

Maintaining participation in physical activity during the transition from adolescence to adulthood: a mixed methods study

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Abstract

Background: Levels of PA commonly decline during adolescence. Some individuals do remain active through adolescence into young adulthood (16-25 years); however, the factors supporting their ongoing participation during this transitional life stage are poorly understood. A greater understanding of the factors that facilitate maintenance of PA levels during this life stage will make a valuable contribution to the fields of public health and PA studies and aid in the development of health promotion activities that promote regular participation in PA by young people.

Aims: This Australian study examines the role of PA in the lives of young people, particularly those who remain engaged in regular PA as they transitioned from adolescence to adulthood. It explores the influence of childhood factors as well as current life circumstances on participation levels.

Methods: This is a multiphase mixed methods study. Phase one used data from the Childhood Determinants of Adulthood Study (CDAH), an Australian population based prospective cohort, to examine the associations between sociodemographic, behavioural, sociocultural, psychological, emotional, cognitive and physical factors measured in childhood and adolescence with PA behavior during the transition from adolescence to adulthood. Focus groups were conducted with fifty young people aged 16 – 26 years to explore how young people speak about PA and changes since leaving high school. In phase two, following analysis of CDAH and focus group data, semi-structured interviews were conducted with 24 young people aged 16 - 25 years. Interviewees also completed the International PA Questionnaire and were asked to complete a weekly pedometer diary.

Results: The most common pattern of PA behaviour was one of fluctuating participation. Childhood factors such as sports competency and cardiorespiratory fitness as well as sociocultural factors predicted maintenance of PA for males and females. Two distinct subgroups of PA maintainers were identified, with one group characterised by above average childhood competency and diversity of childhood PA experiences. PA was central to members of this groups' sense of identity. The second group were characterised by supportive sociocultural factors and current life circumstances. Maintenance of PA for

both groups was concomitant with valuing PA for a combination of extrinsic (relationships, health/fitness) and intrinsic (physical challenge, time out) factors. These values were consistent with this transitional life stage, but also fluid and dynamic, altering according to the type of activity undertaken and with changes to life circumstances.

Sex differences were found across all elements of the study, including childhood predictors of PA, perceptions of PA and type of PA undertaken, but no clear patterns were discernible for socioeconomic status or education. Geographic location impacted the type of activities undertaken as well as the frequency.

Conclusion: The value placed on participation appeared critical for maintenance of PA during this transitional life stage. Competency, social support from family, friends and other adults as well as opportunities provided by schools and colleges also contributed to maintenance of PA.

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Abbreviations

ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum, Assessment and Reporting Authority
AFL	Australian Football League
AIHW	Australian Institute of Health and Welfare
ASHFS	Australian Schools Health and Fitness Survey
BMI	Body Mass Index
CDAH	Childhood Determinants of Adult Health
CI	Confidence interval
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DALY	Disability Adjusted Life Years
GPAQ	Global Physical Activity Questionnaire
HLAQ	Historical Leisure Activity Questionnaire
IL	Instrumental Leisure
IPAQ	International Physical Activity Questionnaire
km	Kilometre
LTPA	Leisure time physical activity
MET	Metabolic equivalent
PA	Physical activity
PCYC	Police Citizens Youth Club
PE	Physical education
PWC ₁₇₀	Physical work capacity at heart rate 170 beats per minute
Qual	Qualitative
Quan	Quantitative
RR	Relative risk
SD	Standard deviation
SEIFA	Socio-Economic Index For Areas
SES	Socioeconomic status
TAFE	Technical and Further Education
TL	Traditional Leisure
UK	United Kingdom
USA	United states of America
WHO	World Health Organisation

Glossary Sports

Cricket	A bat and ball game played between two teams of 11 players on a field with a 22 metre long pitch in the centre. Each team takes it in turns to bat while the other team fields. The bowler bowls at the batsman who attempts to hit the ball so that he can run to the other end of the pitch to score a run. The batting team bat until 10 batsmen are out and then the fielding team bats.
Football (Australian Rules, footy, AFL)	A game played between 2 teams of 18 players each on an Australian rules football ground or modified cricket ground. Points are scored by kicking a ball between two tall goal posts. The oval shaped football is kicked, handballed or players can run with it (distance restricted). Football is a contact sport with tackling and obstruction using the body allowed.
Futsal	The official indoor game of soccer. The game is played with two teams of five players on a hard court surface the size of 40m x 20m. The ball is smaller with less bounce than regular ball with teams aiming to score goals through the rectangular goal at each end.
Netball	A game played between two teams of seven players. Games are played on a rectangular court with a goal ring at each end. Players have specific positions with restrictions on movement. Each team attempts to score a goal by passing the ball down the court and shooting into the goal ring.
Soccer	Soccer is commonly known as football outside Australia and is played between 2 teams of 11 players. The game is played with a spherical ball on a rectangular ground with rectangular goals at each end. The ball may not be touched by the hands except by the goal keeper, with players kicking or heading the ball to progress the ball down the field.
Tennis	Tennis is commonly played between two individuals or two teams of two players each. Each player uses a racquet and a hollow rubber ball on

a rectangular court. Players aim to play the ball so that the opposition cannot return the ball. The object is to win the best of three or five sets with each set consisting of games and each game consisting of points.

Statement of Co-Authorship

Kim Jose (KJ) was responsible for the overall study design of this mixed methods research project. Some of the data used in this thesis comes from the Childhood Determinants of Adult Health (CDAH) Study. The data collection and much of the data cleaning was complete when KJ joined the CDAH team so she was not involved in the study design or data collection for this study. KJ was responsible for designing the research questions based on the data available from the CDAH study. KJ was responsible for all the remaining data collection, cleaning and analysis, including recruitment of study participants.

This thesis includes papers for which KJ is not the sole author. KJ took the lead in this research in that she designed the overall research study, analysed the different data strands and wrote the manuscripts.

Chapter 4

Jose KA, Blizzard L, Dwyer T, McKercher C, Venn AJ. Childhood and adolescent predictors of leisure time physical activity during the transition from adolescence to adulthood: a population based cohort study. *International Journal of Behavioral Nutrition and Physical Activity*. 2011;Jun;8.

KJ contributed to statistical analysis and drafting of the manuscript. TD and AV contributed to the CDAH study conceptualisation, design and co-ordination and drafting the manuscript. LB and CM contributed to statistical analysis and drafting the manuscript. All authors read and approved the final manuscript

Jose K and Hansen E Exploring the Relationship Between PA and Leisure in the Lives of Young Australians. *Journal of Physical Activity and Health* 2013;10(1): 54-61.

KJ contributed to the study design, recruitment, data collection and analysis. EH contributed to the study conceptualisation, data analysis and drafting of the manuscript.

Chapter 6

Jose KA, Cleland VJ, Venn AJ, Hansen E. Young adult perceptions of Australia's physical activity recommendations for adults. Accepted for publication *Health Promotion Journal*

of Australia.

KJ contributed to the study conceptualisation, recruitment, data collection and analysis. AV contributed to study conceptualisation and design and drafting the manuscript. VC contributed to study design and drafting the manuscript. EH contributed to study conceptualisation and design, assisted with data analysis and drafting the manuscript.

Signed by primary supervisor Dr Emily Hansen

Signed: Date _____

Publications and Presentations

Publications arising directly from the research described in this thesis

Chapter 3

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Jose K and Hansen E Exploring the Relationship Between PA and Leisure in the Lives of Young Australians. *Journal of Physical Activity and Health* 2013;10(1): 54-61.

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Conference presentations arising from this thesis

*Presenting author

Oral presentations

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Jose K*, Cleland V, Venn A, Hansen E. Continuing participation in leisure time PA during the transition from adolescence to adulthood. Oral presentation. *8th International Mixed Methods Conference*, Leeds June 2012

Jose K*, Hansen E. 'I just never would associate walking as exercise': Perceptions of walking for exercise in young Australians. *Primary Health Care Research, Evaluation and Development Annual Symposium*, University of Tasmania, December 2011

Jose K*, Hansen E. Continuing engagement with PA during the transition from adolescence to adulthood. *Primary Health Care Research, Evaluation and Development Annual Symposium*, University of Tasmania, December 2010

Jose K*, Physical Activity in Young Adults: A Mixed Methods Approach. *Deakin University Higher Degree by Research Student Symposium*, School of Exercise and Nutritional Science Deakin University, Melbourne, November 2009

Jose K* Otahal P, Blizzard L, Venn A. Childhood and adolescent predictors of maintaining PA in early adulthood. Oral presentation. *7th National Physical Activity Conference 'Be Active'*, Brisbane October 2009

Jose K*, Hansen E. What leisure? Leisure time PA in young adults. Oral presentation. *7th National Physical Activity Conference 'Be Active'*, Brisbane October 2009

Jose K*, Hansen E. Conducting Focus Groups in Young Adults: social context matters. Tasmanian University Postgraduate Association conference, University of Tasmania, September 2009

Poster Presentations

Jose K, Cleland V*, Venn A, Hansen E. Poster: Leisure time PA during the transition from adolescence to adulthood: a mixed methods approach. *International Conference on Diet and Activity Methods*, Rome May 2012

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Chapter 1 Introduction

The transition from adolescence to adulthood is a time of significant change for young people and a critical life stage for setting the foundations for adult health through the impact of social determinants of health (education, employment) and health-related behaviours (1). An important health-related behaviour is participation in physical activity (PA). Regular participation in PA is associated with reduced rates of all-cause mortality, cardiovascular disease, type 2 diabetes, stroke, hypertension, breast cancer, colon cancer and depression. However, participation in PA declines during adolescence with this decline continuing into young adulthood (2). Despite the importance of this issue, many aspects of changes in PA participation between adolescence and adulthood are poorly understood.

Thesis statement: The health benefits of participation in regular leisure time physical activity (LTPA) and the decline in participation during the transition from adolescence to adulthood are well documented, the factors that influence active young adults' willingness and capacity to remain active are complex.

The focus in PA research has been on documenting patterns of PA behaviour over time (tracking), identifying the relative influence of personal, social and environmental correlates or determinants on PA behaviours for particular population groups (children, adolescents, adults) and developing PA measurement tools. There has been little research into habitual participation in PA or participation in PA during the transition from adolescence to adulthood.

In particular, the factors that enable young people to remain physically active during this transitional life stage are relatively unknown. A greater understanding of the factors that facilitate maintenance of PA during this life stage will make a valuable contribution to the fields of PA studies as well as to health promotion and public health. Understanding the factors that facilitate maintenance of PA will assist in identifying key points for intervention as well as contribute to the development of more effective PA intervention programs. This thesis, presents research conducted between 2008 and 2013 that investigates the maintenance of PA during the transition from adolescence to adulthood.

To date, PA research has primarily used quantitative methods to examine measures of association between characteristics of interest, such as demographic (education, employment, ethnicity) or social factors (parental PA) and PA outcomes. Qualitative PA research has focused on identifying barriers and facilitators to participation, particularly in females of different ages. More recently, in public health and related fields, researchers are using mixed methods approaches in order to provide more comprehensive understanding of complex issues. For example, mixed methods research has been used to; identify the key factors that impact the ability to manage self-care among people with heart failure (3), understand recruitment issues in randomised control trials for prostate cancer treatment (4) and examine food buying practices for people living in areas with restricted food supply (5). Mixed methods research involves collecting, analysing and integrating qualitative and quantitative data in the same research study. This research study addresses the lack of research into factors that facilitate maintenance of PA, particularly during the transition from adolescence to adulthood, using a mixed methods research design.

This innovative research project used a multiphase mixed methods research design with two distinct stages. In Stage One, a national population based cohort of young Australian adults (Childhood Determinants of Adult Health, CDAH, study) with validated measures of PA and focus groups with young Australians aged 16 – 26 years was used to develop preliminary hypotheses about PA maintenance during this transitional life stage. These preliminary hypotheses were tested and explored further in Stage Two when semi-structured interviews were conducted with 24 young Australian adults aged 16 – 25 years. Interview participants also completed validated measures of PA (International Physical Activity Questionnaire (IPAQ) and pedometer diaries). Data from each stage of the research was then integrated within and across each stage, using two mixed method analytic approaches known as merging and connecting (6).

This thesis is structured in the following manner. The study aims and research questions are presented at the end of the introduction (see page 3). Relevant literature is reviewed in Chapter 2. This is followed by a detailed methods chapter (Chapter 3) that explains the methodological approach, procedures and the data collection and analysis techniques used in the research. The first results chapter (Chapter 4) presents the results from Stage

One of the study, presenting analysis of data from the CDAH study and focus groups separately before integrating the data. The second and third results chapters (Chapter 5 and Chapter 6) present analysis of data from interview participants only. In these chapters interview and PA data (pedometer, IPAQ) are synthesised and integrated, facilitating development of a profile of PA participation for each interview participant. The final two results chapters (Chapter 7 and Chapter 8) present findings from focus group and interview data that help reveal social and cultural influences on participation and how important aspects of this transitional life stage appear to influence PA participation. The discussion chapter (Chapter 9) draws together all of the key results and discusses them in relation to key theoretical approaches and existing PA research. Implications for public health and health promotion, directions for future research and limitations are also presented.

1.1 Research aims and questions

1.1.1 Aims

This study examines the role of PA in the lives of young people, particularly those who remain engaged in regular PA as they transition from dependent adolescent to independent adult. It also explores the influence of childhood factors as well as current life circumstances on participation in PA during this transitional life stage.

1.1.2 Research questions

1. Which personal, social and environmental factors in childhood and adolescence predict PA in young adulthood?
2. How do young adults perceive PA?
3. Do type and frequency of PA change for those who persist with PA from childhood and adolescence into adulthood?
4. What factors do young adults' report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult?

5. How do young adults make decisions about PA participation?
6. How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into the independent environment of further study or work?

Chapter 2 Literature Review

2.1 Introduction

This thesis examines habitual participation in PA during the transition from adolescence to adulthood. The role of PA in the lives of young people as well as the influence of childhood factors and current life circumstances on participation in PA during this transitional life stage is examined. The first section of this literature review (section 2.2) presents an overview of relevant PA research; including PA and health outcomes, trends in participation, tracking of PA, measurement of PA and the correlates and determinants of PA. These areas were selected as they highlight the positive impact PA has on health outcomes, illustrate changes in participation in PA occurring globally as well as for individuals (tracking), outline current developments in PA measurement and the shortcomings when measuring habitual participation in PA and provide summaries what is already known about factors that influences P A participation. As this study examines PA during the transition from adolescence and adulthood a review of literature examining the impact of life events on PA is also included. This study uses qualitative research to examine the role of PA in the lives of young people so a review of qualitative studies examining perceptions and experiences of PA is also presented. Wherever possible this review presents PA research in these areas that has been undertaken with young people during this transitional life stage.

As this study focuses on P A during the transition from adolescence to adulthood section 0 reviews the literature pertaining to young adulthood and youth transitions. The concept of youth transitions is discussed and alternative approaches from youth researchers presented. As PA is commonly undertaken during leisure time a review of perceptions of leisure and the role of leisure in the lives of young people is also presented. As many young people undertake PA through their involvement in sport and physical education an overview of the role of physical education, sport and the Tasmanian education system is also provided. Finally, in section 2.4 a brief overview of key behavioural theories from the disciplines of psychology, sociology and anthropology is presented.

2.2 Key concepts physical activity

2.2.1 Physical activity

Physical activity (PA) is defined as '*any bodily movement produced by skeletal muscles that results in energy expenditure*' (7 p126). PA is undertaken for various purposes and is commonly categorised into different domains; namely leisure-time, occupational, transport and household (8). PA is important for physical growth and development in childhood and adolescence (9), has positive impacts on health outcomes at all ages and plays an important role in maintaining functional health in older adults (10).

Cardiorespiratory fitness is defined as the ability to complete daily tasks with vigour and incorporates attributes such as cardiorespiratory endurance, muscle strength/endurance, flexibility, body composition, skill, speed and coordination(7). Maximal health benefits result from regular participation in PA over time (11, 12).

PA is categorised according to intensity, frequency and duration. Together these three factors provide a measure of volume of activity (13). Intensity of PA is the rate of energy expenditure required to perform an activity and is measured in metabolic equivalents (METs), kilocalories, joules, millilitres of oxygen consumption or speed. One MET is equivalent to energy expenditure sitting at rest. Categorisation according to METs includes sedentary (≤ 1.5 METs), light intensity (1.6 - 2.9 METs), moderate intensity (3.0 - 5.9 METs) and vigorous intensity (≥ 6.0 METs) activity (13). Laboratory and field studies have facilitated the development of a compendium of PA where activities are assigned a MET value (14, 15). Activities such as fishing and slow walking are classified as light intensity; brisk walking and mowing the lawn are classified as moderate intensity and jogging and many sports are classified as vigorous intensity.

Studies examining the relationship between the intensity of PA and all-cause mortality have found a dose response curve (12, 16, 17). However, the greatest risk reduction actually occurs when people move from no PA (sedentary) to low intensity PA (see Figure 2:1) even though these activities may fall below recommended intensity levels (12, 16, 17).

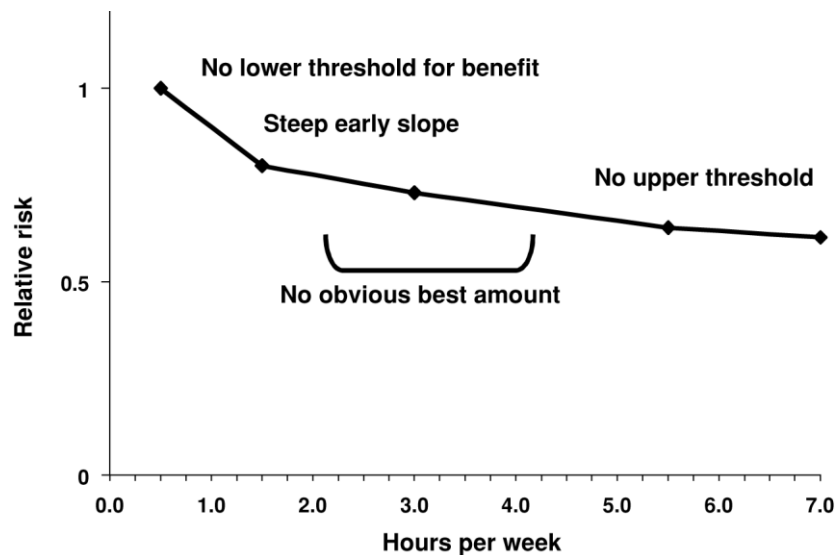


Figure 2:1 Risk of all-cause mortality by hours/week of moderate to vigorous PA.

Source: Powell KE, Paluch AE, Blair SN. Physical Activity for Health: What kind? How much? How intense? On top of what? *Annu Rev Public Health*. 2011;32(1):349-65 (13).

Traditionally, PA recommendations referred to high intensity or vigorous PA due to the focus on the relationship between exercise and cardiorespiratory fitness rather than PA and health (18). However, as evidence for the health benefits of moderate intensity PA has grown, PA recommendations for adults throughout the world have been revised and now advise at least 150 minutes of moderate intensity PA per week(19, 20). Children and adolescents are advised to do at least 60 minutes of moderate intensity PA everyday (19, 20).

2.2.2 Physical activity and health

Chronic non-communicable diseases such as diabetes, cardiovascular disease, stroke, dementia, depression and anxiety are the leading causes of death and morbidity throughout the world (21). In Australia they account for 83% of deaths under the age of 75 years (22). Cancer and cardiovascular disease are the leading causes of disease and injury burden in Australia as measured by disability-adjusted life years (DALYS)(23). Rates of non-communicable disease can be reduced through addressing four key behavioural risk factors: tobacco smoking, PA, harmful alcohol use and unhealthy diet. Globally, physical inactivity (not meeting PA recommendations) is the fourth leading risk factor for

all mortality (24). Physical inactivity accounted for 6.6% of the total burden of disease and injury in Australia with ischaemic heart disease, type 2 diabetes and stroke accounting for four-fifths of this burden (23). The annual cost to the Australian health sector of physical inactivity is AUS\$672million or 1.3% of total annual health sector costs (25).

A range of health benefits, including a reduction in all-cause mortality, cardiovascular disease, type 2 diabetes, stroke, hypertension, breast cancer, colon cancer and depression is associated with regular participation in PA (10, 19, 20). PA also leads to improved cardiorespiratory and muscular fitness, improved bone health, improved cognitive function and healthier body mass (26). Participation in just 15 minutes per day of moderate intensity activity such as walking confers health benefits, even in those at risk of cardiovascular disease (27).

2.2.3 Health behaviours, health outcomes and the transition from adolescence to adulthood

The period between adolescence and adulthood is a time of significant social change associated with changes in health outcomes and health-related behaviours (1). Early childhood development and prenatal care impacts on adolescent health, but the adolescent period is considered integral for establishing future patterns of adult health through health-related behaviours and social determinants of health such as educational and employment opportunities. While there have been substantial improvements in child health over recent decades adolescent health has experienced less improvement (1). Greater recognition of the importance of this period in the life course and its foundational role for adult health is needed.

While young people are generally considered to be healthy, mortality rises during adolescence (10 – 19 years) and young adulthood (20 – 24 years)(28) as do mental health disorders (29). Behaviours such as smoking, PA, alcohol and substance misuse are commonly initiated or change during adolescence and impact on the development of chronic non-communicable disease in adulthood (30, 31). Despite increasing recognition of the importance of the transition from late adolescence to adulthood for promoting health enhancing behaviours there is limited data available on health behaviours during this transitional life stage. In the USA studies have examined physical activity behaviours

during the transition from high school to college (32-34). These studies found a decrease in PA, but are limited by their retrospective reporting of PA (32), short follow-up period (five months) (33) and self-report measures of PA (34). A longitudinal study of a nationally representative cohort of Canadian adolescents examined changes in health behaviours during the transition from adolescence (12 – 15 years) to early adulthood (24 - 27 years) (35). This study found that PA decreased by 24% across the study period while binge drinking and smoking increased. Studies that examine tracking of PA during the transition from adolescence to adulthood are discussed further in section 2.2.5.

Changes in lifestyle factors such as smoking, PA and cardiorespiratory fitness as well as BMI (body mass index) and waist circumference between adolescence and adulthood have been found to impact on cardiovascular disease risk profiles (blood lipid and lipoprotein levels) in adulthood (36). In a 10 year longitudinal study of young Norwegian adults, those classified as 'active maintainers' using self-report measures of sport and exercise from adolescence (13 – 19 years) to adulthood (23 – 31 years) had better mental health and lower cardiovascular disease risk profiles than those in all other PA categories (relapsers, adopters, inactive maintainers) (37). Pooled data from four cohort studies following participants from childhood to adulthood in Australia, Finland and the USA found that compared to those who remained overweight or obese from childhood to adulthood, those overweight or obese children who became nonobese adults had a decreased risk of developing type 2 diabetes, hypertension and dyslipidaemia in adulthood (38). Maintenance of risk factors for cardiovascular disease such as high BMI, high blood pressure and high triglycerides from childhood to adulthood have been found to predict cardiovascular disease and type 2 diabetes in young adulthood (39). Many of these risk factors for chronic disease are impacted by PA. These studies highlight the impact the decline in PA during the period between adolescence and adulthood has on patterns of adult health. However, the factors that contribute to maintenance of PA during this transitional life stage have received little attention and are poorly understood.

2.2.4 Trends in physical activity participation

Studies investigating changes in PA patterns with age (incorporating self-report or objective measures of PA) show a decline in PA with increasing age, with this decline

commencing during childhood and early adolescence (see Figure 2:2 below) (2, 40-50). Evidence suggests that this decline has a biological basis (51, 52). A recent systematic review and pooled analysis of longitudinal studies using self-report and objective measures of PA during adolescence (10 – 19 years) found that mean percentage PA declined 7% per year and that the decline occurred in females at younger age (9 – 13 years) than males (13 – 16 years) (40).

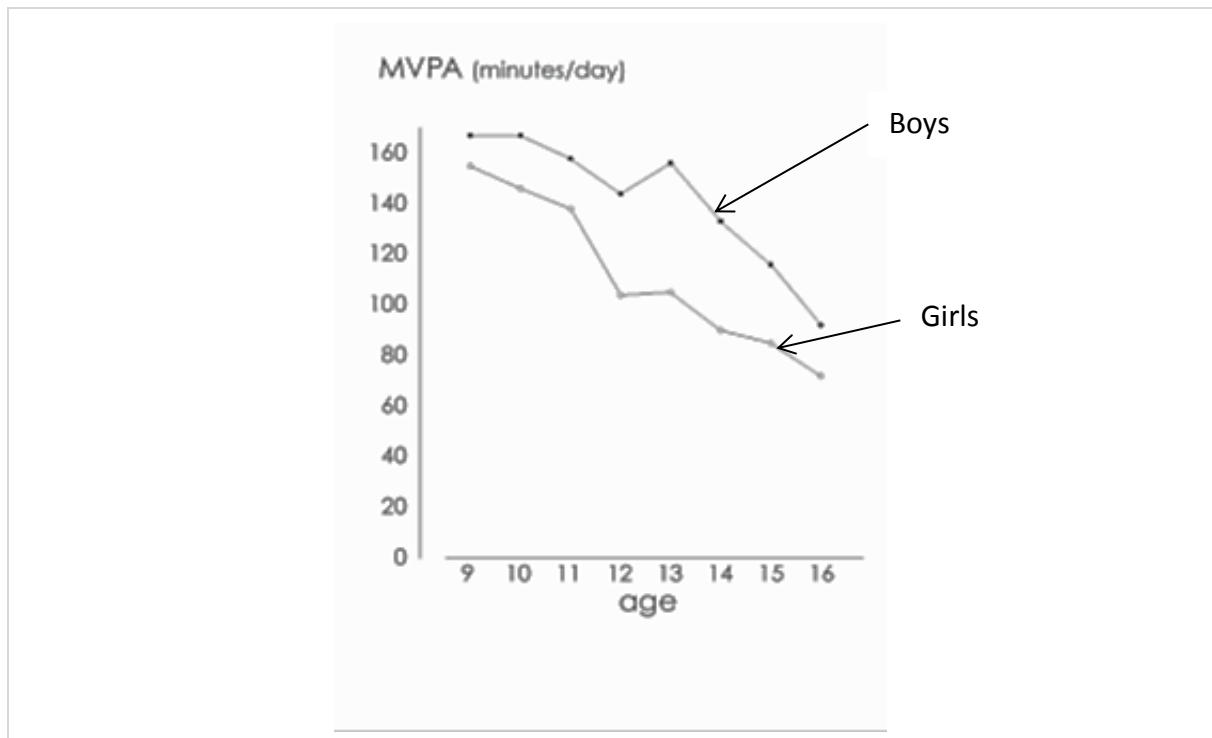


Figure 2:2 Age and gender-related patterns in moderate vigorous physical activity (MVPA) Australian children

Source: Commonwealth Scientific and Industrial Research Organisation. 2007 Australian National Children's Nutrition and Physical Activity Survey. Canberra: CSIRO 2007 (53)

Determining population wide temporal trends in PA is difficult due to the lack of consistent and ongoing surveillance systems. The development of standardised measurement instruments such as the International Physical Activity Questionnaire (IPAQ) and the Global Physical Activity Questionnaire (GPAQ) have assisted international surveillance of PA. Objective measures of PA such as pedometer and accelerometer data have also been used in population based surveys in recent times, but due to the additional costs involved have mainly been used in higher income countries. A recent comprehensive review of global PA found that worldwide 31.1% of adults are classified as

physically inactive using self-reported PA, with physical inactivity more common in high income countries than low income countries (41). Globally, 80.3% of 13 – 15 year olds did not meet the recommended 60 minutes of PA per day. Significant between country variations in different domains of PA were found with <4% of adult Australians walking to work while >20% German and Chinese adults walk to work (41). Using objectively measured PA levels (where available); the mean amount of moderate to vigorous PA for adults was 35.5 minutes per day and 65 minutes per day in adolescents. A systematic review of PA levels worldwide show that there have been increases in leisure time physical activity (LTPA) and a decrease in occupational PA in adults in high income countries in recent decades (54). The trend for youth PA participation is less clear with some reviews indicating that PA appears to be decreasing in this age group (54) while other reviews indicate that total PA and sports participation have not declined in recent years (55) .

In the most recent Australian Health Survey (2011-2012) 66.9% of Australians aged 15 years and over were sedentary or had low levels of exercise in the week prior to the survey (56). This is an improvement from 2007-08 when 71.6% were sedentary or had low levels of exercise. Older Australians (75 years and older) were less active than younger Australians (<75 years) and men were more active than women. The percentage of young Australians aged 15 – 19 years classified as inactive increased between 1989-90 and 2007-08 from 43% to 53% for males and 63% to 71% for females (57). For the first time pedometer data was collected as part of the survey and found that young people age 15 – 17 years averaged 7,371 steps per day with only 5% females and 9% males (aged 15 – 17 years) reaching the recommended step count of 12,000 steps per day (58). For young people aged 18-24 years, 22% males and 18% females completed the recommended 10,000 steps per day with the average step count for this age group 7,587 per day.

2.2.5 Tracking of physical activity over time

Tracking of PA refers to the stability of a person's relative rank over time (59). Tracking studies commonly measure correlations between repeated measures of PA to show stability or variability in PA over time (60). Correlation coefficients from PA tracking

studies show that PA tracks at low to moderate levels across the life span (61-68). However, the majority of tracking studies rely on self-report measures of PA commonly focusing on PA of high intensity such as organised sport and often failing to adjust for measurement error. Where objective measures have been used and adjustment for error occurred, PA has been found to track at higher levels (67, 69). To date short term fluctuations in PA are not incorporated into the concept of tracking (60). Tracking of physical fitness measures show greater longitudinal stability than PA (44, 70-72). Tracking studies show no systematic differences to support age or development-related variations in participation at different phases of life (60, 69).

Longitudinal studies of older adolescents with repeated measures of PA show that maintaining PA behaviours over time is uncommon (61, 62, 73). A longitudinal study of Finnish youth (twins) using self-report measures to calculate frequency of weekly LTPA at ages 16, 17 and 18 years found that only 19.1% of boys and 11.2% of girls were categorized as persistent exercisers (exercised 4-5 times per week) at all three ages (61). In a longitudinal New Zealand study using self-reported LTPA over the last year and energy expenditure only 5.8% of females and 15.8% of males were found to meet PA recommendations at both age 15 and age 18 (62). In adults, repeated measures of self-report LTPA over the past 12 months found that 12% were classified as persistently active across three time points (1981, 1988, 2002/2004)(63). The Australian Longitudinal Study on Women's Health found that even though the proportion of women in the age cohort 18 – 23 years categorised as active at two time points (1996, 2000) remained the same there was considerable individual variation from one time point to another with 36% women categorised as active in 1996 categorised as inactive in 2000 (74). The literature shows that there is significant variability in PA behaviours over time with few individuals maintaining PA behaviours during the transition from adolescence to adulthood.

2.2.6 Measurement of physical activity

There have been significant advances in measures of PA in recent years, particularly objective measures of PA, largely driven by the need to accurately assess energy expenditure. Measurement devices include pedometers, accelerometers and Global

Positioning System (GPS) devices (75). Pedometers measure steps per day (total ambulatory PA), but are unable to capture information on intensity or duration of PA as well as some types of PA such as swimming and cycling. Accelerometers provide information on frequency, intensity and duration of PA and can also provide information on sedentary behaviours. However, they are unable to distinguish between types of PA and contextual factors and lack universal standards for converting raw data to counts (75). GPS devices are relatively new methods of assessing PA and provide more contextual information about PA behaviours, however data collection and analysis is complex and limited to outdoor areas (75). Direct observation is another objective measure, but due to the requirement for trained observers and associated costs is most commonly used with a small number of participants or when investigating PA in a particular setting (76).

Along with objective measures of PA, standardised self-report measures have also been developed for different ages and diaries and log books are also used. These methods provide more contextual information, but rely on recall which is more likely to capture information about high intensity structured PA (77, 78). A systematic review of 74 studies comparing direct measures of PA with self-report measures found no clear trend with respect to over or under reporting of PA by self-report compared to direct measures (77). The selection of PA measurement method will be determined by the study aims and objectives, type of PA information required, target population, sample size, costs and logistics (75-77).

Due to the high level of intra-individual variability inherent in PA behaviours PA measurement protocols have been developed to ensure data collection occurs on a number of days in order to capture typical activity levels (79). Variability is impacted by seasonality, week day versus weekend day, work/school day versus non work or school day and the weather. Protocols frequently stipulate data collection on weekend days as well as weekdays. However, a study of 23 adults who wore a pedometer and recorded their step counts for 365 consecutive days showed that 5 consecutive days of wear provided reliable estimates of step counts, but did not provide an accurate measurement of yearly PA (80).

Despite advances in the objective measurement of PA, capturing an individual's long term or habitual involvement in PA remains a challenge. Longitudinal studies aim to capture habitual PA behaviours using repeated measures over time, but these measures still capture data over a short time period. Daily PA levels may be relatively stable over short time periods, but this does not necessarily reflect long term habitual PA behaviours (80). It has been recommended that multiple measures of PA may be needed to develop a complete PA profile, but this is not common (76). These measurement issues have implications for our understanding of the relationship between habitual PA and health outcomes.

2.2.7 Correlates and determinants of physical activity

Correlates and determinants of PA are commonly classified as demographic or biological, psychosocial, behavioural, social and cultural and environmental (81). Studies in adolescents and adults have found significant variables in all classifications highlighting the complexity of PA behaviours. However, studies have been predominantly cross-sectional in nature, relied on self-report measures of PA, used inconsistent measures of potential correlates and commonly focused on LTPA (82-84). Combining findings from 16 systematic reviews of correlates and determinants of PA in children, adolescents and adults since 1999 Bauman and colleagues found that the most consistent correlates of PA at all ages are male sex, self-efficacy for PA and previous PA, reported health status and intention to exercise in adults and family social support in adolescents (81). Correlates also varied with different domains of PA (81). Two reviews of determinants of PA that restricted their inclusion criteria to prospective studies found a large number of potential determinants had been examined in children and adolescents (85, 86). Self-efficacy, behavioural control and support for PA (85) and age, ethnicity and planning (86) were associated with smaller declines in PA in adolescents. Both these reviews excluded studies that focused on PA in a single domain, such as active transport or leisure.

Prospective studies investigating child and adolescent predictors of adult PA have found positive associations with young adults' own level of education (87, 88), sociodemographic factors (87-89), sports participation in adolescence (88, 90-94), PA in childhood or adolescence (88, 95, 96), physical fitness measures (44, 97) and measures of

physical ability (87, 94). None of these studies included factors from all of demographic or biological, psychosocial, behavioural, social and cultural and environmental categories or focused on the transition from adolescence to adulthood.

The few studies that have examined factors that influence PA behaviours during this transitional life stage have focused on the decline in participation (98-100), the impact of socioeconomic factors such as education and occupation as well as parenthood (100, 101), changes in sports participation (100) or focused on specific population groups; commonly university/college students (98, 99). These study characteristics restrict the ability to identify factors that support maintenance of PA behaviour during this transitional life stage. Further research into the correlates and determinants of PA during this transitional life stage is needed.

While classifying correlates of PA behaviours according to different levels of influence (personal, social, environmental) assists in focusing research objectives and identifying areas for intervention it may contribute to assumptions that correlates act independently of each other. Correlates research rarely addresses the complex and dynamic interplay between factors across classifications. For example, sociocultural factors may influence psychosocial factors such as attitudes, beliefs and social support in different ways across the life course and this may vary for males and females. Common sociocultural correlate measures such as ethnicity, parental support and parental involvement in PA may fail to capture the manner in which ethnic identification or broader social and cultural values impact on PA behaviours. Similarly, measures of urban or rural place of residence may be inadequate to identify the complex manner in which these factors impact on PA behaviours. While correlates research has contributed significantly to our understanding of PA behaviours it frequently fails to capture the complex interactions between demographic or biological, psychosocial, behavioural, social and cultural and environmental factors.

2.2.8 Life events and physical activity

It is postulated that transitional life stages or life events may influence the stability of PA behaviours across the life course (11, 60, 102, 103). A systematic review of tracking studies indicate that there is lower stability of PA behaviours during transitional life

stages (60). Malina (102) proposes that changes in contextual factors associated with life events may be important when considering maintenance of PA over time. Research to date has been unable to determine if PA persistence is a function of individual or environmental stability (81) although this question appears misdirected as it is likely that it is a combination of both.

The transition from adolescence to adulthood is associated with changing social roles which are in turn associated with changing expectations and responsibilities (1). In the past studies investigating the impact of life transitions on PA behaviours have focused on the impact of specific events such as the transition to university, parenthood, change in employment status, marriage and violence or disaster (74, 101, 104-108). Brown and Trost (74) found that getting married, having children and starting work were associated with a decrease in PA over four years in a cohort of young Australian women aged 18-23 years. In the same cohort of young women establishing a live-in relationship was associated with decreases in PA (105). In the cross-sectional study using data from respondents aged 15 – 29 years in the 2003 American Time Use Survey parenthood, employment status and school enrolment impacted the odds of meeting physical activity recommendations (101).

Two recent systematic reviews examining the impact of life events on LTPA suggest that life events do impact on PA levels (104, 108). Transition to university, parenthood, re-marriage and urban disaster were associated with a decrease in PA while retirement was associated with an increase in PA (108). For males and females, multiple simultaneous life events were associated with a decrease in PA (108). These reviews highlighted a number of important limitations in the literature examining the impact of life events on PA. These included the small number of longitudinal studies (104), a focus on women (108), the limited number of life events measured (104) and retrospective recall of PA when assessing PA prior to the event (108) even in longitudinal studies (104).

Examining the impact of specific life events on PA behaviours contributes to our understanding of PA. However, as a result of changes in contemporary western society many life events previously associated with the transition from adolescence to adulthood (leaving home, marriage) now occur at an older age (see section 2.3.1. for more detail).

Social role transitions are no longer so clearly defined or associated with the transition from adolescence to adulthood as in the past. Hence, this study does not focus on the impact of specific life events on PA, but considers the transition from adolescence to adulthood a period of significant social change.

2.2.9 Qualitative physical activity studies: exploring context

Qualitative studies aim to assist our understanding of human behaviour through the investigation of perceptions, meanings and social and cultural context using focus groups, interviews, participant observation or open ended questions on questionnaires (109). The methods used and type of analysis undertaken may be determined by a particular theoretical approach (grounded theory, interviews and iterative thematic analysis), type of data collected (content analysis of written document), topic under investigation and the aims of the study.

Studies exploring perceptions of PA in active and inactive adolescents and adults of all ages using interviews and focus groups find that PA is perceived positively, being considered important for improving health and fitness, improving well-being and providing opportunities for socialising and learning new skills (110-120). Few studies explore perceptions of different intensities of PA, but studies of walking in adults found they believed walking to be too slow to achieve any health benefits (121, 122). Health and fitness benefits were associated with participation in regular high intensity PA by adolescents and adults, but high intensity PA is perceived negatively as hard work and requiring effort (110, 113, 119).

Qualitative studies exploring participation in PA have commonly focused on identifying facilitators and barriers to participation. Reviews of such studies have compiled lists of barriers (cost, time, access, transport, social support, safety) and facilitators (fun, social support, facilities) to participation in children and adults (123-125). These studies tend to reflect quantitative studies that identify correlates or determinants of PA by failing to capture the complex interaction between individual, social, cultural and environmental factors on PA behaviours (126). A recent systematic review of 19 qualitative studies exploring PA participation in adolescent girls (11 – 19 years) found that ability comparison and competition, family, peer, teacher influence and appearance concerns were the most

common factors influencing participation (127). Where qualitative studies give greater consideration to the broader social and cultural context of participants' lives it has been found that changing academic expectations in older adolescents (15 – 18 years) have a significant impact on participation in PA (111, 128-131). Changing academic expectations result in increasing time pressure with a subsequent cessation of PA or a shift from participation in structured team sports to more flexible unstructured individually based activities (128). This reported shift to individual activities was demonstrated in the population based Survey of Sport and Exercise carried out in Ireland in 2003 where interviews with 3,080 adults reconstructed individual sports and exercise histories and found a shift from team sports to individual activities in late adolescence (132).

Interviews with young people aged 13 – 23 years found that decisions about continuing participation in organised sports in older adolescence are influenced by their perceptions of adulthood (133). Males more commonly than females considered sports participation consistent with their perceptions of adulthood. Older adolescents also found opportunities to participate in organised sport restricted by talent or competency as competition for places on teams becomes greater (131, 133). In focus groups exploring the perceptions and expectations of PA with adolescent girls, participants indicated that they prefer a focus on participation and informal unstructured PA (134, 135). However, a study using focus groups to explore the meaning of PA with active adolescent girls aged 13 - 16 years participants enjoyed the physical challenge participation provided (136). In this study participants self-identified as active on the basis of regularly engaging in one PA during their leisure time and were recruited from areas in England with significant deprivation and poor health status. As well as providing them with a physical challenge focus group participants also found that participation in PA provided them with opportunities for time out therefore enhancing their emotional well-being (136). This enjoyment of physical challenge was also found during interviews with 21 active adolescent girls aged 15 years (112). Recruitment processes limited this study, with study participants selected by PE teachers. As a result the researchers considered their study population to include only those who were interested and committed to PE. (136) No measures of PA behaviours were undertaken as part of these two studies.

Interviews with 75 young women from the UK aged 15 – 19 years compared social

influences between those women who always participated in sport or PA with those who never participated in sport and PA found that family and friends and a positive assessment of their own ability were key characteristics of those who always participated in sport or PA (111). During focus groups with 160 young people aged 12 – 18 years in Canada purposefully selected from low and high SES areas social factors, such as support from friends and adults, were found to be important influences on participation irrespective of SES categorisation (129). In this same study perceived competency was also found to influence participation. In an Australian study with 27 rural living young women aged 16 – 17 years focus group discussions also highlighted the important role support from family and friends played in facilitating participation in PA (128). None of these studies used validated measures of PA (self-report or objective) to determine actual PA and were more commonly undertaken with females than males. A review of qualitative studies examining sport and PA participation among children and adults also found that support from parents and peers and perceived competency were important considerations for adolescents of all ages (123).

A Canadian study classified participants (age not specified, but recruited from senior secondary school) as maintainers and decliners using retrospective reporting of PA in when study participants were in grade 7 and the Physical Activity Questionnaire for Adolescents to measure current PA (130). Four single-sex focus groups were then conducted with those classified as maintainers and three single-sex focus groups conducted with those classified as decliners. During qualitative analysis themes were compared between groups. Parental support and perceived competence were found to positively influence PA maintenance for male and female maintainers. While this study classified participants on the basis of self-report PA the focus group questions explored motivations for participation in PA and social influences and did not examine this behaviour in the broader context of participants' lives.

The Australian-based Life Activity Project, a longitudinal qualitative study following three cohorts of children and adolescents (18 primary school, 18 year 7 and 8 students, 18 year 10 students) recruited through schools with a range of social, cultural and geographic characteristics, explored the role of PA and values associated with health and the impact these had on choices, self-perceptions and embodiments of young people (137). This

comprehensive study used themed interviews, journals, mapping exercises, cameras and direct observation over a 3-5 year period. Geography, social class (as determined by attendance at independent school versus government school), socioeconomic status and schools' values were found to influence the PA choices of adolescent males and females (126, 138). Similarly to the studies outlined above support from family and friends and competency were found to influence participation. For those participants who completed high school during the study, ongoing participation was influenced by their PA identity developed during the school years, changing priorities and social, cultural and economic constraints (138). While this study followed young people over time it was not designed to focus on those who remained active.

2.2.10 Summary physical activity

Participation in regular moderate intensity PA is associated with a range of health benefits, including a reduction in all-cause mortality, cardiovascular disease, type 2 diabetes, stroke, hypertension, breast cancer, colon cancer and depression. It is important for growth and development in childhood and functional health in older adults. Changes in health behaviours between adolescence and adulthood have been found to impact on risk profiles for disease. The transition from adolescent to adulthood is an important time for establishing patterns of adult health. While objective measures of PA have become increasingly accurate and more commonly used in PA research, these methods are not designed to capture habitual patterns of activity. A large number of correlates of PA have been identified, with correlates differing according to PA domain. The most consistent correlates of PA are sex, age, self-efficacy and past PA behaviours. However, correlates research commonly fails to capture the interplay between individual, psychosocial, environmental factors and sociocultural factors. While perceptions of PA are generally positive, comprehensive qualitative studies exploring PA behaviours in adolescents indicate that social, cultural and environmental factors remain important influences on PA behaviours.

The decline in PA during adolescence and young adulthood is well documented in the literature and the health impacts of this decline have been demonstrated. However, few studies examine the factors that contribute to maintenance of PA during this transitional

life stage. Focusing on understanding the factors that help young people remain active during this transitional life stage follows the salutogenic approach suggested by those working in the area of health promotion (139). This approach has been applied in the area of obesity research where the concept of resilience has been used to examine maintenance of healthy weight. In this context resilience refers to those:

who manage to maintain a healthy weight, despite exposure to circumstances that increase the risk of obesity (140 p16).

A greater understanding of the factors that contribute to maintenance of PA would provide valuable insights that could identify key points for intervention and contribute to the development of health promotion and public health initiatives promoting PA to young people.

A broader understanding of this transitional life stage, how it has changed in recent decades and how young people manage the challenges associated with life stage will enable a more thorough examination of the role of PA behaviours during the transition from adolescence to adulthood. The following section reviews the literature pertaining to youth transitions and the role of leisure in the lives of young people.

2.3 Key concepts young adulthood

2.3.1 Youth or young adulthood: a transitional life stage

The concept of youth as a distinct stage in the life cycle is a recent phenomenon, developing over the course of the 20th century as groups of young people with distinct behaviours became widespread in developed countries (141, 142). Definitions of youth include, but are not limited to, biological and psychological change, changing rights and responsibilities according to political and legal processes as well as a period of transition impacted upon by social norms, economic circumstances and social policies (141, 143, 144). Hence, youth as a concept varies socially, culturally and historically and is impacted by a country's stage of economic development (141-143, 145). Typically, in contemporary western society such as Australia, the youth life stage is characterised by a period of semi-dependency and is often associated with upheavals and turbulence, as individuals seek to develop a sense of identity and make their own way in society (141, 142, 145).

Youth is ... a bridge between the total dependence of childhood and the independence of adulthood (141 p55).

The term youth is not used in this study as it is often used to refer to younger adolescents. Participants (aged 16 – 26 years) are referred to as young adults or young people.

Historically, the transition to adulthood was characterised by specific events: employment transition (entering the workforce), housing transition (moving away from the parental home) and domestic transition (setting up own household or family of one's own) (143). Prior to the 1970s this process was seen as a relatively predictable linear process with a clear sequencing of events (146-148). In recent decades the process has become prolonged with traditional pathways replaced by extended education, transitory and insecure employment and delays in leaving home and the onset of parenthood (145, 147-151). In Australia the age at which young people leave home, cohabitate and commence parenthood has increased in recent decades (152-154). Surveys with young people (13 – 29 years) exploring perceptions of adulthood have found that today's young people are more likely to define themselves as adults depending upon the degree to which they accept responsibility for their actions and make independent decisions (155, 156). However, studies with young people using surveys and interviews reveal that some specific transitions, such as parenthood, remain key indicators of adulthood (156, 157), particularly among those from lower social class (158).

An alternative view to that of youth transitions has been proposed conceptualising youth in terms of generational factors (147). This approach takes into account the unique political, social and economic factors that '*shape, constrain and create opportunities for successive cohorts of young people*' (147 p497). Generational cohorts are not only a product of their age, but of the prevailing social conditions that influence priorities, attitudes and experience. Wyn and Woodman (147) argue that the post 1970s generation have shifted their expectations of life in ways that distinguishes them from previous generations of young people with the three key components of the new adulthood: '*responsibility and choice, personal relationships, and finding balance in life*' (147 p507). Cote and Brynner (151) also consider that a generational perspective may be beneficial

for understanding the transition to adulthood. Using a life course perspective they propose that this framework encapsulates the impact of the social, political and economic circumstances into which new generations are exposed.

Despite differing views about the way in which youth and young adulthood should be conceptualised and defined, and challenges to the concept of youth as transition, there is widespread agreement among youth researchers that the period of youth has been prolonged in recent decades (143, 145, 151, 159, 160). The transitions approach to youth remains valuable as this is undoubtedly a period of significant social change, but needs to broaden to encompass the way '*personal agency, critical moments, youth cultural forms and social constraints*' impact on youth transitions (161 p17). Despite the differences in approach, youth researchers also agree that the youth life stage has become increasingly complex with an increasing diversity of experiences and outcomes (146, 162, 163).

As traditional social structures (family, employment, and social class) become increasingly fragmented researchers are increasingly focusing on the role of individual agency in the lives of contemporary young people (164-166). Longitudinal studies following the post-school pathways of young people in Australia, Britain, Canada and the Netherlands born after 1970 using repeated surveys and interviews have found that young people consider themselves to be less restricted by traditional structural constraints such as class structure, sex and race (161, 163, 167-169). They adopt flexible approaches to work, study and other aspects of life in order to deal with less predictable labour markets and changing social support structures (149, 163). However, while young people are less likely to identify structural factors such as sex, race and class as exerting influence on their life choices, longitudinal studies incorporating measures of sociodemographic factors and ethnographic studies examining the transitional experiences of young adults continue to show the impact they do have on the life chances and circumstances of contemporary young people (141, 161, 168-173). For example, a 15 year longitudinal study of Canadian examining post-secondary school education and career pathways for young people completing school in 1988 found that social class, as determined by having one parent with a university degree, was associated with educational attainment, employment, timing of marriage and parenthood of study participants (172).

2.3.2 Perceptions and meaning of leisure

As previously described PA levels across different domains have changed in recent decades as technological advances result in less PA in our daily lives. These advances have resulted in decreased levels of occupational PA in adults in high income countries, but an increase in LTPA (54). For contemporary young people, as work and household activities increasingly require less physical effort (or labour) PA will be predominantly an activity of leisure. Hence, in this study an understanding of leisure and its role in the lives of young people may provide useful insights into their participation in PA.

Longitudinal post-school pathway studies, while focusing on further education and employment, found that leisure activities, relationships, lifestyle, family and pleasure (as well as work) are increasingly significant considerations for young people when deciding about their futures and their lives (161, 163, 167). However, these studies were not designed to explore the role of leisure activities, lifestyles or relationships in the lives of young people.

Modern concepts of leisure developed as a result of changes in work practices and society following the industrial revolution (174, 175). Traditionally, leisure was defined in the context of work and time use (non-work time) and served to assist with recuperation from work (174-179). In recent decades this work-based definition of leisure has been broadened as it failed to reflect the experiences of those who were not in paid employment, such as many women, the unemployed and those living in non-western societies (180-182). This definition of leisure as non-work time also fails to capture the experiences of adolescents and young adults.

Lay definitions and traditional understanding of leisure are similar in adolescents and adults and incorporate concepts of freedom of choice, pleasure, relaxation, challenge and creativity (174, 183-185). Human behaviour is guided by the meanings attached to events or activities and this is influenced by past experience and context. It is the intrinsic value that individuals attach to an activity, such as enjoyment or satisfaction that enables them to identify it as leisure (186, 187).

the meaning one attaches to anything or event is highly dependent on the whole

configuration of things, events, and the meanings that surround it (188 p41)

Meaning making is a creative process in that '*people can and do make up new meanings for things as they go along*' (188 p42).

Longitudinal studies of leisure are uncommon, but those that examined leisure behaviours show that the most significant predictor of future leisure activities remains current leisure activities (189, 190) with adolescent leisure behaviours predicting leisure behaviours 40 - 50 years later (190). A longitudinal study with older adults found that changes in physical functioning and depressive symptoms along with sex and race predicted leisure behaviour (191). Longitudinal studies examining perceptions of leisure and leisure behaviours over time show that perceptions of leisure remain relatively constant while leisure behaviour and meanings are more dynamic, changing with the diversity and breadth of an individual's life experience and situational factors (189, 192-194). For example, perceptions of leisure as a means of providing fulfilment occurred when leisure was integrated into an individual's life with little distinction between leisure and non-leisure time (194). Life events such as leaving home, attending college, partnering and parenthood have been found to influence leisure patterns in females more than males (189). Using a life stage perspective, a population based cross-sectional study on physical recreation in Canada found that those aged 18 – 23 years were more likely to start new leisure activities than those in three other groupings (24 - 43, 44 - 63, 64+ years) (195). Despite a limited sample of 35 Australian university leisure studies students (aged 17 - 38 years at baseline) a longitudinal study exploring leisure meanings found that leisure meanings evolved from less to more developed meanings (passing time, exercising choice, escaping pressure, achieving fulfilment) over an eight year period. This study provided some indication that developmental stage as well as life experiences were important in understanding the progression through the four stages (193, 196).

Despite traditional lay definitions of leisure incorporating pleasure, relaxation and choice, alternative approaches to categorising leisure exist within the academic literature. These include instrumental versus non-instrumental leisure where instrumental leisure activities are undertaken for a purpose, such as establishing social networks or self-

improvement (175, 177). Public health policy makers and practitioners have focused on the concept of instrumental leisure by encouraging the use of leisure time for healthy lifestyle activities, such as PA, that reduce the risk of disease (197). Serious leisure involves activities that require a '*steady pursuit of an amateur, hobbyist, or career volunteer activity*' (198 p54). Serious leisure may involve goal setting, require a long term commitment, acquisition of skills and become a central feature in an individual's life and identity as was found in a qualitative study of 19 women climbers (199).

2.3.3 Leisure and young people

In contemporary Western cultures, young people use their leisure choices to develop independence from adults, explore social roles and to experiment with differing social identities (174, 177, 180, 200). Leisure activities provide opportunities to either challenge or reinforce social values and norms (176, 201, 202) or facilitate involvement in particular lifestyle groups (such as surfers, climbers, snowboarders) who share behaviours as well as attitudes and beliefs (145, 179, 180, 203, 204). Miles (145) postulated that as more traditional pathways to adulthood, such as school-to-work and home-to-married have been replaced by extended education, more transitory and insecure employment options and delays in leaving home, that leisure choices and their attendant lifestyles play a greater role in identity formation for today's young people. Despite the potential instability of such lifestyles, Miles argues that their inherent flexibility and instability may assist them to cope with social change in modern society. Leisure choices, through their ability to facilitate membership of a particular lifestyle group may provide certainty and a sense of belonging in a world of uncertainty. However, while post-school transition studies show that young people increasingly prioritise leisure, relationships and lifestyles the majority find it difficult to achieve the balance they desire in terms of time commitments, largely due to work pressures (163).

2.3.4 Summary young adulthood

In recent decades there have been significant changes in social structures such as the family, employment and social class. These changes are reflected in the lives of today's young people with young people spending more time in training and education on completion of secondary schooling, living at home longer and delaying parenthood.

Concomitantly there has been an increased focus on individual agency and taking responsibility for one's own actions and decision making. Priorities have changed with relationships (family and friends), lifestyle and leisure all important considerations along with employment when considering their future. Perceptions of leisure include pleasure, relaxation and executing choice and remain relatively stable over time. Leisure behaviours are more dynamic; however adolescent leisure behaviours are predictive of adult leisure behaviours. Leisure activities can be undertaken for instrumental or non-instrumental means with some leisure activities categorised as serious leisure. For the majority of young people PA will be undertaken in the context of their leisure time (time away from work or study) and this may influence the choices and decision making with respect to LTPA.

2.3.5 Physical education, sport and young people

Participation in physical education (PE) and organised sport contribute significantly to total daily PA in Australian children and adolescents (205). The 2010 population based Involvement in Organised Sport and Physical Activity Survey of Australians over the age of 15 years found that 22% of the Australian population aged 15 years or older reported playing organised sport in the 12 months prior to the survey (206). The highest participation rate (38%) occurs in those aged 15 – 24 years with men more likely to be involved than women. For children and adolescents, 60% participate in at least one sport outside school hours with the highest participation rate occurring in those aged 9 - 11 years and the lowest participation rate in those aged 12 - 14 years (207). The Crawford report into organised sport in Australia found that sporting organisations and funding are focused on elite sports, commonly at the expense of participation, and recommended that the national policy framework should address participation as well as high performance sport and include financial and non-financial strategies that enable greater participation in sport (208).

In Australia, the new National Health and Physical Education curriculum will be finalised in December 2013. The new curriculum adopts a strengths-based approach and focuses on lifelong participation in physical activity (209). Similarly to many European countries PE in Australia is often not delivered by a specialist teacher, particularly in primary

schools (210, 211). The higher levels of knowledge, confidence and enthusiasm of specialist PE teachers are considered beneficial to students (210). Studies examining the compulsory provision of PE and/or school sport indicate that it does not significantly impact on PA participation in childhood or adulthood (212). The recent Cochrane review of school based interventions to increase PA and fitness in children and adolescents found significant heterogeneity among interventions (213). However, interventions did result in an improvement in the proportion of children who engaged in moderate to vigorous PA during school hours, a decrease in television viewing and improved maximal oxygen uptake (aerobic capacity).

2.3.6 Tasmanian education system

As this thesis examined PA behaviours during the transition from high school to work or further study (using a Tasmanian sample) a short explanation of the Tasmanian school system is provided here. Within Australia the Australian Capital Territory and Tasmania have a unique approach to the provision of education during the senior high school years. In Tasmania, government funded high schools provide education for years¹ 7 - 10 inclusively. The senior high school years (years 11 and 12) are available at separate government funded senior secondary colleges. In 2009 in Tasmania there were 100 government funded schools offering secondary education (years 7-10) and 8 senior secondary colleges (years 11 – 12)(214). Prior to 2007 the school leaving age in Tasmania was 16 years. From 2008 Tasmanian students were required to participate in education, training or full-time employment until the age of 17 years (215). The most recent Australian census (2011) showed that the national rate of attainment of year 12 or equivalent school/non-school qualification by those aged 20-24 years had risen from 78% in 2001 to 85% in 2011 (216). While Tasmania's attainment rate remained low compared to other states it had the greatest increase in this period from 65% in 2001 to 77% in 2011. Senior secondary school education is also available through independent schools throughout Tasmania.

¹ Throughout this study the term year or years are used to refer to school years. However, study participants commonly use the word grade. The terms year and grade are interchangeable.

2.4 Behavioural theories and approaches in physical activity research

Numerous social and behavioural theories are used to increase our understanding of health behaviours and inform the development of interventions to change health-related behaviours such as PA. Public health and health promotion interventions aimed at changing PA behaviours have come from the fields of psychology, sociology, anthropology and public health. Evidence suggests that theory-based interventions will be more effective than those not informed by theory (217, 218). It is postulated that initiating or changing and maintaining behaviours may require distinctly different theoretical approaches, but there has been little research to determine if this is the case (217, 219). In PA research, psychological theories are the predominant theories used and reported upon (220).

2.4.1 Psychological behavioural theories

Numerous behavioural theories exist in the field of health behaviours and exercise psychology. These can be grouped into five main categories according to their primary focus; beliefs and attitudes, perceptions of control, perceptions of competence, stage-based theories and hybrid approaches (221). Commonly used theories include the Transtheoretical model (TTM) and Social Cognitive Theory (SCT) (217, 222). The TTM focuses on behaviour change with a key premise of this theory being that people are at different stages of readiness to change behaviours (stages of change) and that interventions should identify and target the distinct stage to increase their effectiveness (223). Identifying the processes of change has been critical for understanding how to move people between stages (221). These processes include cognitive, affective and behavioural strategies and techniques, such as increasing knowledge and awareness of benefits and seeking support from others. Each stage (precontemplation, contemplation, preparation, action, maintenance) has been shown to be associated with different levels of PA (224).

The SCT focuses on the relationship between personal, behavioural and environmental factors in order to understand human behaviour and incorporates the concept of self-efficacy (225). Perceived self-efficacy is defined as the '*beliefs in one's capabilities to*

organize and execute the courses of action required to produce given levels of attainments' (226 p624). Self-efficacy is considered a key construct in understanding many health related behaviours not only PA (221, 227). While Self-efficacy Theory is a stand-alone behavioural theory the concept of self-efficacy is an important component within other behavioural theories such as the TTM and SCT.

Health behaviour theories from the discipline of psychology have been criticised for focusing on individual and motivational processes associated with behaviours and not the ability for individuals to make changes to their behaviour (228, 229). They have also been criticised for being linear and deterministic, underpinned by assumptions of rational and planned processes and failing to account for the complex and dynamic nature of individual behaviours (230). These theories have contributed valuable information in terms of understanding or predicting behaviours, but fail to account for behaviour change or provide sufficient guidance for developing successful interventions that aim to change PA behaviours. It is argued that:

What is needed to advance health behavior intervention is theory that addresses relationships between modifiable aspects of the environment and behavior. There is no doubt that cognitive processes are involved in these relationships. However, the extent to which current theories capture this is questionable (229 p4).

An attempt to address the limitations of health behaviour theories has been made with the development of theories such as the socio-ecological model of health behaviour described below.

Social ecological models of health behaviour

Ecological models of health behaviour attempt to address the multiple layers of influence on individual behaviour, including community, environmental and public policy as well as intra and inter personal factors (231). Social ecological models focus on the interrelationship between these multiple layers of influence and provide a framework for intervention. In this model it is postulated that individual health behaviours are maximised when the environment and policies support healthy choices. Ecological models differ for different behaviours, but all emphasise multi-level interventions for effecting behavioural changes (232). The use of social ecological models of health

behaviour has been supported by evidence that multilevel interventions impact on population health, particularly the decline in smoking (232). Community level interventions have been a particular focus for PA interventions through modifications to the built environment (233).

However, ecological models have also been criticised for relying on existing health behaviour theories and constructs for intervention at each level (234). It is argued that these fail to adequately capture the complex and dynamic nature of an individual's social and cultural context and the multiple forces influencing an individual's behaviour. These forces include historical, political, organisational, institutional and personal factors that *'are formed in relation to and by each other and often influence people in ways of which they are not consciously aware'* (234 p56S). Ecological models are criticised for failing to adequately capture or incorporate sociocultural influences and the manner in which they interact with historical and current socioeconomic and political factors (235).

Habitual behaviour

The final stage in the health behaviour change process is considered transition to habit (219). Many public health campaigns and exercise professionals focus on promoting the establishment of PA and/or exercise habits. However, it is argued by some sports and exercise psychologists that routine behaviours such as participating in sport or exercise is volitional and intentional and would be difficult to ever describe as habit (236-238). Maddux (236) argues that participation in regular PA behaviours are routine behaviours undertaken mindfully, not habits.

Habit refers to customary ways of acting and involves repeated behaviour that is undertaken with a degree of automaticity (237-239). Habitual responses or behaviours are considered to be automatic, requiring minimal attention or conscious decision making and are considered useful and even essential for day to day living as they save time and free individuals from a state of perpetual decision making (236, 237). Context stability is considered important for maintaining habitual behaviours (240).

2.4.2 Sociological and anthropological approaches and theories

Sociological and anthropological approaches and theories are being increasingly applied

in public health as they provide a means of assessing the ways economic, political, social and cultural factors influence health and disease (241, 242). Through exploration of phenomena in real-life contexts, sociological and anthropological theories and approaches facilitate examination of the interplay between social, cultural and environmental factors and the individual. These approaches can complement more traditional epidemiological and psychological approaches, contextualising behaviours and exploring the way sociocultural context mediates the relationships between risk factors and disease outcomes (243, 244). Three theoretical approaches from the disciplines of sociology and anthropology are summarised below; Habitus, Situated Action and the Theory of Needs. These three theories have been used in the area of public health and/or physical activity.

Habitus

Prominent French sociologist, Pierre Bourdieu sought to reconcile the dichotomy between the role of social structures and individual agency in understanding individual behaviours. Bourdieu's theories have been extensively applied in public health research, contributing to our understanding of the social and cultural patterning of health behaviours such as participation in PA and sport (245-252), and supportive environments for health as well as health inequalities (253-256). Habitus is central to Bourdieu's sociological approach and philosophy of practice and is defined as '*embodied history, internalised as second nature*' (257 p56), '*a structured and structuring structure*' (246 p170). Habitus is structured in that it reflects past experience and social conditions such as education, family structure and socioeconomic conditions and structuring in that it informs current behaviour, beliefs and perceptions, often unconsciously (258). An individual's current practices '*are not simply the result of one's habitus but rather of **the relations between** one's habitus and one's current circumstances*' (258 p52). The relationship between habitus and social context is dynamic and constantly evolving (258). This is not a linear relationship, but one that is constantly evolving despite the propensity for individuals to gravitate towards social conditions that best match their dispositions (habitus) and their attempts to avoid those social contexts where there may be a clash.

The dynamic relationship between habitus and social context applies to all health behaviours where '*health behaviour is not only a product of context broadly defined but*

also contributes to and alters that context' (234 p625). Individual health behaviours are considered to arise from the relationship between expectations, social structures and resources. The relationship is multidirectional/ bidirectional with behaviours influenced by and influencing expectations, social structures and resources. During transitional life stages individuals may experience significant changes in their social conditions and social context. How individuals respond to these new social conditions and social context will in part be influenced by their habitus (dispositions/past experiences) as well as current or perceived options and constraints.

Situated action

Bourdieu's concept of habitus has been criticised for being an overly reductionist or deterministic view of social life and human behaviour (259, 260). It is argued that Bourdieu focuses on continuity and not change and fails to account for individuals who do not fit their proposed trajectories based on their background and training. Sociologist, Chris Schilling proposes an alternative framework for understanding the relationship between body, social context and social capital termed situated action. This approach considers humans to be always in a state of action, but in differing modes depending upon the current degree of conflict or equilibrium with their environment (261 p12).

The three key modes of action are habit, crisis and creative revelation. Habitual action is *'based on the establishment in the individuals past of a coincidence between norms and structures of a social field'* (259 p481). Habitual action occurs when there is relative equilibrium between the social and physical environment. Crisis occurs when there is a conflict between social and physical environments and an individual's needs and habitual means of action are no longer possible or desirable. This crisis state leads to creative revelation where individuals alter aspects of themselves or their environment in order to facilitate action. Creativity requires *'engaged deliberation with one's surroundings'* (259 p19), individuals may identify that their capacity for action is greater than previously assumed and find new, possibly innovative ways to overcome obstacles. Shilling considers the three components of situated action integral to the development of sporting skills. As an individual acquires new skills through practise they become habitual, thus freeing the individual to participate more fully and creatively in their chosen sport. Crises arise when there is a change in proficiency or following injury (261). Not all crises will lead to positive

creativity and have the potential to result in negative consequences. These three modes of action are considered relational and none is permanent.

Theory of needs

Medical anthropologist, Christie Keifer, proposes a theory for health-related behaviours that aims to integrate the concepts of health and illness within daily life (188). In the Theory of Needs it is proposed:

that individual lifestyles and decision processes can be understood as strategies for meeting personal needs within the context of a culture and an environment (188 p175).

The needs/context model 'views people as active agents meeting their needs, considers the environment to be in part the result of purposeful action' (188 p162). This theory highlights the relationship between meaning, context and change. Health related behaviours cannot be understood in isolation from the meaning and purposes they embody for those who perform them. Individual behaviour is determined by a:

complex interaction between the material facts (physical and social environment, biology, etc.) and the actors distinct and equally complex, culturally- and biographically- influenced understanding of these facts, and their import for the satisfaction of their own needs (188 p163).

Keifer identifies five basic needs; security, love, respect, meaning and stimulation, with good health critical for ensuring these five needs are met. Three key characteristics of this model of needs are outlined; synergy, conflict and substitution. Synergy refers to the fact that activities commonly address several needs simultaneously. Basic needs may also conflict with each other with actions addressing one need conflicting with another. Substitution occurs when the inability to satisfy some needs results in a greater emphasis on the satisfaction of other needs. Keifer argues that in order to understand or change health behaviours it is important to understand what need the behaviour serves. For example, active transport may be undertaken due to financial considerations while those who participate in sport may enjoy the sociability.

2.4.3 Summary behavioural theories and approaches

Multiple theories from different disciplines have been developed in order to explain or understand individual behaviours. These theories range from those that focus solely on the individual to those that incorporate social factors to those that endeavour to reconcile multiple levels of influence on individual behaviours. Theories have attempted to reconcile the relative influence of individual agency versus social structures on behaviours. Each of these theories has made a contribution to our understanding of individual health behaviours and the number and diversity of approaches in this field highlights how complex the task is. No one theory appears to hold the key to understanding individual behaviours. Given the number of possible theories and approaches from different disciplines that have been developed to understand or explain individual behaviours and their limitations this research study does not use any one model or theoretical approach. Instead, this researcher considers that elements of various theories may contribute to our understanding of PA behaviours. In particular, it appears that we cannot come close to understanding individual behaviours without some consideration of the social and cultural context of behaviour. This study aims to understand PA behaviours in the broader context of young people's lives. Instead of aligning the research design and data analysis with a particular theoretical framework findings from this study will be linked to relevant theories during the discussion. This approach is consistent with the paradigmatic assumptions or worldview of the researcher outlined further in section 3.2, page 37.

2.5 Summary

This chapter has reviewed key concepts and findings from PA studies, youth research and leisure research and presented a summary of the behavioural theories and approaches commonly used in physical activity research. PA is associated with a range of health outcomes and decreases in PA behaviours during the transition from adolescence to adulthood are associated with poorer health outcomes in young adulthood. Despite this transitional life stage being seen as important for establishing adult patterns of disease few PA studies have focused on this transitional life stage. Where studies do exist these have predominantly been tracking studies, examined the impact of specific life events such as marriage or parenthood that are not confined to this transitional life stage,

focused on a narrow demographic such as college students or been cross-sectional studies. While youth researchers have conducted a number of longitudinal studies examining post-school pathways for young people these studies have largely focused on employment and education outcomes and not health behaviours. Given the importance of this transitional life stage for adult health outcomes and the decline in PA that occurs during this period it appears critical that we better understand the factors that contribute to the maintenance of PA during the transition from adolescent to adulthood. In order to do this PA behaviours need to be considered within the broader context of young people's lives.

Chapter 3 Methods

3.1 Introduction

This thesis investigates the role of PA in the lives of young people as they transition from adolescence to adulthood (age 16 – 25 years). Perceptions and beliefs about PA and PA behaviours are explored in depth. This multiphase mixed methods study examines associations between sociodemographic, behavioural, sociocultural, attitudinal and physical factors measured in childhood and adolescence on PA during this transitional life stage using data from the Childhood Determinants of Adult Health (CDAH) Study. It also explores perceptions and beliefs about PA and current engagement with PA during the transition from adolescence to adulthood using focus group and interview data, survey and objective measures of PA with young people aged 16 – 25 years.

This chapter presents the paradigmatic assumptions associated with mixed methods research as well as the rationale for using a mixed methods research design. It provides an overview of the research design used and the methods used to collect data.

3.2 Mixed methods

Mixed methods as a methodological approach to evaluation and research has existed for many decades, but only in recent decades has it emerged as a distinct methodological approach (262, 263). With this emergence has come a need for clarification of philosophical assumptions, design issues, analysis issues and rationales (263, 264). Mixed methods research is defined as:

Research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry (265 p4)

A broader conceptual definition of a mixed methods approach is provided by Jennifer Greene:

A mixed methods way of thinking is an orientation toward social inquiry that actively invites us to participate in dialogue about multiple ways of seeing and

hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important to be valued and cherished (266 p20).

The philosophical assumptions that underpin mixed methods research remain a significant challenge for mixed methods researchers. While not always explicit these assumptions impact on how research is undertaken. A researcher's worldview or paradigm is a:

cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, how results should be interpreted and so on (267 p4).

Particular paradigms or worldviews have become associated with particular research methodologies; quantitative (objectivism) or qualitative (constructivism). It is argued that this differentiation of research methodologies according to paradigms misrepresents historical and current research practice (264, 268, 269). Researchers who use primarily quantitative or qualitative methodologies in their research are assumed to have particular ways of understanding the nature of the social world, the nature of knowledge and the methods that should be employed to investigate these (270). However, data collection methods are distinct from approaches to data analysis and many research projects use a combination of approaches (269). While particular worldviews lend themselves to particular methods this is not always the case; classical ethnography was often undertaken with an objectivist/empiricist worldview (268). It is argued that data collection and analysis should be determined according to the '*research focus, research context, and research design*' (269, p18) rather than philosophical position. In mixed methods research qualitative and quantitative methods are used with the decision to mix methods largely a result of the need to address particular research objectives (271, 272).

Six different positions on paradigms in mixed methods research have been identified (263, 270). These are:

- Purist Stance – believe that paradigms must be respected and preserved.
Different paradigms cannot be mixed in the same study.
- A-Paradigmatic stance – paradigm assumptions regarding reality are independent

so can be mixed.

- Substantive Theory Stance – paradigms may be embedded within substantive theories. Substantive theory guides practice.
- Complementary Stance – paradigmatic assumptions are important and must be respected and preserved. Paradigm and methodological integrity must be maintained with methods kept separate.
- Dialectic Stance – different paradigms are equally as important in different ways. Paradigms provide only a partial worldview. Paradigmatic assumptions guide practice, but in the tension and differences can come new understandings.
- Alternative Paradigm Stance – philosophical paradigms reconcilable through new paradigms such as pragmatism, scientific realism or transformation-emancipation.

The most common paradigmatic stance in mixed methods has been the alternative paradigm stance (270, 273). This stance avoids the tensions and challenges of using more traditional paradigms. The most common paradigm used in mixed methods research is that of pragmatism (270, 272). Pragmatism focuses on the research problem:

offer(ing) an immediate and useful middle position philosophically and methodologically; it offers a practical and outcome-oriented method of inquiry ... and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions (264 p17).

Diverse approaches are used and both objective and subjective knowledge is valued (6). Creswell and Plano Clark (272) argue that more than one paradigm or worldview can be used in mixed methods research and that the paradigm used will reflect the mixed methods design. They suggest pragmatism as the most appropriate philosophical approach for multiphase designs. However, for this the dialectical position described by Greene best captures the researcher's belief that there are different ways of knowing and that no one way has a greater claim on truth. Through engaging with the different assumptions and perspectives in different paradigms, better understandings and different ways of knowing can be developed (270, 274). Dialectic proponents '*do not privilege any one particular set of assumptions or any one mental model or way of knowing*'. (274, p 97).

3.3 Mixed methods purpose

A number of rationales for the use of mixed methods have been identified (270, 273, 275) with 'enhancement' being most commonly cited (275). Enhancement involves mixing methods to achieve a better understanding of the phenomenon of interest (270, 276). Other commonly identified purposes include completeness, triangulation and sampling. Greene (270) identifies five broad purposes for mixing methods; triangulation, complementarity, development, initiation and expansion. Many mixed methods studies will have more than one purpose.

In this study a mixed methods design was selected for the purpose of:

- Complementarity – provides more comprehensive and deeper understandings by using different methods.
- Development – the results from one method inform the development of another, such as sampling criteria or instrument construction.
- Initiation – explores contradiction or divergence with the aim to provide new perspectives. Different methods assess different aspects of the same phenomenon.

3.4 Mixed methods conventions and designs

As mixed methods has developed as a distinct methodological approach certain conventions about notation, research design and data analysis have developed. Commonly the term 'quan' is used to denote quantitative methods and 'qual' to denote qualitative methods. The use of uppercase and lower case is used to indicate the relative priority of the methods with arrows and plus signs indicating the timing of different strands (sequential or concurrent). Similarly common typologies have been developed to classify research designs, these are; convergent design, explanatory design, exploratory design, embedded design, transformative design and multiphase design (272, 273). Research aims and purposes influence the design used.

Mixed methods typologies have been criticised by some mixed methods researchers for being too narrow and prescriptive, failing to capture the complexity and diversity of many mixed methods research designs (277, 278). A complete mixed methods research study

may not easily be classified according to conventional typology. Guest (277) suggests that where typologies fail to capture research design that the focus should be on identifying the points of interface within a study and describing the timing and purpose of integration. The point of interface refers to the point where two data sets are integrated or connected. Complex mixed methods studies may then be described accordingly; for example, 'a mixed methods study with three sequential phases'. This frees the researcher from having to classify their research design according to inflexible categories (277). Using this approach to typologies the research design in this mixed methods study is a multiphase design with two sequential phases and multiple points of interface.

Intentional integration of data is now considered best practice in mixed methods research (6). Integration involves combining different types of data rather than keeping them separate, maximising the strengths and minimises the weakness of each type of data to answer research questions. Integration can occur at any stage of the research process and at a minimum studies should integrate conclusions from different data strands (279, 280). Three key analytic approaches are used in mixed methods research for integrating data; merging, connecting and embedding (6). Merging data involves combining qualitative and quantitative data through the use of tables presenting qualitative and quantitative data or transforming one type of data to another. Connecting data involves analysing one form of data and using the results to inform the subsequent data collection such as recruitment or research questions. Embedding data occurs when one dataset of secondary priority is embedded within a primary design. This may involve embedding a qualitative component within a randomised control trial in order to explain results or better understand the impact of an intervention on participants (272). Some strategies for integrating data during analysis include synthesising data from various sources for joint interpretation, extreme or negative case analysis, comparison of themes across groups defined by categorical variables and pattern analysis using tables (279, 280). In this study key analytic approaches used are merging and connecting across the two stages. Specific strategies used are comparison of themes across groups, data synthesis, negative case analysis and pattern analysis.

3.5 Research design for this project

This study uses a multiphase design with two sequential stages: Stage One and Stage Two (see Figure 3:1, pages 43 - 39). In each stage data analysis occurred concurrently (272).

Findings from Stage One were used to build preliminary hypothesis about participation in PA during this transitional life phase that were explored further in Stage Two.

Figure 3:1 Research Design**STAGE ONE – Data analysis occurred concurrently****Procedures:**

Identify key
childhood
variables
Determine PA*
categories

QUAN

Secondary
Data
(CDAH)

Product:

Categories
identified
Childhood
variables

Procedures:

Focus
groups

QUAL

Data
collection

Product:

Focus Group
transcripts,
notes

Procedures:

Log
multinomial
regression
analysis,
stratified by
sex

QUAN

Data
Analysis

Product:

Patterns PA,
Relative
risks

Procedures:

Iterative
thematic
analysis.

QUAL

Data
analysis

Product:

Major
themes,
preliminary
PA profiles

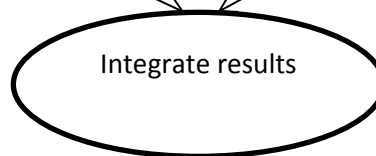
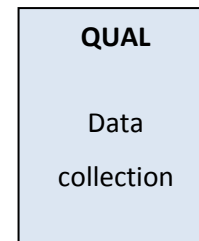
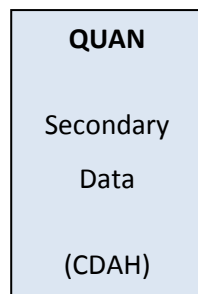
STAGE ONE - CONCURRENT

Procedures: Integrate data
during analysis and on
completion Stage One

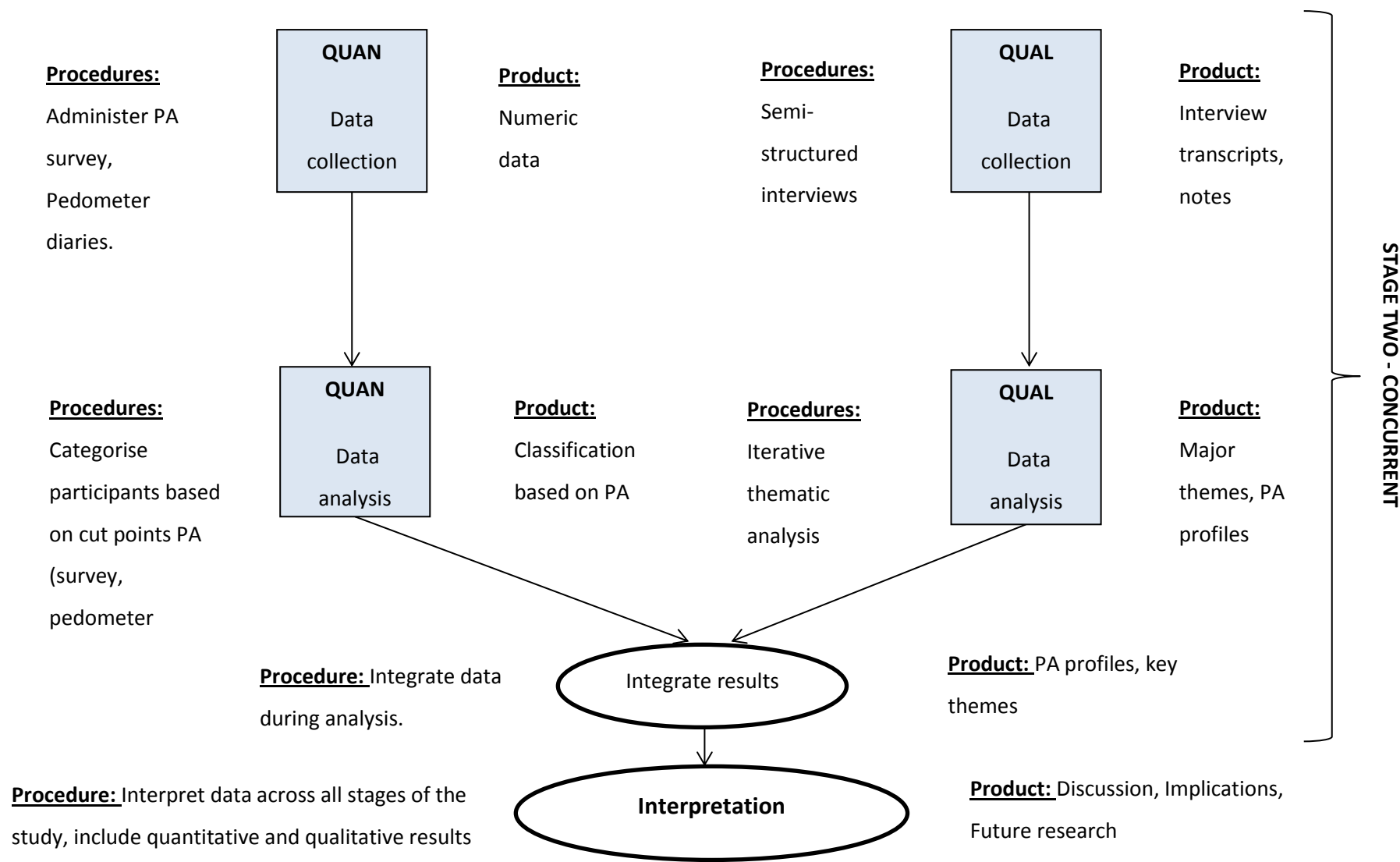
Integrate results

Product: Table relating quan
findings and qual themes

Product: Recruitment criteria and
interview schedule Stage Two



Stage Two – data collection and analysis occurred concurrently



The key research questions, data source and type are shown in Table 3:1 below. While a specific data source is specified for each research question, qualitative data analysis involved comparisons across groups defined by categorical variables based on quantitative data analysis. For example, perceptions of PA were analysed according to self-reported leisure time walking (Yes/No).

Table 3:1 Research questions, data source and type

Research Questions	Design	Type of Data Collected
Which personal, social and environmental factors in childhood and adolescence predict PA in young adulthood?	QUAL + QUAN	CDAH Study Historical Leisure Activity Questionnaire Childhood questionnaire Focus Groups
How do young adults perceive PA?	QUAL	Focus Groups Interviews
Do type and frequency of PA change for those who persist with PA from childhood and adolescence into adulthood?	QUAL + QUAN	CDAH Historical Leisure Activity Questionnaire Focus Groups Interviews IPAQ/ pedometer data
What factors do young adults' report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult?	QUAL	Focus Groups Interviews
How do young adults make decisions about PA participation?	QUAL	Focus Groups Interviews
How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into the independent environment of further study or work?	QUAL	Focus Groups Interviews

3.6 Ethics approval

Ethics approval for focus groups and interviews (see Appendix 1) was obtained through the Human Research Ethics Committee (Tasmania) Network (Reference No. H0010202) and further approval was granted from the Tasmanian Department of Education for recruitment through education settings (see Appendix 2). A Good Character Check was required by the Tasmanian Education Department in order to conduct focus groups and interviews with students (see Appendix 3). Participants who were aged 16 or 17 years of age and consented to be involved in the study also required consent from a parent or guardian otherwise participants provided their own consent (see Appendix 4 and Appendix 5). Focus groups members were asked to respect the confidentiality of other members and to respect the opinions of others within the group.

Ethics approval was obtained through the Southern Tasmania Health and Medical Research Ethics Committee for the CDAH study. All participants provided written informed consent for the study.

3.7 Stage One: qualitative data

As previously presented in Figure 3:1 (page 43) Stage One of this study consisted of a qualitative component (focus groups) and quantitative component (survey). The qualitative component is discussed in detail here.

3.7.1 Recruitment and procedures focus groups

Focus groups were selected as a preliminary data collection method because they are well suited to exploratory studies investigating motivations, attitudes and normative assumptions associated with the phenomenon (PA) under study (281). Group discussion and interaction often lead to new perspectives and insights (282). It was also considered that group interaction and informal conversation would facilitate participation by young people and that for some young people the opportunity to participate in a focus group with their friends would be more attractive than an interview (283). In this study focus groups were used as a preliminary data collection to provide insights into young people's perceptions of PA, the language they used to talk about PA, their attitudes towards PA as a leisure activity and changes in participation that could then be followed up in during

interviews.

Pre-existing groups in Tasmania where young people meet were identified and approached about their willingness to be involved in this study. Groups were identified on the basis of particular characteristics such as PA participation (sports club), rural demographic (rural youth, boarding hostel for year 11 and 12 students), socioeconomic factors (community youth group) and schools. Snowballing techniques were also used to recruit participants for two focus groups. Where participants were recruited through organisations such as the sports club or youth group, preliminary contact and approval was received from the president of the club, school principal or manager before the researcher spoke directly to young people about the research, outlining the processes involved and topic of interest (PA). Interested young people were then provided with an information sheet and consent form. In some cases, such as the rural and community youth group, information was provided and focus groups conducted on the same day. In other cases, such as the sports club or school groups the researcher provided information and organised a suitable time in the following week for the focus group to be conducted. Where snowballing techniques were used the initial contact provided friends or acquaintances with written information about the study.

Focus groups were conducted between November 2008 and June 2009 in a range of venues including school classrooms, meeting rooms at sports venues or community centres, cafes and on site at the University of Tasmania. The focus group venue and timing was selected to be easily accessible to participants and designed to fit within their daily schedules. For example, a focus group was conducted prior to a sports team's training session, during the lunch hour or before school. Each group lasted approximately 35 minutes. All eight focus groups were organised and facilitated by this researcher. The group interview (n=2) was intended to be a focus group, but the anticipated number of participants did not attend. A note taker was present at five of the focus groups and at one focus group the teacher was present as an observer. All groups were audio-recorded and the facilitator made notes on group dynamics and processes following each focus group.

Group composition varied from single sex to mixed groups. The composition of each

focus group largely reflected the recruitment process. For example, where participants were recruited from a female or male sports team then the focus group was single sex. Where recruitment occurred through a co-educational education setting the focus group was commonly mixed. The majority of the focus groups consisted of young people who knew each other through shared classes and team or group membership, but they were not necessarily close friends. In many groups the use of pre-existing groups enhanced the discussion as differences in opinion and experiences were openly discussed and explored because members were more comfortable and relaxed. In a few groups this appeared to restrict discussions. In one group, however, pre-existing social dynamics were evident that impacted on the ability of some group members to participate freely in discussions. The facilitator encouraged participation and engagement from all focus group members as much as possible.

Participants

A maximum variability purposeful sampling strategy was used to ensure data was captured from a wide range of young people with different backgrounds and different experiences and behaviours related to PA (284). In this sampling strategy predetermined independent variables of relevance to the study are identified and recruitment undertaken to ensure variation occurs within the sample. Common predetermined independent variables are sex or education attainment. In this study consideration was given to sex, age, education, rural/urban dwelling, employment and PA participation.

Fifty young people aged between 16 and 26 years were recruited to the study (see Table 3:2). Participants included males ($n = 18$) and females ($n = 32$) and rural ($n = 22$) and urban ($n = 28$) dwelling young people. Twenty nine of the young people were aged 16 -18 years and twenty one were aged 19-26 years. Participants were studying, working, combining study and work or unemployed. Recruitment focused on including young people from diverse economic backgrounds as determined by residential postcode and with varying levels of education. For those aged 19-26 years, ten had completed or were enrolled in a university degree. The remainder had finished school at either year 10, 11 or 12. For those aged 16-18 years five had completed school at the end of year 10. The remainder were still studying. No standardised measure of PA was taken for focus group participants, but participants provided information about the type of PA they participated

in on information sheets (see Appendix 6). The majority of young people (n= 38) considered themselves 'active' when asked to distinguish between being active or inactive on participant information sheets completed after the focus group. From the discussions it was apparent that participants were engaged in PA at varying levels of regularity and intensity.

Table 3:2 Focus group participant characteristics

Focus Group	No. in Group	Sex F/M	Age Range years	Residence rural/ urban	Work	Study	Work and Study	Unemp	Recruit factors
1	7	6/1	21-24	0/7	1	0	5	1	snowballing
2	5	5/0	20-22	1/4	3	0	2	0	netball
3	6	3/3	18-23	5/1	6	0	0	0	rural youth
4	3	3/0	18-25	3/0	3	0	0	0	rural youth
5*	2	0/2	18-22	2/0	2	0	0	0	rural youth
6	7	0/7	18-26	0/7	1	0	1	5	youth ct
7	4	2/2	17-17	4/0	0	1	3	0	hostel
8	4	4/0	16-16	1/3	0	1	3	0	snowballing
9	12	9/3	16-18	6/6	0	5	7	0	college
Total	50	32/18	16-26	22/28	16	7	21	6	Various

*This was a group interview

Abbreviations; No = number, F = female, M = male, Unemp = unemployed, ct = centre, recruit = recruitment

3.7.2 Measures

A focus group guide was developed after consideration of relevant literature (see Appendix 7). This assisted the facilitator to focus the discussion while being flexible enough to allow for the exploration of new ideas or areas of interest raised by participants. The focus group guide asked participants how they spent their leisure time, what factors influenced their decision making about leisure activities, how their involvement in PA may have changed since leaving school, how engaged they were in PA, how being active made them feel and the role or meaning of PA in their lives. Young people were asked to consider PA as more than just sport and provided with examples

such as walking the dog, walking for transport or dancing. The preliminary questions in the focus groups asked participants what they did in their leisure time. Leisure was not defined for young people, but 'spare time' was an alternative offered if young people asked for clarification about this question or were confused by it.

An interactive exercise was conducted during each focus group. Each participant was asked to choose one or two words that best encompassed what PA means for them. A selection of words was provided, but participants could also choose a word not on the list (see Figure 3:2). More than one participant in the group could choose the same word. Every participant was asked to speak to the group about the word(s) they had chosen. This exercise ensured all participants had the opportunity to speak and this encouraged ongoing contributions from most participants.

<u>Words - Meaning</u>
Relaxing, Time Out, Pain, Injury, Friends, Energy, Discomfort, Fun, Sustainable, Social, Competition, Endurance, Weight, Lifestyle, Fitness, Embarrassed, Challenge, Body shape, Health*, Expected*, Desirable*, Achievement*
*added at suggestion of participants and then used in subsequent focus groups

Figure 3:2 Words used during interactive meaning exercise

3.8 Stage One: quantitative data

Stage One of this study consisted of a qualitative component (focus groups), described previously, and a quantitative (survey) component. The quantitative component is described in detail here.

3.8.1 Childhood determinants of adult health (CDAH) study

The Childhood Determinants of Adult Health (CDAH) study is a cohort of young adults who participated in the Australian Schools Health and Fitness Survey (ASFHS) in 1985 when they were aged 7 – 15 years (285, 286). The feasibility of tracing children from the ASFHS was determined in 2001 and a full follow-up study conducted between 2002 and

2006. This study included a range of PA measures in childhood and adulthood including historical PA data that covered the transition from adolescence to adulthood, thus enabling investigation into childhood predictors of PA during the transition to adulthood. Only the measures of relevance to this thesis are described in detail here.

The aim of the CDAH study is to examine the impact of childhood factors (smoking, physical activity, diet, low fitness, obesity, blood pressure, blood lipids) in the development of diabetes and cardiovascular disease during adulthood (285). The CDAH study has found modest associations between childhood and adult PA that varied according to different domains of PA, age and sex (287). More than one third of CDAH participants remained in the same PA category at follow-up as at baseline (stable active or stable inactive) while one third moved from a high category in childhood to low category in adulthood and the remainder moved from low category in childhood to high category in adulthood (288). Childhood socioeconomic position (as measured by highest level of parental education) was not related to tracking of PA, but upward social mobility and maintenance of high socioeconomic position as measured by parental and own level of education were associated with increased PA and fitness (89). Correlates of PA in adulthood varied according to measure of PA (self-report or pedometer) and sex (289). The CDAH study has also found that most obese adults were not obese as children (290) and that adult vascular health, as measured by intima-media thickness and large artery stiffness, is impacted by changes in body size and obesity between childhood and adulthood (291).

3.8.2 Recruitment and procedures CDAH

Baseline childhood (1985)

Childhood and adolescent data for this study were taken from the 1985 ASFHS (286, 292). The children were selected using a two-stage probability sampling process. In the first stage schools were chosen with a probability proportional sample to enrolment numbers at age 10 and 14 years in schools with an enrolment over 200. This resulted in the exclusion of 9.9% primary schools and 3.1% secondary schools. To ensure a wide geographical distribution, eligible schools were listed in ascending postcode order and a random-start, constant-interval selection procedure used. Twelve schools refused to participant and were replaced with another 12 schools. One hundred and nine schools of

a possible 121 agreed to participate (90% response rate). In the second stage, 15 girls and 15 boys from each age group (7 – 15years) were randomly selected from school student lists. Data from only 10 girls and boys were used with a response rate was 77.5%. The distribution of schools is shown in Figure 3:3 below.

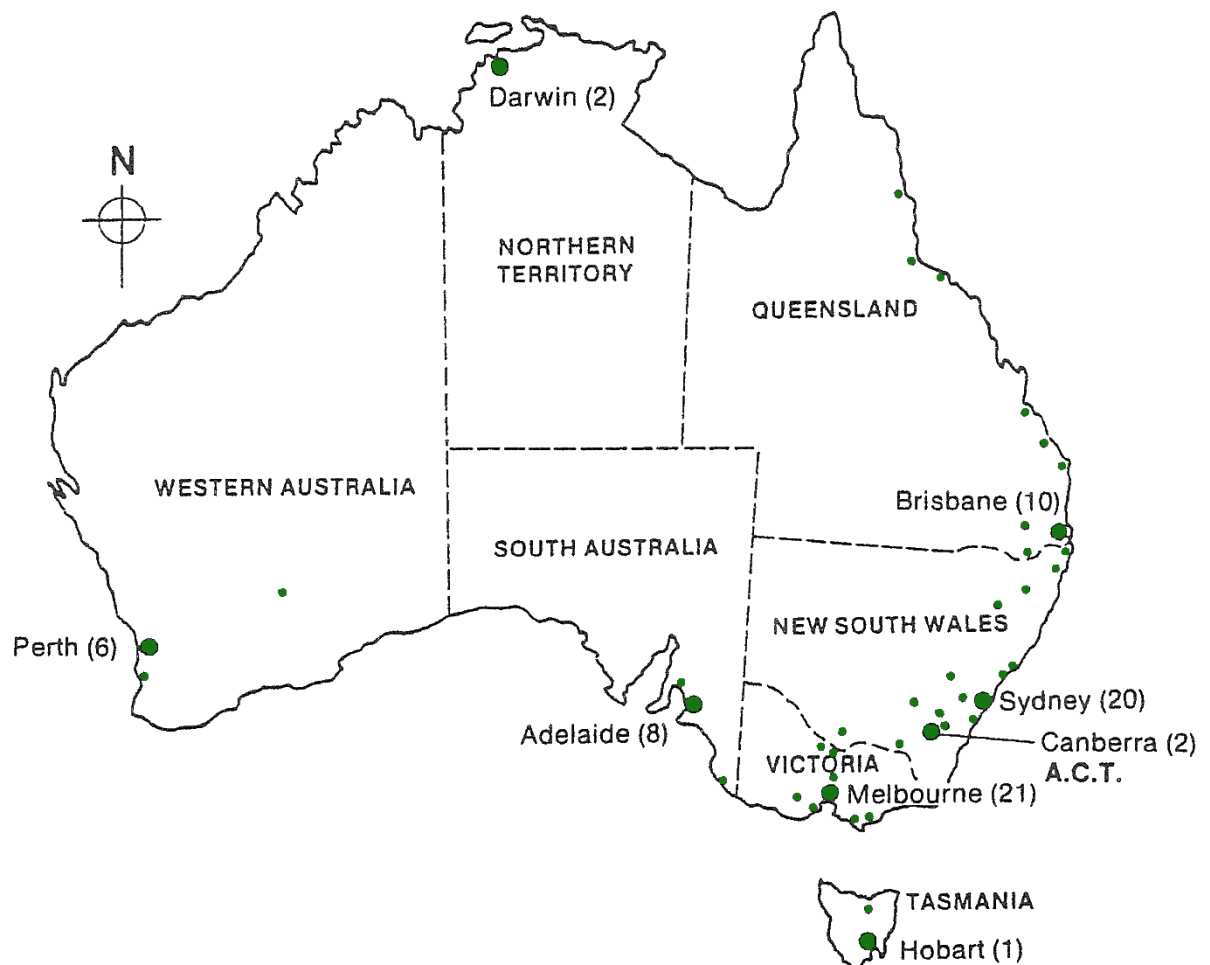


Figure 3:3 School sites Australian health and fitness survey 1985

Follow-up in adulthood (2004-2006)

The CDAH Study located 6,840 (81%) of the original 1985 ASFHS participants in 2001-2002 using the Australian electoral roll, telephone listings, national death index and school class mates. Of the 5,170 (61% baseline) who agreed to participate in the follow up study 2,905 (34% baseline) young adults aged 26-36 completed PA measures or provided fitness data at 1 of 34 clinics held throughout Australia between 2004-2006. Not all those who wished to participate in the study could attend clinics so these people completed

questionnaires. The total number of questionnaires completed was 3,967 (47% baseline) (285, 290). The distribution of study clinics for CDAH is shown in Figure 3:4.

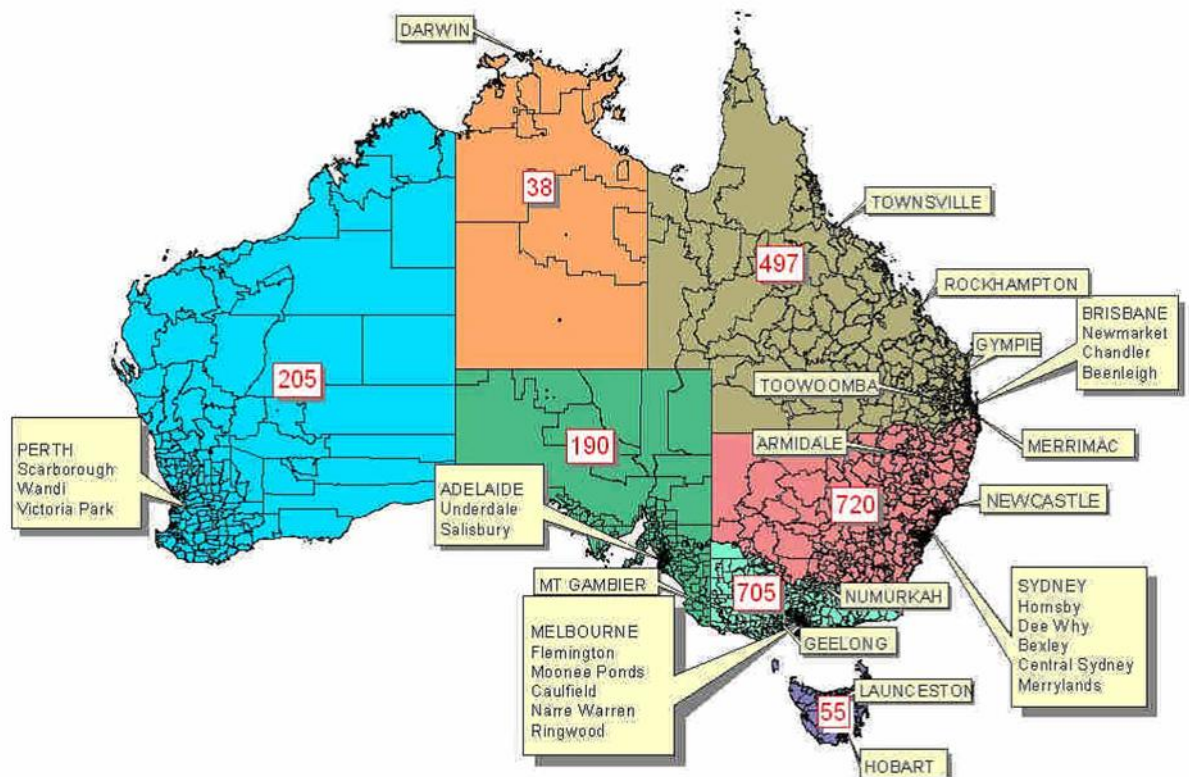


Figure 3:4 Clinic sites for CDAH follow-up 2004-2006 with number of clinic attendees shown in boxes

Data collection teams were trained in each state and territory with each test conducted by the same person for each state and territory. Core staff (project manager, trained phlebotomist, ultrasound technician) who attended all clinics throughout Australia supported these state clinic teams. Clinic attendees signed a consent form on arrival at the clinic and completed questionnaires were collected. Questionnaires included general (e.g. marital status, employment status, and health status), PA and dietary. Clinic attendance took approximately three hours with a strict protocol observed with respect to the order of tests. Data from clinic forms were scanned and verified using Teleform Version 9. All data was manually verified and double-checked to ensure accuracy.

Participants who enrolled in the CDAH study but were unable to attend clinics were encouraged to complete alternative arrangements; short clinic protocol (blood test, blood pressure and anthropometric measures, questionnaires); visit local pathology

centre for blood test, complete mailed questionnaires and seven day pedometer diary, complete mailed questionnaire without pedometer, full questionnaire by phone, short questionnaire by mail or phone. As a result full clinic data is not available for all participants.

3.8.3 Childhood measures

A range of measurements were performed in childhood and adolescence to assess health, lifestyle, physical fitness and physical performance parameters. Field tests, completed by all participants, included the 1.6km run, sit-ups and push-ups, standing long jump, 50m run, sit and reach, height, weight and girths. Technical tests conducted on subsamples of 9, 12 and 15 year olds included tests of muscular strength (grip, shoulder extension, shoulder flexion, leg) using dynameters. Cardiorespiratory fitness was measured using the physical work capacity (PWC₁₇₀) bicycle ergometer test. At baseline children and adolescents also completed a questionnaire in groups of four under supervision of a trained data collector (see Appendix 8). The questionnaire was based on the Canadian Fitness Survey 1981 with additional questions including a sport and exercise history, information on sport and recreational skill and demographic questions. Data collectors read the instructions and worked through the first page of the questionnaire reading and explaining each line. In secondary schools where it was apparent that children could read and understand the questionnaire they proceeded at their own pace. In primary schools the entire questionnaire was read to students. Students completed the questionnaires independently and were allowed to ask questions if they were unsure. Non-English speaking students were provided with individual assistance (292). In this study, questions were grouped and categorised as sociodemographic, sociocultural, behavioural and psychological/emotional/cognitive. No reliability or validity information was available for the questions used on the survey. However, self-report PA from this questionnaire produced similar results to those of other population based surveys with boys reporting more PA than girls and PA declining among girls from the age of 13 years (287). Self-reported participation in a greater number of extracurricular sports in childhood was associated with higher levels of childhood cardiorespiratory fitness (293).

Sociodemographic

Sociodemographic information collected included postcode of residence at baseline and

parents' highest levels of education when participants were aged 12 (reported retrospectively by participants at follow up). Using the 1981 census data, the Australian Bureau of Statistics Socio-Economic Index For Areas (SEIFA) and children's residential postcode participants were categorised according to area-level socioeconomic status (SES). SEIFA provides a measure of socio-economic conditions by geographic area using four indices measuring different aspects of advantage and disadvantage based on questions asked in the Australian population census. Categories are based on quartiles of the distribution and classified as low, medium-low, medium-high and high. Responses for parental education were categorised into high (university), medium (trade/vocational) and low (school only).

Sociocultural

Sociocultural information collected included language spoken at home, number of older and younger siblings and PA of parents. For analysis, language spoken at home was dichotomised as English or other due to the low number of non-English speaking participants. Information on siblings was dichotomised as any older/ younger siblings (Yes/No). Parental activity levels were assessed using the responses to the question 'Does your mother/ father exercise regularly?' Possible responses were yes/ no/ don't know. The variable 'Active mother' and 'Active father' were determined from the answers to the question about the exercise habits of the child's mother and father.

Behavioural

Behavioural factors included information about frequency of smoking and alcohol use, sports played and whether the sports were played for school or a club. For analysis, smokers were defined as those who had smoked one cigarette in the past week and alcohol users indicated that they had drunk alcohol on one or two days in the past week. Children were able to list up to six sports they had played in the past year and whether they played the sport for a club, school, both or neither. For analysis, diversity of sports was dichotomised as playing three or more sports in the past year or playing less than three. Outside school sport was defined as playing the sport for a club or both school and club. This variable was then dichotomised as playing sport outside school (yes/no).

Psychological, emotional, cognitive

Psychological, emotional and cognitive factors collected included self-rated health, enjoyment of school sport, PE and PA, perceived competency at each sport and perceived competency at a range of physical recreational activities. For analysis, the five possible responses to the question 'Is your health usually?' were collapsed from five levels to two (Very good/ good or average/poor/very poor). Responses to the questions 'Do you enjoy school physical education (PE) classes?' and 'Do you enjoy school sport?' were each collapsed from seven levels to three (enjoyed every much/quite a lot/sometimes or not much/not at all or didn't have/do). For analysis these variables were then dichotomised as enjoyed PE (Yes/No) and don't enjoy school sport (Yes/No) with the small number of children who did not have school PE classes or school sport excluded from the final analysis. Children were also asked 'Do you enjoy PA? (Vigorous playing or activities you do by choice)'. Responses were Yes/No and children were asked a follow-up question Why/Why not? Enjoyment of PA was dichotomised as Yes/No.

For each sport the children played they were asked to indicate how good they felt they were compared to others of their age. Responses could be better, same or worse. A perceived sports competency score was developed using the average score for the total number of sports played. This was then dichotomised using the median score as perceiving oneself as being better than peers (scored 1) or the same as/worse than peers (scored 0). A list of recreational activities (physical and cultural) was provided and children were asked to indicate if they had ever tried the activity and how good they were at it (e.g. Never tried/ Can't do/ Can do about average/ Can do very well). A perceived recreational competency score was developed for those who had participated in at least two of the physical recreation activities listed on the questionnaire (tennis, swimming 100m, ice or roller skating, squash/badminton/racquetball, skateboarding). This was dichotomised using the median score as being able to do very well (scored 1) or average/can't do (scored 0).

Physical

Anthropometric measures including height and weight were measured in childhood. Height was measured in centimetres to the nearest 0.1cm using a rigid metric measuring tape and plastic square set or Kawe Height tape. Participants had bare feet. Weight was

measured using beam or medical spring scales to the nearest 0.5kg. This was repeated until two consecutive measures were the same. Body Mass Index (BMI) was calculated by dividing weight in kilograms by height in metres squared. Internationally recognised age and sex specific cutpoints were used to categorise participants as healthy weight/overweight and obese (294).

Physical fitness measures in childhood included a 1.6km run (measured in minutes) and a standing long jump (measured in centimetres). The standing long jump was conducted indoors and measured from the starting point to the closest heel on landing using a measuring tape to the nearest centimetre. Participants were allowed two trials with the best jump counted. The 1.6km run was conducted outside with as many groups of participants as there were timekeepers. Time taken to complete the run was measured using a stopwatch to the nearest second. Participants were encouraged to run the distance, but could walk if necessary.

3.8.4 Adult measures

This study used information about PA provided in a Historical Leisure Activity Questionnaire completed by 2,618 (31% baseline) participants at follow-up to categorise participants' PA behaviours during the transition from adolescence to adulthood.

Physical activity during the transition from adolescence to adulthood

The Historical Leisure Activity Questionnaire (HLAQ) was first developed to capture historical (lifetime PA) as well as more recent LTPA in Pima Indians (295). The questionnaire was adapted to capture Australian sporting and recreational activities (see Appendix 9) and used to assess LTPA in the CDAH study population between baseline and follow up (ages 15 - 29). The original version of the HLAQ was designed to be interviewer administered, but was considered suitable for self-administration in this study population. Participants were asked to complete the questionnaire, recalling usual frequency and duration of physical leisure activities during each of three periods when they were aged; 15 - 19, 20 - 24 and 25 - 29 years. A list of activities was provided with provision for participants to include activities that were not listed.

Using the Ainsworth compendium of physical activities (15) average minutes per week

spent in moderate and vigorous PA were calculated at each of the three age groups. Using the weekly totals from Australia's PA recommendations for children/adolescents (420 mins moderate to vigorous PA/week) and adults (150 mins moderate to vigorous PA/week) participants were categorised as either active or inactive if they met the weekly totals recommended for that age group (see Table 3:3). Participants were categorised as persistently active if they met the weekly totals from the guidelines at each of the three age groupings. Those who failed to meet the recommendations at any time period were classified as persistently inactive, and the remainder were classified as variably active.

Table 3:3 Categorisation using HLAQ and physical activity recommendations

	Age 15-19	Age 20-24	Age 25-29	PA Category
Participant A	420+ mins Mod/Vig PA Active	150+ minutes Mod/Vig PA Active	150+ minutes Mod/Vig PA Active	Persistently active
Participant B	<420 mins Mod/Vig PA Inactive	<150 minutes Mod/Vig PA Inactive	<150 minutes Mod/Vig PA Inactive	Persistently inactive
Participant C	420+ mins Mod/Vig PA Active	<150 minutes Mod/Vig PA Inactive	150+ minutes Mod/Vig PA Active	Variably active

Abbreviations: Mod/Vig PA = moderate/vigorous PA

Validity of historical leisure activity questionnaire

The criterion validity of the HLAQ was assessed using data from the 2,005 CDAH participants who completed the HLAQ and physical measures at follow-up (2004 - 2006). Physical measures used were the International Physical Activity Questionnaire (IPAQ) and physical work capacity at a heart rate of 170 beats per minute on a Monark cycle

ergometer (PWC₁₇₀). This work was undertaken by another team member Dr. Charlotte McKercher (296). The median duration of total historical activity decreased from 5.5 hours per week at 15-19 years to 3.2 hours per week at 25-29 years for males and 2.8 hours per week at 15-19 years to 2.3 hours per week at 25-29 years for females. Males reported higher durations of activity than females at each age period. Correlations between total historical activity and childhood sports participation were stronger for older than younger children. Total historical activity was significantly correlated with past-week leisure PA (Females $r = 0.13$ to 0.37 , Males $r = 0.14$ to 0.31) and cardiorespiratory fitness (Females $r = 0.09$ to 0.29 , Males $r = 0.09$ to 0.23) in adulthood (see Table 3:4).

Table 3:4 Spearman correlations between historical leisure activity, PA and cardiorespiratory fitness in childhood and adulthood²

HLAQ Total Activity [†]	Childhood Measures, by age [‡]				Adult Measures [^]	
	Sport		1.6km run		LPA _{tot}	PWC ₁₇₀
	Younger	Older	Younger	Older		
Males						
15-19 years	0.07	0.22**	0.03	0.12 [¶]	0.14**	0.09 ^{¶¶}
20-24 years	0.10 [¶]	0.20**	0.08	0.07	0.22**	0.13**
25-29 years	0.09 [¶]	0.15 ^{¶¶}	0.08	-0.03	0.31**	0.23**
Females						
15-19 years	0.09 [¶]	0.23**	0.08 [¶]	0.20**	0.13**	0.12**
20-24 years	0.01	0.13 [¶]	0.04	0.20**	0.21**	0.19**
25-29 years	0.01	0.18**	0.07	0.21**	0.37**	0.29**

[†]By age period

HLAQ = Historical Leisure Activity Questionnaire; Sport = participation in school and extracurricular

² Spearman rank order correlations (r) were used to assess the association between HLAQ at each age period and other self-report measures of PA or objective reference measures of cardiorespiratory fitness in childhood (past week sports participation and cardiorespiratory fitness, 1.6km run) and adulthood (IPAQ, PWC₁₇₀). Analysis was undertaken separately for males and females and associations were stratified according to age at baseline (Younger, 9-12 years and Older 13-15 years).

sport during the past week; LPA_{tot} = total past-week leisure PA (IPAQ); PWC170 = physical working capacity at 170 beats/minute

Younger (9-12 years), Older (13-15 years)

3.9 Stage Two

Stage Two of this study consisted of interviews with young people who also completed a standardised PA questionnaire (IPAQ) and were asked to complete a weekly pedometer diary. In depth interviews were selected as the method of data collection in Stage Two as a means of following-up findings of interest from Stage One as they facilitate more in depth exploration of individual experiences. A semi-structured approach provided the flexibility to ensure discussion reflected the experiences and interests of participants and for the interviewer to follow-up interesting and/or unexpected topics or issues (297, 298). Integration of findings from focus groups and CDAH in Stage One was critical for the development of the interview schedule for Stage Two and in identifying participants for recruitment into Stage Two of this study. See section 4.7, page 106 for full details of analysis from Stage One.

3.9.1 Recruitment and procedure

The recruitment of participants for Stage Two of the study was determined after consideration of the results of analysis in Stage One. Socio-demographic factors, such as SES and parental education were not found to be significant predictors of PA during the transition from adolescence to adulthood in the CDAH study (see section 4.1, page 73). However, the socio-demographic measures used in the CDAH study reflected parental or family socio-demographic factors so socio-demographic circumstances (education, work/study, SES, rural/urban dwelling) found to be associated with PA in adulthood remained a consideration during the purposeful sampling strategy for Stage Two. Purposeful sampling in Stage Two focused more specifically on ensuring maximum variability with respect to PA experiences and behaviours. This included:

1. Young people for whom participation in PA appeared to have different levels of significance and importance as determined by comments during focus groups (integral to current lifestyle, casual involvement, no involvement).
2. Young people who were physically active in different ways (lifestyle, team sports,

gym use, none), including individual and group activities.

Sixteen participants who had been involved in the focus groups conducted during Stage One and agreed to participate in individual follow-up interviews were contacted via phone and email to organise a suitable time and place to conduct the interview. The remaining interview participants were recruited through networks and word of mouth (snowballing) with a particular focus on ensuring they were physically active at different levels of intensity and regularity as well as participating in a range of physical activities (284). All participants lived in Tasmania.

Twenty four interviews were conducted in various venues including participants' homes, in parks, school offices, workplaces and at the University of Tasmania where the interviewer was based. Participants were offered a choice of interview venues and times but the majority (n= 15) preferred to be interviewed at the university. Interviews varied in length from 28 to 55 minutes and were all audio-recorded. The interviewer made notes of any additional factors that had relevance to the interview on completion of the interview, but did not make notes during the interview.

Participants

Twenty four young people aged between 17 and 25 years were recruited to the second stage of the study (see Table 3:5). Participants were provided with a copy of the information and consent form via email or through the contact person and were then contacted by email or telephone to organise a time and place to conduct the interview. Where interview participants were 16 or 17 years of age their parents signed a consent form.

Table 3:5 Interview participant characteristics

Sex	Male	10
	Female	14
Age	16-18 years	11
	19-25 years	13
LTPA	Lifestyle (surfing, rafting)	8
	Gym	6
	Team Sports	5
	None	5
Work/Study	Working Full Time	7
	Working Part Time	2
	Combining Work/Study	9
	Studying Full Time	6
Place of residence	Rural	8
	Urban	16
Socioeconomic Status by Area of Residence (quintiles) ^a		
	One (lowest)	8
	Two	2
	Three	5
	Four	7
	Five (highest)	2

^aAustralian Bureau of Statistics (ABS) Socio-Economic Index For Areas

3.9.2 Measures

Interview guide

The interview guide (see Appendix 10) was developed after consideration of findings from Stage One and included questions about priorities for time use, childhood PA and competency, current involvement in PA, how their involvement had changed and since when, future plans for PA, how being physically active made them feel and what meaning it held for them. A specific question about walking for exercise was included after this was identified in early interviews as an area for further exploration. Participants who had participated in the focus groups were reminded about the word they had chosen during the interactive exercise where they were asked to select a word that reflected what PA meant for them. They were asked to comment further on the word they had chosen or

were given the opportunity to select a new word. Interview participants not involved in the focus groups were provided with the words and asked to select one or two words that encapsulated the meaning of PA for them and to discuss this further.

On completion of the interview participants completed a general information sheet (see Appendix 11) that provided some demographic details, as well as information about the PA they currently participated in. Interviewees (n = 23) also completed the long IPAQ (see Appendix 12) on completion of the interviews. One participant completed the IPAQ two weeks after his interview over the phone. Those who were willing to wear a pedometer for one week were instructed how to do so and provided with a reply paid envelope to return the pedometer and pedometer diary.

International physical activity questionnaire

The long IPAQ is a comprehensive questionnaire for measuring PA in adults aged 15 – 69 years (299). The IPAQ has been found to have good construct validity and reasonable reliability (300). It captures all domains of PA (leisure time, occupational, transport and household) as well as providing information about the frequency, duration and intensity (299). It also asks specifically about walking in different domains (e.g. transport, leisure). This questionnaire is the most commonly used PA questionnaire in adults (300) and has been found to produce repeatable data across 12 countries with acceptable criterion validity (299, 301).

Pedometers

Pedometers provide a measure of total volume of ambulatory PA measured as number of steps taken. Pedometers provide an easy to administer and inexpensive measure of PA, particularly ambulatory activity, and have been found to correlate strongly with accelerometers and time in observed activity for children and adults (302, 303). While pedometers do not provide information on frequency, intensity or duration of PA they are able to capture incidental activity that are often difficult to measure using survey techniques.

In comparisons of pedometer brands the Yamax pedometer has been considered the criterion pedometer against which other brands are measured (304). In this study all participants were asked to wear a Yamax Digiwalker (SW-200) for a week and complete a

pedometer diary (304). Willing participants ($n = 20$) were shown how to wear the pedometer attached to the waistband of their right hip in the interviews and asked to wear it for seven consecutive days. Participants were advised to reset the pedometer at the end of each day. Participants were provided with a pedometer diary to complete in which they provided information on the time they started and stopped wearing the pedometer each day, total number of steps for each day, any occasions when they removed the pedometer to do PA and any conditions that might affect the steps count (see Appendix 13). Complete pedometer data were available from seventeen participants.

















3.10 Data analysis

3.10.1 Qualitative data analysis

Audio recordings of the focus groups and interviews were transcribed as quickly as possible after the group or interview was conducted. Notes taken during and after the focus groups and/or interviews were collated with the transcripts. Transcripts were checked for accuracy against the audio recordings. To assist with data management transcripts were imported into the qualitative data analysis software program NVivo 9 (QSR International).

Case nodes with key attributes (demographic and PA categories) were created for each focus group and interview participant (see Table 3:6). This process enabled data to be compared and contrasted according to particular attributes. Using case node attributes and the query facilities available in NVivo it was possible to conduct within and between case analyses and generate comparative tables.

Table 3:6 Attributes based on demographic and physical activity data

Name	
	Age
	Age Group
	Sex
	SEIFA category
	Place of residence
	Siblings
	Current circumstances
	Active/Inactive
	Education level
	Leisure meaning
	IPAQ_LTwalking
	Meaning 1
	Meaning 2
	PA type
	Pedometer category
	IPAQ_TotPA

Notes and transcripts underwent a process of careful reading, re-reading and constant comparison with the aim of identifying themes (305, 306). As this was an iterative research design data collection and analysis were concurrent. Iterative research analysis involves collecting and analysing data as it is collected, enabling themes and patterns in the data can be used to refine data collection tools or interview guides during the study (109).

NVivo enables all coding references for a theme to be held in a node. Nodes can be independent or connected through a hierarchical structure which reflects the development of more general to specific coding for a theme. In this study transcripts and notes were coded line by line to identify key concepts and issues and to identify and categorise answers to common questions. For example, in this study focus group participants were asked about how their participation in PA had changed since leaving high school. The coding tree for responses to this question and then more specific detail is shown below in Table 3:7.

Table 3:7 Coding tree for the response to the question how participation in physical activity had changed since leaving high school.

		Sources	References
Parent node	Changes to PA since high school	9	10
Child node	How its changed	32	81
	How they feel about changes	18	29
	When change occurred	5	6
	end grade 10	20	41
	end of grade 12	12	19
	Why it's changed	2	2
Second generation child node	Choice	10	28
	Leaving home	8	12
	Moved schools	7	16
	Organised	5	7
	Time Commitments	26	89
	Transitions lifestyle	23	41

This open or broad brush coding enables data to be categorised into broad themes (307). Once this process is complete then key themes can be examined and narrowed further with like concepts or categories clustered together (109). For example, participants' understandings, beliefs and perceptions of PA appeared significant in understanding their PA behaviours. A parent node titled 'Understanding PA' was created to capture this important theme. Analysis revealed participants associated specific benefits with participation in PA so a child node was created for benefits of participation in PA. Specific benefits were categorised and coded onto second generation child nodes (see Table 3:8). Participant responses to the interactive meaning exercise and to a specific question about Australia's PA recommendations for adults and walking for exercise also reflected participant understandings and beliefs about PA so were coded at child nodes under the parent node 'Understanding PA'. Note, the meaning node had a number of second generation child nodes that reflected the words chosen by participants during the interactive meaning exercise, but these are not shown here for simplicity.

Table 3:8 Coding tree for the theme ‘Understanding physical activity’ showing child and second generation child nodes.

		Sources	References
Parent node	→ Understanding PA	26	59
Child node	→ Benefits of PA	0	0
	Behavioural Impact	15	23
	Fitness	40	150
	Fun	19	46
	Healthy	23	60
Second-generation child node	Muscle Bulk	10	15
	Psychological wellbeing	25	62
	Satisfaction	10	17
	Skill development	4	11
	Social	14	38
	Weight	22	43
	Intensity PA	21	49
	PA Recommendations	28	76
	Meaning of PA	5	7

On completion of these coding stages; preliminary analysis of focus groups and interview data, identification of key themes and clustering of concepts all coding was reviewed for thoroughness and relevance (307). This involved conducting a number of text searches and coding queries that resulted in the refinement of coding. Searches can be conducted on selected sources (focus groups or interviews) or nodes. Text searches enabled verification of key words or concepts. For example, searching for the terms ‘fitness’ and ‘cardio’ verified that all interview participants discussed the fitness benefits of participation in PA. Matrix queries enabled comparison across categories or nodes. For example, a matrix query was conducted on all references to walking according to whether or not participants reported walking for leisure on the IPAQ. During analysis interview participants were categorised according to their pattern of participation in PA since childhood. Using the ‘set’ function in NVivo that enables items to be grouped a number of matrix queries were conducted examining the relationship between patterns of participation and demographic characteristics, contextual factors and social influences such as family and friends.

Associations between concepts were explored. For example, transitions were a key

theme in this study and a parent node 'Managing Transitions' with seven child nodes was created. Two of these were for specific transitions; sports transitions and gaining a driver's license. The remaining five child nodes were; commitments, time pressure, decision making, priorities and expectations. These five themes appeared interlinked and consideration was given to combining some of them. In order to determine if these themes should be combined or remain separate an advanced query was conducted that involved creating a new node with these five themes combined and then displaying the text with coding stripes for just the codes that were combined. This made it possible to determine how much overlap there was between nodes and if there were discernible differences between the text coded at these nodes (307). Despite some similarities this process found that the five themes reflected distinct concepts that warranted keeping the coding separate.

The coding process with NVivo ensured that the prevalence of key themes and the extent to which they represented the majority of study participants or subgroups of participants could be determined. Exceptions to key concepts or categories were identified and investigated further. The NVivo model building tool and chart facility was also used to build and refine ideas as well as clarify key themes (307, 308). Decision making about coding and coding processes were recorded in the project log. Key concepts, ideas and reflections relating to key themes were identified throughout the coding process and were recorded in specific theme memos as well as the project log (308).

3.10.2 Quantitative data analysis

Childhood/ adolescent predictors of adult PA were analysed separately for males and females because sex differences are consistently found in PA participation (309). Log multinomial regression made it possible to estimate the relative risk (RR) and 95% confidence intervals of being variably active and persistently active. Relative risk is the probability that a member of the 'exposed' group develops a disease or reports an outcome relative to that of the unexposed. Confidence intervals provide an estimate of the range of values for the differences between groups (310). Log multinomial regression analysis enables the association (expressed as the RR) between the 'exposure' or explanatory variables and the outcome to be determined when there are more than two

categorical outcomes (311). All analysis were adjusted for age and the persistently inactive group was used as the reference category. Univariable log multinomial regression analysis of childhood predictors of PA persistence in early adulthood was conducted (311). Univariable analysis tests the relationship between one explanatory variable at a time and the outcome variable, ignoring all other variables (310). Thus enabling the variables that are more strongly related to the outcome to be identified. After checking the scale of the long jump and 1.6km run it was decided that the relationship with log risk was approximately linear and the results have been presented with continuous variables (i.e. variables measured on a continuous scale).

Covariates (potential explanatory variables) selected for further investigation in multivariable analysis were those that were statistically significant in univariable analysis. They were retained in the final models either if they were statistically significant or if their inclusion resulted in a marked (>10%) change in the coefficients of other covariates retained in the model. The final sample size for multivariable analysis (M=797, F=962) excluded those who did not answer questions about competency because they had not played organised sport (n=77) or participated in at least two of the physical recreational activities (n=39) or did not answer the question about enjoyment of school sport because they did not have school sport (n=93). There were also a small number of missing variables (M=14, F=44). Data were analysed using STATA version 10.1 (StataCorp, 2008).

Data from the IPAQ was used to estimate total minutes spent in PA during the past week by multiplying the duration and frequency of PA. The amount of PA time spent in each domain (leisure, occupational, transport, household) was also calculated. Time spent in moderate PA and vigorous PA during leisure and time spent walking for transport and leisure were also calculated.

From the seven day pedometer diaries mean steps per day were calculated. Removal of pedometers in order to participate in PA was noted. Recommended indices for healthy adults (312) were used to classify study participants according to their mean steps per day:

- <5000 steps/day sedentary
- 5000-7499 steps/day low active
- 7500-9999 steps/day somewhat active
- 10,000-12,500 steps/day active
- >12,500 steps/day high active

3.11 Qualitative and quantitative data integration

As previously described in section 3.4 (page 40) mixed methods analytic approaches can involve merging, connecting and embedding data. Data integration can occur at any time during a mixed methods study (272). In concurrent designs data analysis commonly occurs independently with mixing occurring at the interpretation stage. However, integrated mixed method designs are characterised by interaction during the study, including analysis (270, 272, 275). In this study there was integration during data analysis for Stage One and Stage Two as well as during interpretation of the data at the end of each Stage and on completion of the study. For example, during Stage One when determining how to categorise PA behaviours using CDAH data two possible outcomes were considered (meet weekly total recommendations at all three age categories/do not meet weekly total recommendations at all three age categories; meet weekly total recommendations all three age categories/ meet weekly total recommendations some of the three age categories/ do not meet weekly totals recommendations at any three age categories). Examining the CDAH data and preliminary focus group data it was decided to categorise the PA behaviours from the CDAH survey into three outcome variables as this more accurately reflected the behaviour patterns observed in our focus group participants as well as CDAH participants. During focus groups many participants discussed the influence of siblings on their PA behaviours. This focused analysis on the sibling data available in the CDAH study. On completion of data analysis for each data strand in Stage One the data was then compared and similarities and differences noted (merging). The findings from Stage One then informed the recruitment strategy and the development of the interview schedule in Stage Two (connecting).

In Stage Two pedometer, IPAQ and interview data were synthesised to identify a pattern of PA participation for each interview participant. PA characteristics (activity category as

determined by pedometer step counts, total self-reported PA and leisure time walking from the IPAQ) were added to the attributes feature in NVivo, facilitating pattern analysis. For example, data on walking from the IPAQ were used to categorise interview participants as leisure time walkers or not and comments on walking for exercise from interviews then analysed. Comparison of key themes and concepts was undertaken using PA characteristics as well as demographic characteristics. Integration and synthesis of pedometer, self-report and focus group and interview data throughout the study provided an opportunity to generate greater understanding of PA behaviours and perceptions and beliefs in young adults.

Chapter 4 Results

The influence of childhood factors and current circumstances on physical activity

This chapter presents the results from Stage One of this study. Results from analysis of the CDAH study and focus groups are presented separately before integrating the results. Data from the CDAH study addressed the research question ‘Which personal, social and environmental factors in childhood and adolescence predict PA in young adulthood?’ and contributed to identifying patterns of participation during this transitional life stage. These findings have been published (296). Focus groups provided preliminary data addressing the research questions: How do young adults perceive PA?, What factors do young adults’ report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult? How do young adults make decisions about PA participation? How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into the independent environment of further study or work? and contribute to identifying patterns of participation. Selected findings from the focus groups have also been published (313). Data from focus groups pertaining to changes in participation since completing high school are presented separately in Chapter 8, section 8.4, page 222.

As the participants in the CDAH study were now aged 26 – 36 years focus groups were conducted concurrently with young people currently aged 16 – 26 years. Results from the focus group data are presented using the focus group number, sex and age of respondent; for example FG1, M19. Where a conversation is presented then each individual speaker will be identified as Speaker 1, 2, 3.

4.1 Stage One quantitative component

4.1.1 CDAH Study

As described in Chapter 3, section 3.8, page 51 the CDAH study was a population based cohort of young Australian adults with measures of PA, health, behavioural, social and cultural factors and physical fitness at baseline when participants were aged 7 – 15 years.

At follow-up CDAH participants reported PA during the transition from adolescence to adulthood retrospectively using the HLAQ (see page 58). Using this national study it was possible to identify which childhood and adolescent personal, social and environmental factors predicted LTPA in young adulthood.

Participant age at baseline was evenly distributed across the ages 9 - 15 years (13.2% - 14.9%) for males and females. Other childhood characteristics of the CDAH study population, such as SES and language spoken at home are contained within the univariable analysis tables (Table 4:2, Table 4:3, Table 4:4, Table 4:5) and are not presented separately. As described in Chapter 3, section 3.8.4, page 58 participants were classified as persistently active, variably active or persistently inactive across the three age groups 15 – 19, 20 – 24, 25 – 29 years using the HLAQ and weekly totals from Australia's PA guidelines for adults and adolescents. The classification of CDAH participants is shown below in Table 4:1. One fifth of males and females were categorised as persistently active (19.9%). Of those who were persistently active 60.2% were males. One third of participants were persistently inactive across the three age groupings with 67.4% of these being females. The largest grouping was the variably active group with 49.8% participants.

Table 4:1 Classification of physical activity during the transition to adulthood in the CDAH study

		Persistently Inactive	Variably Active	Persistently Active
	n	n (%)	n (%)	n (%)
Male	922	203 (22.0)	474 (51.4)	245 (26.6)
Female	1,126	419 (37.2)	545 (48.4)	162 (14.4)
Total	2,048	622 (30.3)	1,019 (49.8)	407 (19.9)

There were no material differences between study participants who were involved at follow-up (n = 2,048) and eligible non-participants (9 to 15 year-olds at baseline, n = 4,511) with respect to mean age at baseline, mean number of sports played or mean BMI. Non-participants were more likely to be male (53.7% compared to 46.3%), more likely to

smoke (11.4% compared to 7.8%) and more likely to be classified as low SES by area of residence in childhood (10.2% compared to 7.2%).

A number of behavioural, psychological/emotional/cognitive, sociocultural and physiological factors measured during childhood/adolescence were examined to determine their association with PA behaviours during the transition to adulthood. The full results for the univariable analysis between childhood factors and PA category for females is shown below in Table 4:2 and Table 4:3. For females, diversity of sport (positive), perceived sports competency (positive), smoking (inverse), having younger siblings (inverse) and time taken to run 1.6km (inverse) were all significantly associated with being persistently active in young adulthood. Perceived recreational competency (positive), long jump distance (positive) and not enjoying school sport (inverse) were found to be associated with being variably active in young adulthood.

Table 4:2 Childhood demographic, sociocultural and physiological factors associated with being persistently active during the transition from childhood to adulthood, univariable analysis females^a

	Persistently							
Childhood	Inactive	Variably Active			Persistently Active			
Variables (% Total n)		% or			% or			
	% or mean	mean	RR ^a (95%CI)	p value	mean	RR ^a (95%CI)	p value	
Demographic								
Parental education, 100%								
Low (n=439)	38.3	47.6	1.0 (ref)		14.1	1.0 (ref)		
Med (n=390)	41.5	46.4	0.98(0.85, 1.13)	0.76	12.1	0.85(0.60,1.21)	0.36	
High (n=297)	30.0	52.2	1.10(0.95, 1.27)	0.22	17.8	1.19(0.85,1.67)	0.31	
SES (Area of residence), 96.8%								
Low (n=64)	51.6	37.5	1.0 (ref)		10.9	1.0 (ref)		
Med-low (n=414)	35.7	50.5	1.35(0.97,1.88)	0.08	13.8	1.17(0.56, 2.45)	0.68	
Med-high (n=309)	37.5	47.9	1.28(0.92, 1.80)	0.15	14.6	1.20(0.56, 2.55)	0.64	
High (n=303)	35.0	48.8	1.31(0.93,1.84)	0.12	16.2	1.35(0.64, 2.84)	0.44	
Sociocultural								
Active Father, 100%								
No (n=706)	38.8	47.7	1.0 (ref)		13.5	1.0 (ref)		
Yes (n=420)	34.5	49.5	1.04 (0.91,1.17)	0.57	16.0	1.15 (0.86,1.54)	0.33	
Active Mother, 100%								

No (n=671)	39.3	47.2	1.0 (ref)		13.4	1.0 (ref)	
Yes (n=455)	34.1	50.1	1.06 (0.94,1.20)	0.35	15.8	1.16 (0.87,1.54)	0.30
Any older siblings, 100%							
No (n=462)	39.4	47.6	1.0 (ref)		13.0	1.0 (ref)	
Yes (n=664)	35.7	48.9	1.04(0.91,1.16)	0.66	15.4	1.16(0.86,1.55)	0.34
Any younger siblings, 100%							
No (n=456)	36.6	46.3	1.0 (ref)		17.1	1.0 (ref)	
Yes (n=670)	37.6	49.9	1.08 (0.95,1.22)	0.23	12.5	0.73(0.55,0.97)	0.03
Language spoken, 100%							
Other (n=120)	39.2	50.0	1.0 (ref)		10.8	1.0 (ref)	
English (n=1006)	37.0	48.2	0.96(0.80,1.17)	0.71	14.8	1.32(0.78,2.26)	0.30
Physiological							
1.6km run, mins(n=1033) ^b ,							
91.7%	9.9	9.69	1.00(0.96, 1.05)	0.37	9.46	0.87(0.79,0.97)	0.01
BMI, kg/m ² , 96.6%							
Normal (n=1028)	37.1	48.4	1.0 (ref)		14.49	1.0 (ref)	
Ovwght/obese (n=97)	39.20	47.4	0.98(0.79,1.22)	0.85	13.4	0.92(0.54,1.55)	0.76
Long jump, cm(n=1119) ^c	143.30	146.32	1.004(1.001,1.01)	0.01	144.05	1.01(0.99,1.01)	0.61

Abbreviations: RR = relative risk; CI = confidence interval; ref = referent; med = medium; Ovweight = overweight

^aAdjusted for age at baseline

^b25th, 50th, 75th percentile = 8.58, 9.57, 10.67 mins; ^c25th, 50th, 75th percentile 130.5, 145.5, 159.0 cm

Table 4:3 Childhood behavioural, psychological, emotional, cognitive factors associated with being persistently active during the transition from childhood to adulthood, univariable analysis females^a

Childhood Variables (% Total n)	Persistently						
	Inactive	Variably Active			Persistently Active		
	% or mean	% or mean	RR ^a (95%CI)	p value	% or mean	RR ^a (95%CI)	p value
Behavioural							
Diversity sports played, 100%							
<3 (n=630)	40.3	47.3	1.0 (ref)		12.4	1.0 (ref)	
≥3 (n=496)	33.3	49.8	1.05(0.93,1.19)	0.42	16.9	1.36(1.03,1.81)	0.03
Outside school sports, 100%							
No (n=437)	40.0	46.7	1.0 (ref)		13.3	1.0 (ref)	
Yes (n=689)	35.4	49.5	1.06(0.94,1.2)	0.34	15.1	1.18(0.88, 1.59)	0.27
Smoker , 100%							
No (n=1031)	36.4	48.4	1.0 (ref)		15.2	1.0 (ref)	
Yes (n=95)	46.3	48.4	1.01(0.80,1.26)	0.96	5.3	0.39(0.16,0.94)	0.04
Alcohol, 100%							
No (n=1064)	36.8	48.8	1.0 (ref)		14.4	1.0 (ref)	
Yes (n=62)	43.6	41.9	0.86(0.64,1.16)	0.33	14.5	1.10(0.59,2.03)	0.78

Psychological, emotional, cognitive

Sports competency†, 92.5%

Did not play (n=84)	36.0	52.0	excluded		12.0	excluded	
Same/worse peers (n=670)	40.0	48.1	1.0 (ref)		11.9	1.0 (ref)	
Better peers (n=372)	32.5	48.1	1.00(0.88,1.14)	1.00	19.4	1.60(1.19,2.14)	<0.01

Recreational competency †,96.2%

Had not tried (n=43)	35.0	58.0	excluded		7.0	excluded	
Av/can't do (n=718)	38.90	45.8	1.0 (ref)		15.3	1.0 (ref)	
Very well (n=365)	34.3	52.3	1.15(1.01,1.30)	0.03	13.4	0.84(0.62,1.15)	0.27

Enjoyed PE†, 98.3%

Did not have/do (n=54)	35.2	57.4	excluded		7.4	excluded	
No (n=36)	47.2	47.2	1.0 (ref)		5.6	1.0 (ref)	
Yes (n=1071)	37.2	47.8	1.01(0.71,1.44)	0.95	15.0	2.80(0.72,10.83)	0.14

Do not enjoy school sport† , 98.2%

Did not have/do (n=67)	32.9	53.7	excluded		13.4	excluded	
No (n=999)	36.7	49.0	1.0 (ref)		14.3	1.0 (ref)	
Yes (n=40)	62.5	20.0	0.41(0.22,0.76)	0.01	17.5	1.26(0.63,2.50)	0.51

Enjoyed PA , 97.3%

No (n=23)	60.9	26.1	1.0 (ref)		13.0	1.0 (ref)	
Yes (n=1073)	37.1	48.6	1.87(0.94,3.71)	0.08	14.3	1.16(0.40,3.35)	0.79

Self-rated health, 98.4%

Av/below (n=205)	42.4	44.4	1.0 (ref)		13.2	1.0 (ref)	
Good/V. Good (n=903)	36.2	49.1	1.10(0.94,1.31)	0.24	14.7	1.09(0.74,1.59)	0.68

Abbreviations: RR = relative risk; CI = confidence interval; ref = referent; med = medium; PE = physical education; Av = average; V.good = Very good

^aAdjusted for age at baseline

[†] Those who did not play sport, try at least two physical recreation activities or participate in PE or school sport excluded from analysis

For males, medium-high socioeconomic status, diversity of sport, playing sport outside school, having an active father, speaking English at home, perceived sports competency, perceived recreational competency (all positive) and time taken to run 1.6km (inverse) were all significantly associated with PA persistence in young adulthood. Medium-low and medium-high socioeconomic status (inverse), speaking English at home (inverse) and time taken to run 1.6km (positive) were associated with being variably active (see Table 4:4 and Table 4:5 below).

Table 4:4 Childhood demographic, sociocultural and physiological factors associated with being persistently active during the transition from childhood to adulthood, univariable analysis males^a

Childhood Variables	Persistently	Variably			Persistently		
	Inactive	Active			Active		
	% or mean	% or mean	RR ^a (95%CI)	p value	% or mean	RR ^a (95%CI)	p value
Demographic							
Parental education, 100%							
Low(n=363)	24.5	50.7	1.0 (ref)		24.8	1.0 (ref)	
Medium(n= 303)	20.8	52.8	1.03(0.89,1.19)	0.71	26.4	1.09(0.84,1.42)	0.50
High(n=256)	19.9	50.8	0.99(0.85,1.16)	0.95	29.3	1.20(0.92,1.55)	0.17
SES (Area of residence), 95.8%							
Low(n=78)	19.2	62.8	1.0 (ref)		18.0	1.0 (ref)	
Med-low(n=319)	24.1	49.5	0.76(0.62,0.93)	0.01	26.3	1.55(0.93,2.58)	0.09
Med-high(n=244)	22.1	48.4	0.74(0.59,0.91)	0.01	29.5	1.77(1.06,2.96)	0.03
High(n=242)	17.8	54.1	0.83(0.67,1.02)	0.08	28.1	1.67(1.00,2.80)	0.05
Sociocultural							
Active Father, 100%							
No(n=630)	23.0	52.9	1.0 (ref)		24.1	1.0 (ref)	
Yes(n=292)	19.9	48.3	0.91(0.79,1.04)	0.18	31.8	1.33(1.07,1.65)	<0.01
Active Mother, 100%							

No(n=576)	22.0	53.5	1.0 (ref)		24.5	1.0 (ref)	
Yes(n=346)	21.9	48.0	0.89(0.78,1.02)	0.10	30.1	1.23(0.99,1.52)	0.06
Any older siblings, 100%							
No(n=400)	21.7	48.5	1.0 (ref)		29.8	1.0 (ref)	
Yes(n=522)	22.2	53.6	1.09(0.96,1.24)	0.18	24.1	0.83(0.67,1.03)	0.09
Any younger siblings, 100%							
No(n=357)	22.1	54.1	1.0 (ref)		23.8	1.0 (ref)	
Yes(n=565)	22.0	49.7	0.93(0.82,1.06)	0.26	28.3	1.16(0.93,1.46)	0.19
Language spoken at home							
Other(n=114)	24.6	59.6	1.0 (ref)		15.8	1.0 (ref)	
English(n=808)	21.7	50.2	0.83(0.70,0.98)	0.03	28.1	1.83(1.18,2.83)	0.01
Physiological							
1.6km run,							
mins(n=872) ^b , 94.6%	8.14	8.17	1.05(1.00,1.09)	0.04	7.8	0.86(0.78, 0.95)	<0.01
BMI, kg/m ²							
Normal(n=841)	21.8	51.4	1.0 (ref)		26.9	1.0 (ref)	
Ovweight/obese(n=81)	24.7	51.9	1.01(0.81,1.25)	0.95	23.5	0.88(0.58,1.32)	0.54
Long jump, cm(n=921) ^c	159.2	161.1	1.00(0.99,1.00)	0.74	166.0	1.00(0.99,1.01)	0.11

Abbreviations: RR = relative risk; CI = confidence interval; ref = referent; med = medium; Ovweight = Overweight

^aAdjusted for age at baseline

^b25th, 50th, 75th percentile = 7.18, 7.78, 8.73 mins; 25th, 50th, 75th percentile = 142.0, 160.0, 180.0, cm

Table 4:5 Childhood behavioural and psychological, emotional, cognitive factors associated with being persistently active during the transition from childhood to adulthood, univariable analysis males^a

Childhood Variables	Persistently Inactive	Variably Active			Persistently Active		
	% or mean	% or mean	RR ^a (95%CI)	p value	% or mean	RR ^a (95%CI)	p value
Behavioural							
Diversity sports, 100%							
<3(n=474)	24.7	52.7	1.0 (ref)		22.6	1.0 (ref)	
≥3(n=448)	19.2	50.0	0.95(0.84,1.08)	0.44	30.8	1.36(1.09,1.68)	0.01
Outside school sports, 100%							
No(n=275)	28.0	51.6	1.0 (ref)		20.4	1.0 (ref)	
Yes(n=647)	19.5	51.3	0.99(0.87,1.14)	0.92	29.2	1.44(1.11,1.87)	0.01
Smoker, 100%							
No(n=857)	21.7	51.6	1.0 (ref)		26.7	1.0 (ref)	
Yes(n=65)	26.2	49.2	1.00(0.77,1.30)	0.99	24.6	0.84(0.54,1.32)	0.45
Alcohol, 100%							
No(n=845)	22.4	51.2	1.0 (ref)		26.4	1.0 (ref)	
Yes(n=77)	18.2	53.2	1.04(0.84,1.30)	0.69	28.6	1.07(0.74,1.54)	0.72

Psychological, emotional, cognitive

Sports competency†, 96%

Did not play(n=60)	30.0	53.3	excluded		16.7	excluded	
Same/worse peers (n=435)	26.90	49.7	1.0 (ref)		23.4	1.0 (ref)	
Better peers(n=427)	15.90	52.9	1.07(0.94,1.22)	0.28	31.2	1.31(1.05,1.63)	0.02

Recreational competency †,100%

Had not tried(n=39)	25.6	56.4	excluded		18.0	excluded	
Av/not do(n=458)	25.3	51.1	1.0 (ref)		23.6	1.0 (ref)	
Very well(n=425)	18.1	51.3	1.00(0.88,1.14)	0.95	30.6	1.30(1.04,1.61)	0.02

Enjoyed PE†, 97.8%

Did not do(n=52)	34.6	42.3	excluded		23.1	excluded	
No(n=39)	23.1	51.3	1.0 (ref)		25.6	1.0 (ref)	
Yes(n=811)	21.0	52.0	1.04(0.76,1.42)	0.81	27.0	1.01(0.58,1.74)	0.98

Do not enjoy school sport†, 98%

Did not have(n=54)	33.3	51.9	excluded		14.8	excluded	
No(n=832)	21.3	51.6	1.0 (ref)		27.1	1.0 (ref)	
Yes(n=18)	16.7	38.9	0.77(0.43,1.37)	0.37	44.4	1.57(0.93,2.66)	0.09

Enjoyed PA, 97.7%

No(n=31)	45.1	32.3	1.0 (ref)		22.6	1.0 (ref)	
Yes(n=870)	21.1	52.0	1.59(0.95,2.67)	0.08	26.9	1.21(0.63,2.35)	0.57

Self-rated health, 98.3%

Av/ below(n=162)	22.2	51.9	1.0 (ref)		25.9	1.0 (ref)	
Good/V.Good							
(n=744)	21.8	51.3	0.99(0.84,1.17)	0.95	26.9	1.03(0.77,1.36)	0.86

Abbreviations: RR = relative risk; CI = confidence interval; ref = referent; med = medium; PE = physical

education; V.good = Very good; Av = average

^aAdjusted for age at baseline

† Those who did not play sport, try at least two physical recreation activities or participate in PE or school sport excluded from analysis

As described in Chapter 3, section 3.10.2, page 69 covariates selected for multivariable analysis were those that were statistically significant in univariable analysis. They were retained in the final models either if they were statistically significant or if their inclusion resulted in a marked (>10%) change in the coefficients of other covariates retained in the model. Results from the final multivariable analysis for females are shown in Table 4:6. For females, perceived sports competency in childhood was positively associated with being persistently active. Smoking in childhood and having younger siblings were inversely associated with being persistently active. Not enjoying school sport was inversely associated with being a variably active female.

Table 4:6: Childhood and adolescent predictors of being persistently active in young adulthood, multivariable analysis females, n=962

Childhood Variables	Variably Active			Persistently Active		
	Adj RR [†]	95%CI	p	Adj RR [†]	95%CI	p
Behaviour						
Smoker ^a	1.05	(0.83,1.31)	0.69	0.31	(0.12,0.82)	0.02
Physiology						
Long jump ^b	1.00	(1.00,1.01)	0.09	0.99	(0.99,1.00)	0.10
Sociocultural						
Has younger siblings ^c	1.10	(0.96,1.26)	0.18	0.69	(0.52,0.93)	0.02
Attitude						
Higher sports competency ^d	0.95	(0.82,1.09)	0.44	1.88	(1.39,2.55)	<0.01
Recreational competency ^e	1.11	(0.97,1.27)	0.12	0.83	(0.61,1.14)	0.26
Do not enjoy school sport ^f	0.42	(0.19,0.92)	0.03	0.93	(0.32,2.66)	0.89

[†]Adjusted for all other variables in the table

^aSmoking, dichotomised as Yes/No (reference category non-smoker)

^bDistance in the long jump (cm) continuous variable

^cAny younger siblings, dichotomised as Yes/No (reference category no younger siblings)

^dPerceived sports competency compared to peers, better than peers at sport, dichotomised Yes/No

^eRecreational competency, ability to complete a task, dichotomised Yes/No

^fDo not enjoy school sport, dichotomised as Yes/No (reference category enjoyed school sport)

Results from the final multivariable analysis for males are shown in Table 4:7. Time taken (minutes) to complete the 1.6km run was inversely associated with being persistently

active i.e. for every minute taken to run the 1.6km long run males were less likely to be persistently active in adulthood and more likely to be variably active into adulthood. In other words, the faster they ran the 1.6km long run (indicating higher fitness) the more likely they were to be persistently active. Playing sport outside school, having an active father and not enjoying school sport were also positively associated with being persistently active males. Not enjoying school sport was inversely associated with being a variably active male, while time taken to run 1.6km and perceived sports competency were positively associated with being variably active males.

Table 4:7 Childhood and adolescent predictors of being persistently active in young adulthood, multivariable analysis males, n=797

Childhood Variables	Variably Active			Persistently Active		
	Adj RR†	95%CI	p	Adj RR†	95%CI	p
Behaviour						
Outside school sports ^a	0.92	(0.78,1.09)	0.33	1.47	(1.05,2.08)	0.03
Physiology						
1.6 km run ^b	1.06	(1.02,1.11)	<0.01	0.85	(0.78,0.93)	<0.01
Sociocultural						
Active father ^c	0.96	(0.82,1.10)	0.54	1.25	(1.01,1.54)	0.04
Attitude						
Higher sports competency ^d	1.18	(1.02,1.36)	0.03	1.08	(0.86,1.35)	0.52
Recreational competency ^e	0.98	(0.85,1.12)	0.73	1.23	(0.98,1.54)	0.07
Do not enjoy school sport ^f	0.36	(0.13,0.98)	0.04	4.07	(2.31,7.17)	<0.01

†Adjusted for all other variables in the table

^aOutside school sport, dichotomised as Yes/No (reference category did not play outside school sport)

^cActive father, dichotomised Yes/No (reference category inactive father)

^eRecreational competency, ability to complete a task, dichotomised Yes/No

^fDo not enjoy school sport, dichotomised as Yes/No (reference category enjoyed school sport)

4.2 Summary Stage One quantitative component

This is the first study to explore the association between child and adolescent

demographic, behavioural, sociocultural, attitudinal, and physical factors and PA behaviour during the transition from adolescence to young adult. Young adults were categorised as persistently active, variably active or persistently inactive during this transitional life stage. For females, higher sports competency was positively associated with being persistently active and smoking and having younger siblings inversely associated with being persistently active. For males, playing sports outside the school environment, having active fathers and not enjoying school sport were positively associated with being persistently active and time taken to complete the 1.6km run inversely associated with being persistently active. From this large population-based sample with 20 year follow-up childhood and adolescent factors were found to predict PA behaviours during this transitional life stage, particularly for those who persisted with PA.

4.3 Stage One qualitative component

The following section presents the findings from the qualitative component of Stage One (focus groups). As described in Chapter 3, section 3.7.1 Recruitment and procedures focus groups (page 47) focus groups were conducted with young people currently experiencing this transitional life stage. Focus groups provided preliminary information on perceptions of PA, patterns of participation and sociocultural influences on participation.

4.3.1 Focus groups

Characteristics of focus group participants were presented in Table 3:2 on page 50. The majority of young people (n= 38) considered themselves 'active' when asked to distinguish between being active or inactive on participant information sheets completed after the focus group. Active participants provided details about the type of PA they participated in on information sheets. From the discussions it was apparent that the majority of participants were engaged in PA, but at varying levels of regularity and intensity.

4.3.2 Perceptions of leisure time physical activity

When responding to the opening question about leisure time, young people found it hard to identify with the concept of leisure time: “*do you mean out of school?*” (FG9, M18). Many young people talked about activities of daily living such as eating, sleeping or housework as leisure activities. For those young people who were involved in further education they spent “*most of my spare time studying*” (FG7, F17). Rural participants talked about working on the farm as a leisure activity and some young people felt they had no leisure time or asked “*what spare time?*” (FG4, F22). The overall impression was that their time and activities were not easily categorised into leisure/non-leisure. When further questioned about their leisure time, the leisure activities mentioned, such as watching TV, playing computer games, reading and daily activities, were largely home based.

In general, similar patterns were seen for males and females with respect to leisure activities. Younger participants (16 – 18 years of age) identified more solitary leisure activities such as reading and computer use while older participants (19 – 26 years of age) identified socialising with friends as a leisure activity. PA such as walking and gym use was mentioned by some participants (n=12). Two participants mentioned swimming training and a few participants mentioned the sports they played as leisure. Decisions about leisure activities were influenced by friends, energy, tiredness levels and the weather. Males were more likely to mention boredom or their mood as influencing their decisions about leisure activities.

Participants for two of the focus groups were recruited through sports clubs. Only one focus group participant from these two focus groups (n = 12) mentioned the sporting activity when asked about their leisure activities. One of these focus groups was held in the sports venue prior to a game being played. This disinclination to identify their sport as leisure led the researchers to explore the relationship between leisure and PA in more detail (313).

4.3.3 Physical activity and leisure

As previously described in Chapter 3, section 3.7.2, page 50, during the focus groups participants were asked to choose one or two words that best encompassed what PA means for them. A selection of words was provided by the facilitator (see page 51) but participants could choose their own words. Young people attached meanings to their participation in PA that could be categorised within a broader leisure context. For analysis, similar words were paired and then classified as representing traditional or instrumental leisure (TL/IL) where possible. The words chosen and their classifications were: achievement/challenge (TL), body shape/weight (IL), competition (TL), enjoyment/fun (TL), fitness/energy (IL), health (IL), relaxation/time out (TL), lifestyle (TL), pain (IL), injury (not classified), desirable/expected (IL). One male participant was unable to identify a word that encompassed the meaning of PA for him. Half the participants identified words that represent an instrumental understanding of leisure.

Similar patterns between males and females, rural and urban dwellers and younger and older participants were observed when the meanings were classified as either traditional or instrumental leisure. However, those who indicated that they participated in lifestyle activities or more traditional forms of PA such as playing sport were more likely to assign traditional leisure meanings to their participation. Older females appeared more likely to assign instrumental meanings to PA. Younger participants (aged 16 – 18 years) chose achievement or challenge, only females chose competition and relaxation or time out was selected only by those who were working. Males often selected the word fun to describe the meaning of PA. Fitness, energy and health combined were the most common words chosen by participants irrespective of demographic factors.

While fitness, energy and health were all selected as separate words by participants it was difficult to distinguish between the ways young people discussed these meanings of PA. Many young people used all three terms interchangeably when discussing the meaning of PA. The interchangeability of these three concepts was clear in the comments made by these young people when explaining why they had chosen health and fitness:

I went with 'health' because in high school, I was fit. I was always into athletics, but when I left I went to kitchens which led to unhealthy food eating. ... I find

myself sweating a lot doing simple activity. So, yeah I chose “health” because that’s pretty much my main goal, I want to get back to where I was in high school (FG3, M23)

I picked fitness because I like to know I’m doing something. And doing something makes you feel a lot better I think, really. I suppose it coincides with health as well. Being fit means being healthy as well. (FG2, F20)

Health was rarely discussed in terms of preventing disease or illness. Rather participation in PA gave young people the energy or the fitness to “do other things” (FG1, F22) and this was considered an indication of good health.

Despite the focus on obesity in the media and discourses around weight loss only a few of the participants specifically chose weight or body shape as the word they would use to encompass PA and its meaning for them. These were nearly all women. For example one female participant said:

I chose the word “Weight”. Because when I think about exercise, it reminds me that I really must do more because I’m getting fat. (FG3, F25)

Older females were much more likely to choose these words than the younger women in the study; however, one young male did talk about the role PA had played in overcoming obesity during early adolescence.

Discussions of PA as a means of self-improvement (IL) contrast with some of the other meanings that participants chose as best representing what PA meant for them. These young people selected words such as achievement, relaxation and enjoyment. The way they discussed the meaning of PA is illustrated by the comments below:

I picked achievement, just because, I don’t know, I really love the way you feel afterwards, you’ve done something. Especially with I suppose bushwalking³, it’s a really good feeling. It’s the best. (FG8, F16)

I chose “time out”. If I go, when I go for a run at night time and I run just out the back road where there’s no-one else ... You can just forget about everything else

³ Bushwalking is the Australian term used to describe walking in natural environments. In other countries the terms hiking or tramping may be used to describe the same activity.

and just focus on what you want to do. And think about what you want to do with your life. It's just your time sort of thing. (FG3, M18)

The meanings these young people gave to PA embodied more traditional concepts of leisure. While young people who gave more traditional leisure meanings to their PA participation may be expected to view their participation as leisure, in our study there was no consistent pattern between those who identified PA as leisure and the meaning they attached to participation. The meanings associated with PA were explored further in Stage Two of this study (see Chapter 6, section 6.5, page 168).

4.3.4 A love hate relationship with physical activity

When talking about PA some young people described contradictory responses. They distinguished between how they felt during the activity and after it was finished. These participants commonly described not enjoying the physical effort associated with being physically active. Participation in PA made them feel “tired” or “stuffed” and they just “want(ed) it to be over” (FG8, F16). However, many of these same participants described the sense of “accomplishment”, “satisfaction” and “achievement” they experienced on completion of PA. This mixed response to PA participation is articulated when this young rural dwelling male explains why he chose the word achievement:

After doing big long walks I sort of always felt a sense of achievement. I hated every minute of the walk, but afterwards you look back and think “I did that. And I achieved that.” (FG3, M18)

In four of the five focus groups where participants discussed achievement and challenge they also discussed the experience of being active in a negative manner. Many focus group participants recognised that despite the effort required to be physically active it could leave them feeling:

good, aerated or motivated to do what else you've got to do. (FG9, F17).

The majority of participants discussed playing sport, attending the gym, swimming or running when they talked about PA. In the six focus groups where participants were prompted to discuss less intense forms of PA, such as walking, the majority of study participants continued to focus on participation in high intensity PA.

Many participants obviously enjoyed their involvement in PA. When talking about PA their enjoyment was obvious, they just “love(d) sport” (FG4, F18), “love(d) surfing” (FG9, F17), “like competing” (FG2, F21) or found “hanging around with mates fun” (FG6, M18). The source of enjoyment varied from the competitive nature of playing sport, participating with friends or family, achieving personal goals with respect to fitness or skill development as well as the physical sensation associated with particular types of PA such as the “rush” or “thrill” (FG9, M17) associated with rock climbing.

Some participants recognised that their enjoyment varied depending upon what type of PA they were participating in. The following discussion from FG1 about how being active makes them feel illustrated this:

Speaker 1 *I feel really good when I’m playing team sports. I don’t notice that I’m doing lots of work, but if ... I’m on a cross trainer or like a stepper or something at the gym, ... I get really tired. Like I just hate like “Oh 10 minutes to go, 9 minutes to go.” (FG1, F24)*

Speaker 2 *That’s why I like exercise classes. (FG1, F24)*

Speaker 1 *I’m the same (FG1, A24)*

Speaker 2 *You don’t clock watch. You’ve got the music and it’s all like lots of changing. (FG1, F24)*

Speaker 3 *I was just about to say that. When I’m on the treadmill, the internal motivation that I have to get and sustain is sometimes hard. But when I do the classes, even though it can be tough, like the work, but you just don’t feel it as much. (FG1, F23)*

This discussion demonstrated how an individual’s experience of PA may differ depending upon what type of PA is undertaken.

Discussions of the enjoyment, sense of satisfaction and the “energy” they experienced as a result of participation in PA by some participants contrasted with the negative associations with PA and discussions of the effort involved in participation in high intensity PA. It was clear that some participants experienced a combination of these contrasting responses and that responses could vary depending upon the type of activity

they were discussing.

4.3.5 Social support

Family

During focus groups participants were asked about the influence of family and friends on their PA participation. Female participants were much more likely to talk about the influence of family and friends on their participation than male participants. In general, family and friends were considered to have a positive influence on participation. Parents often provided instrumental support such as transport, but also participated with their children as these comments illustrated:

If it wasn't for my mum, I would be a couch potato. I would just sit at home. I wouldn't be able to go anywhere. (FG9, F16)

I probably go bushwalking with my dad because his sports are cycling or orienteering. And I go cycling with him but I really hate orienteering, so we go bushwalking as well. (FG8, F16)

Siblings were also identified as having a positive influence on participation, often joining in activities with them as described below:

I used to play soccer in high school because I loved soccer. But then my sister and my friends got me into playing just a social basketball game. (FG4, F22)

I sometimes go with (brother) and play soccer. Like he has a group from work that play soccer, but not very often. Sometimes every Wednesday (FG3, F20)

Only one participant talked about feeling unsupported by her family:

To be active. And to be slimmer. And I think from family who said it, it's um a big put-down. To be negative rather than be supportive. (FG3, F20)

While a few other participants indicated that their parents weren't active or left it up to them as to whether or not they participated in any form of PA:

With me anyway, my parents were never very active people. They were happy to read books on the weekends. (FG1, F23)

Friends

Friends were identified as important sources of support by males and females as these comments illustrated:

It helps like having the support, like having friend, two friends actually there with you. Like if you go to the gym, it makes it a lot easier. (FG3, M23)

I suppose it's just funner with your friends because someone to share it with, I suppose. (FG7, M17)

And like socially with friends we've got like, once a week, I play alternate aerobi – which is a really odd sport – and bandy which is indoor hockey. So that's not like a club thing, that's just a group of us that get together once a week. (FG1, F24)

However, some participants acknowledged that friends weren't always supportive of their PA and sometimes felt pressured not to participate:

Back at home in high school, I found that like there was big groups, like sometimes when you wanted to exercise or participate in sport, and they all wanted to muck around or go drinking for example, they were all like "oh why would you do that? Come out and have some fun". But you had to make the choice yourself to go out doing what you enjoy doing, rather than giving into them. (FG7, M17)

4.3.6 Fluctuating participation in physical activity

During discussions about participation in PA it was apparent that participation fluctuated in response to academic expectations, work commitments and holidays for many young people. This fluctuating pattern of participation occurred irrespective of the type of PA engaged in as illustrated by the following comments about changing participation:

Last two weeks I did that, I started a new training regime, where I've got to go for a run every night about 2 kms and push-ups, sit-ups and everything like that, as part of a recruitment thing for the army. (FG3, M18)

I actually found like, in the holidays, I went to my shack like for a fair few weeks of it. And I did way more, like I went for runs heaps and stuff, because they didn't want us to have like the pressure of homework and other things. So I was kind of

more relaxed and therefore in the mood to go like running or walking ... (FG8, F16)

I used to go there (X gym) fairly often. I haven't been this year. I guess I've just been busy with schoolwork and stuff. It's hard to fit it in. But um, yeah I used to go quite a lot last year. (FG7, F17)

4.3.7 Feeling time pressure

Irrespective of whether or not they were studying, working or combining work and study young people talked about increased demands on their time after completing year 10. This was considered a turning point in their lives and associated with many changes. With few exceptions the young people who were pursuing further education described increasing expectations about the amount of time they were required to spend outside school hours on study. They associated this increased time commitment to study with a decrease in the time available for participation in other activities, including PA:

Oh it's like you want to go away on the weekend (rafting), for like the entire weekend and then it's like nah, I can't do that. I have like five assignments due on Monday. (FG9, M17)

For those young people who were combining work and study the demands on their time was even greater.

Young people who were working full time also described changing expectations about time use. Even young people with full time jobs may be working variable and long hours with shifts that vary considerably from week to week as this male labourer described:

it depends on my times, starting and stopping can be anywhere from 4 in the morning to 7 and then finish different times. One day this week I started at 7am and went to 8pm, so quite a long day (FG5, M22)

Working irregular hours impacted on their ability to make a commitment to other activities, such as organised sport or exercise. Young people with full time work (males and females) were also more likely to be working in manual jobs (e.g. apprentice carpenter, cleaner or on the farm). The physical nature of their work also impacted on how they chose to spend their non-work time as this female farm worker described:

If it's been a hard day you just don't want to do anything. (FG4, F22)

In contrast to the young people who were studying or working those young people who were unemployed (majority males) did not express feelings of time pressure. Their lives contained few expectations and this group had time on their hands with few commitments. Boredom appeared to be a strong factor in their lives. The local community youth centre provided many opportunities for this group of males to engage in social and other activities. These young people lived on the urban fringe and their lives were impacted by a lack of resources; particularly access to transport.

4.3.8 Time management: establishing routines

In response to feelings of time pressure some participants in this study had established routines in order to facilitate an on-going commitment to regular PA. Having a dedicated time for attending the gym was considered an important strategy for ensuring participation by one young male:

Oh, I just keep that sort of routine, Mondays and Fridays every week. In the diary. (FG1, M24)

However, establishing routines such as this could be challenging due to the flexible and unpredictable nature of other life circumstances as articulated during the discussion about the gym attendance in FG2:

Speaker 1 It just depends on my work. Because like that first week I was working 7-11 in the mornings, and then I went to the gym in the afternoons, which was fine. (FG2, F22)

Speaker 2 Oh that would have been ... you would have been motivated. (FG2, F20)

Speaker 1 But lately I've been working 4-9 at night. And I don't really want to go to the gym, and then have to go and have another shower and then get ready for work. It's just too much hassle. (FG2, F22)

Speaker 2 I wouldn't be going so much if I wasn't on holidays...It's like I'm not doing anything ...working one shift per week. (FG2, F20)

Speaker 3 It's all about routine, I think. Like once you, if you get in a routine of like

going for a run or something every morning it's not as, it's harder to break I guess, than if you just. It's a bit like netball because we're all in a routine of training once and playing once, than sort of when you're not doing it. (FG2, F20).

Some participants used membership of a sports team to ensure that they were physically active on a regular basis. Other young people chose to participate in individual activities such as the gym as participation was more flexible. While recognising the benefits of establishing and maintaining PA routines this was not always easy as other aspects of participants lives were not structured in this way. Working irregular and flexible hours and fluctuating study demands made committing to regular PA difficult. Where routines clashed with work, study or family commitments participation was commonly modified or ceased for a period of time.

4.3.9 Other factors

A number of other factors were mentioned during focus group discussions that appeared to influence the participation of some individuals. While competency was not asked about during focus groups sports competency appeared to have some influence on participation, particularly where individuals experienced a feeling of incompetency as this comment illustrated:

Um, I started to become less good. So I don't know, I just sort of gave up. (FG9, F18)

Participants in the focus group recruited through a netball club (FG2) considered membership of the sports club integral to their on-going participation in team sports throughout adolescence. Being part of an organised activity assisted them to remain involved in the sport as the following discussion from FG2 outlined:

Speaker 1 Because we've played it for so long ... (FG2, F20)

Speaker 2 Well I started with this club in Grade 7 and I've just stuck with it all the way through. (FG2, F22)

Speaker 3 And it's I think, organised. You put your name down, turn up to training... (FG2, F21)

Speaker 1 Yeah. Someone puts your name down at try-outs...and you get a call

“why aren’t you at training, you need to try-out?” (FG2, F20)

Speaker 3 Yeah. Because it’s organised so there’s one less thing you have to worry about. (FG2, F21)

Focus group participants felt that it was important to start playing club sport during younger adolescence as it got harder to join sports clubs once you were older:

I think it’s also like that we were already in the club, sort of thing. It’s quite hard to get into a club thing when you’re this age. Like I’ve got a few, I’ve met a few people at the gym and stuff that want to play netball and things like that. But there’s not really that much information about when the try-outs are. And then like might not get in. Like they get told, “you haven’t played for... we don’t know if we need you” kind of thing. That happened to a girl at (club A) try-outs the other week, like it’s a bit mean. (FG2, F20)

4.4 Summary Stage One qualitative component

The discussions about PA by the young people in these focus groups, some of whom were very active, indicate that fluctuating participation is common as they respond to changes in circumstances, such as academic expectations or holidays. Instrumental meanings and the effort involved in being active impacted on their experiences of PA. Family and friends were generally considered positive influences on their participation, through the provision of practical support and encouragement or by sharing their experiences. Females discussed the influence of family more than males and some participants acknowledged that family and friends were not always a positive influence on participation. While not specifically asked about sports competency or club sports these were important influences for some individuals. Many focus group participants talked about the time pressure they were experiencing as a result of work and/or study commitments. As part of their time management strategies some participants had established a PA routine or made a commitment to organised sport in order to facilitate ongoing participation. Other young people opted for individual based activities due to their inherent flexibility and some ceased all forms of participation.

4.5 Integrating quantitative and qualitative findings

Throughout Stage One of the study there was active consideration and integration of data from the CDAH study and focus groups. For example, during analysis of the CDAH data consideration was given to conducting all regression analysis with a dichotomous outcome variable (met PA recommendations at all three time points or not). However, further examination of the CDAH data indicated that the variably active group was a large and potentially distinct category and preliminary analysis of the focus group data revealed that it was common for young people to exhibit a fluctuating pattern of PA participation over time. As a result the CDAH data were analysed using the three outcomes of PA behaviours: persistently active, variably active and persistently inactive as this appeared to be a more accurate representation of the actual PA behaviours described in focus groups.

Focus group data highlighted the ongoing role of parents and siblings had on PA participation during this transitional life stage and encouraged detailed analysis of the parental and sibling data available from the CDAH study. The CDAH study had information about the number of siblings for each study participant which was included in analysis, but not their PA levels. PA participation of mothers and fathers was available for CDAH study participants. Focus group participants also highlighted the role playing club sports had on their ongoing participation in PA. The CDAH study had information about whether or not participants had played club or school sport during childhood or adolescence, so this was included in quantitative analysis.

The interactive exercise about the meaning of PA for participants was included partly to promote discussion about PA during focus groups (i.e. an ice breaker). However, this interactive exercise elicited particularly rich information about PA behaviours. While not directly comparable, during childhood/adolescence the CDAH participants were asked 'Do you enjoy PA? (vigorous playing or exercise that you do by choice) Yes/ No, Why/Why Not?' The responses to this question provided some information about the factors that contributed to CDAH participants' enjoyment of PA in childhood/adolescence, but not the rich information elicited from focus group discussions. The most common responses were 'It is fun' and 'other' (see Table 4:8 below). When responses were reviewed by sex the

only discernible difference was the response 'keeps me fit' with 14.2% of males indicating this response compared to 9.5% females. No differences were found between responses to this question and PA category during the transition from adolescence to adulthood.

Table 4:8 Reasons why participants enjoyed physical activity in childhood/adolescence by CDAH physical activity classification into young adulthood.

Response	Persistently	Variably	Persistently	Total
	inactive	active	active	
	% (n)	% (n)	% (n)	
It is fun	28.3 (173)	28.8 (287)	28.6 (115)	28.6 (575)
Keeps me fit	11.3 (69)	12.4 (124)	10.2 (41)	11.6 (234)
Keep fit and like it	8.7 (53)	8.2 (82)	9.0 (36)	8.5 (171)
I like it	7.2 (44)	7.6 (76)	9.9 (40)	7.9 (160)
I like being active	2.9 (18)	3.6 (36)	5.2 (21)	3.7 (75)
Something to do	4.2 (26)	3.7 (37)	2.2 (9)	3.6 (72)
I like sport	3.1 (19)	3.1 (31)	5.0 (20)	3.5 (70)
Makes me feel good	3.4 (21)	3.2 (32)	3.0 (12)	3.2 (65)
Other	23.5 (144)	23.9 (239)	21.6 (87)	23.4 (470)
Did not respond/do not know	2.6 (16)	2.9 (29)	2.0 (8)	2.6 (53)
Don't like PA	4.7 (29)	2.5 (25)	3.2 (13)	3.3 (67)
Total	612	998	402	2012

The CDAH study had measures of perceived sports and recreational competency as well as comprehensive physical fitness measures. While not asked about childhood competency or perceived fitness during focus groups these factors were considerations for some focus group participants. Focus group data also provided information about current life circumstances and the impact on PA for young people during this transitional life stage. Table 4:9 below compared findings from the focus groups and CDAH analysis.

Table 4:9 Comparison of factors that influence PA during the transition from adolescence to adulthood from focus groups and the CDAH study.

Theme	Focus Groups N = 50	CDAH N= 2,048
1. Fluctuating participation	<i>Apart from the last three or four weeks it's played quite a big role in my life as well. I've had a lot of study commitments the last three or four weeks and I've sort of stopped going to the gym. I'll start back up tomorrow. (F23, FG1)</i>	Categorised participants into three groups for analysis; persistently inactive, variably active and persistently active. <ul style="list-style-type: none"> Persistently Inactive = 30.3% Variably active = 49.8% Persistently Active = 19.9%
2. Influence of siblings	<p><i>My sister, she's right into the netball. So she makes me stay right into the netball (F22, FG4)</i></p> <p><i>I play basketball actually, with my mum and my sister. I hate it. I suck so bad at it. And my mum and sister are really good. (F20, FG2)</i></p>	<p>Investigated influence of siblings (younger, older, total number) on PA category.</p> <p>Younger siblings (females)</p> <ul style="list-style-type: none"> Variably active RR = 1.10 (0.96,1.26) p = 0.18 Persistently Active RR = 0.69 (0.52,0.93) p = 0.02
3. Influence of parents	<i>Well I suppose my dad likes to go for walks and he'll usually ask me to come along so there's someone to walk with. So I suppose that's probably the main reason I go walking is because he asks me to. (F16, FG8)</i>	<p>Investigated influence of parents PA (mother and father) on PA category.</p> <p>Active father (males)</p> <ul style="list-style-type: none"> Variably active RR = 0.96 (0.82,1.10) p = 0.54 Persistently active RR = 1.25 (1.01,1.54) p = 0.04
4. Meaning of PA	<p>Interactive exercise exploring meaning of PA</p> <ul style="list-style-type: none"> Fitness Health Life style Achievement Fun Pain Challenge Energy 	<p>Why they enjoy PA?</p> <ul style="list-style-type: none"> It is fun (28.6%) Keeps me fit (11.6%) Keep fit and like it (8.5%) I like it (7.9%) I like being active (3.7%) Something to do (3.6%) I like sport (3.5%) Makes me feel good (3.2%)
5. Changes to participation in PA since leaving high school. Role	<p><i>I haven't done any team sport since I left school (F23, FG1)</i></p> <p><i>I played for a club netball. So I</i></p>	<p>Playing sport outside the school environment.</p> <p>Outside school sports (male)</p> <ul style="list-style-type: none"> Variably active RR= 0.92, (0.78,1.09),

of club sport.	<i>already played with them so I already knew about it. So I did sport, like school netball as well and I just found out through other friends for my other netball. (F17, FG7)</i>	<p>P=0.33</p> <ul style="list-style-type: none"> Persistently active = 1.47 (1.05,2.08), p = 0.03
6. Sports competency and cardiorespiratory fitness	<p><i>I love diving as well. I was our high school diving champion. (F18, FG6)</i></p> <p><i>It's good. We're fitter than the rest of them. (M18, FG6)</i></p> <p><i>We used to play futsal. We won the grand final for that. (M18, FG6)</i></p>	<p>Score for self-assessed childhood recreational and sports competency developed.</p> <p>Childhood sports competency (females)</p> <ul style="list-style-type: none"> Variably active RR = 0.95, (0.82,1.09) P = 0.44 Persistently active RR = 1.88, (1.39,2.55) p <0.01 <p>Childhood sports competency (males)</p> <ul style="list-style-type: none"> Variably active RR = 1.18, (1.02,1.36) p = 0.03 Persistently active RR = 1.08, (0.86,1.35) p = 0.52 <p>Cardiovascular fitness – 1.6km run (males)</p> <ul style="list-style-type: none"> Variably active RR = 1.06, (1.02,1.11) p<0.01 Persistently active RR = 0.85, (0.78,0.93) p<0.01
7. Time Pressure	<p><i>It sort of gets busier and you don't have as much time as when you're at school. (M18, FG3)</i></p> <p><i>Time pressure. I work two jobs plus study. So trying to that and actually have some energy to go. (F23, FG1)</i></p>	No data
8. Time Management	<p><i>It's all about routine, I think. Like once you, if you get in a routine of like going for a run or something every morning it's not as, it's harder to break I guess. (F20, FG2)</i></p> <p><i>I do boot camp ...it forces me to go. ... the way it's structured you sort of have to go every time. (F22, FG1)</i></p>	No data

4.6 Summary Stage One

Three distinct patterns of PA behaviours were identified using the CDAH study (persistently active, variably active, persistently inactive) with the most common pattern of participation being variably active. Males were more likely to be classified as persistently active than females, with females more likely to be classified as persistently inactive than males. Males and females were equally likely to be classified as variably active. A number of behavioural, attitudinal, sociocultural and physiological factors measured during childhood/adolescence were found to predict PA behaviours during the transition to adulthood. These factors differed for males and females and also with pattern of PA participation during this transitional life stage. Childhood and adolescent factors were most strongly predictive for those classified as persistently active. Childhood sports competency and time taken to run 1.6km were significant predictors of maintaining PA participation for females and males respectively. Sociocultural and behavioural factors such as having younger siblings (females, negative), smoking (females, negative), playing sport outside school (males, positive) and having active fathers (males, positive) were also found to be significant predictors of maintaining PA.

The pattern of fluctuating participation identified in the CDAH study was also described by focus group participants, commonly in response to time pressure associated with academic studies or work expectations. For the majority of participants in this study negotiating and managing the changing expectations with respect to time use was the dominant experience. Young people were actively managing their time, including their participation in PA. Altering their participation in PA was an effective time management strategy. Many focus group participants did not consider their involvement in LTPA as a leisure activity and the meanings associated with their participation was important in understanding their behaviours. Family and friends continued to influence participation in PA during this transitional life stage.

4.7 How results of Stage One informed Stage Two

4.7.1 Recruitment

While demographic factors were not found to be significant childhood predictors of PA in the CDAH study, recruitment for Stage Two interviews continued to take into

consideration sex of participants, demographic factors such as rural/ urban location, younger/older age, involvement in further education/work and socioeconomic measures. As described in Chapter 3, section 3.9.1, page 61 purposeful sampling primarily focused on ensuring interview participants were involved in different types of LTPA, including competitive sports, attending the gym and lifestyle activities (surfing, rafting) as well as those who were inactive.

Analysis of focus group data in Stage One indicated that there may be differing profiles of active participants with PA appearing to play a greater or lesser role in their lives. This was particularly evident when focus group participants talked about the role of PA in their lives currently, how being active made them feel and their responses to the interactive meaning of exercise. After much consideration and analysis these preliminary profiles were termed active seekers, occasional seekers and non-seekers (characteristics described below). These PA profiles appeared to be consistent with the CDAH PA categories of persistently active, variably active and persistently inactive. These three profiles appeared to have distinct characteristics and recruitment for interviews, particularly recruitment from focus group participants aimed to include individuals who appeared to fit one of these three preliminary categories.

Preliminary PA profiles

1. Active seekers – for these young people childhood factors such as competency appeared to be important. PA appeared to be part of their identity and linked with feelings of self-confidence. These young people were seeking to remain active and appeared more able to negotiate ongoing participation in PA.

I try and make time for that (PA), so then you've got a different aspect to your life – you're not just waking up and going to work or going to school. And then come home and do the same thing again. (M18, FG9)

2. Occasional seekers – for these young people childhood factors appeared to be less important. These young people remained active if it did not conflict with other priorities or commitments and if supported social circumstances such as friends

participating. Current circumstances appeared to impact on participation.

Ours is like a family team (netball). It's been going for ages, like the past year and a half or two years... I just go and make up a person (F21, FG2)

3. Non-seekers /inactive – for these young people childhood factors were important, but were generally less supportive of participation and included having less opportunities to participate or lower levels of competency during childhood. When combined with current life circumstances these young people were commonly inactive.

I'm not a very sports oriented person (F21, FG1)

4.7.2 Interview guide

Given that the transition from adolescence to adulthood was characterised by changing expectations about time use the interview guide included questions about how interview participants prioritised and managed their time. The CDAH study had found that sports competency had also been a significant factor in predicting PA behaviours during this transitional life stage so interviewees were asked about their childhood competency at sports and/or PA. Interviews also included questions about the role of friends and family as well as past participation in PA. The interactive exercise about the meaning of PA was retained during interviews as it had provided a rich source of data during focus groups (see Appendix 10 for the interview guide).

Chapter 5 Results

Patterns of participation in physical activity from childhood to adulthood

5.1 Introduction

This chapter explores patterns of participation in PA from childhood to the current day for interview participants ($n = 24$). The results from this chapter specifically address the research question ‘Do type and frequency of PA change for those who persist with PA from childhood and adolescence into adulthood?’ as well as ‘What factors do young adults’ report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult?’ Findings contribute to understanding how childhood factors such as sports competency, identified as significant during analysis of CDAH data in Stage One, influence PA participation during this transitional life stage.

During interviews, participants were asked about their past participation in PA and how good they considered themselves to be at particular activities (childhood competency). Current engagement in PA was measured using interview data, survey data (IPAQ) and pedometer data (where available). The IPAQ data provided information on intensity, frequency and duration of PA in different domains (work, home, transport, leisure). Pedometer data provided information about ambulatory activity. Interview data provided further information about what type of PA these young people were currently participating in, the role PA currently played in their lives and other contextual factors. Participants were also asked to consider future participation in PA, the meaning they associated with their participation and how being active made them feel. Participants did not quantify their participation in PA during childhood but gave an indication of how active they had been and the types of activities they were involved in. The majority of participants described sports participation, commonly providing details about what age they started a particular activity and any changes in participation. Participants also described participation in unstructured activities during childhood such as playing outside or spending time with their family bushwalking or at the beach. By synthesising all

available data it was possible to build a profile of participation from childhood to young adulthood for each interviewee. Three categories of participation were identified from these profiles; Maintainers, Increasers, Decreasers/Inactive.

This chapter presents a summary of the three categories of PA participation before presenting each category and their key characteristics in more detail. Representative case studies are used to illustrate each category. The challenges in categorising individual participants where key characteristics are not met will also be discussed, particularly with respect to categorising those who describe a pattern of fluctuating participation in PA. All interviewees were given a pseudonym and quotes from interview participants will be labelled with the pseudonym as well as details about their age and other characteristics where applicable; for example Craig 23, gym. The characteristics of interview participants were presented in Table 3:5 on page 63.

5.2 Summary of physical activity categories

This section provides an overview of the PA categories before each category is described in further detail. While participants were purposefully selected on the basis of current participation in PA, categories of participation from childhood were identified following synthesis of all available data. The data pertaining to childhood competency, past participation in PA, current participation in PA (including IPAQ and pedometer data), future participation and how being active made them feel were key considerations. Three distinct patterns of PA participation were identified; Maintainers, Increaseers and Decreasers/Inactive. Participants classified as Maintainers described a pattern of persistent participation in PA from childhood to the current day. This did not equate to no change to their participation, but rather a pattern of maintaining their involvement in PA. Two distinct subgroups of Maintainers were discernible (Identity Based Maintainers, Circumstance Based Maintainers). These subgroups will be described in detail below. Increaseers described a pattern of increased participation in PA in recent years. This included those who had been inactive during childhood, but also those who may have been active during some part of their childhood/adolescence, but described a period of inactivity prior to reengaging in PA. The Decreasers/ Inactive group had either been active during childhood and/or adolescence but were no longer active or had never been active.

A summary of how data integration and analysis of qualitative and quantitative data was used to categorise interview participants is presented here before the different categories are described in further detail. Table 5:1 below illustrates how all available data were synthesised for two interview participants, facilitating the identification of a pattern of participation from childhood to the current day. Both participants were classified as Maintainers with the first example, Allan, categorised as an Identity Based Maintainer and the second example, Alison, a Circumstance Based Maintainer. Table 5:2 on page 114 illustrates how analysis of language used during interviews assisted in categorising interview participants.

Table 5:1 Example of data synthesis for interview participants; process used to identify a pattern of participation from childhood to young adulthood for each interviewee.

	Childhood Competency	Past PA	Current PA			Future PA	Emotional Response	
			IPAQ LTPA	IPAQ Vig	Ped Interviews			
Allan 17 years	I already excelled at swimming by the time I got into school... and then I just went into the top.	I’ve done a lot of sports. I did three years of squad swimming. ... And then I used to do basketball, soccer ...				Climbing I try to do every week.	it’s (raft guide) the thing I love.	So I love all the sports I do. It just
		Sailing, softball, basically anything and everything. ...soccer was the youngest one ... I was doing swimming at the same time through all of those	300 mins/week	180 mins/week	13,830 steps	Surfing, if the conditions are right or the weather is right, every few weeks. Abseiling, not that often. But climbing I can do every once to two weeks in the indoor thing. Rafting I try and do most weekends.	Basically, it’s the thing I want to do ... I’m going to finish Year 12 – get my Certificate in Outdoors and then I can either go to TAFE and get Cert 3 and 4 or I can ... and then basically travel as I guide.	makes me want to do them more. ... I wouldn’t stay sane without them. (I feel) exhilarated, euphoric when out on the water rafting

	<i>Yeah, I was pretty much just average [athletics]...But like I didn't just go</i>	<i>Mum and Dad were never really into sport....It was more farm work that we did together.... Did</i>	120	90	6,872	<i>work is pretty physical all the time. Do a weights kind of class once a week. ... I try and go for a walk a couple of times a week. ... work seems to be quite a lot anyway.</i>	<i>I suppose that is a bit more of a luxury. You've pretty well got to work so you've got to look at that first and then whatever else you can do around it.</i>	<i>Yeah good. I suppose it gives you a bit of a lift on a Thursday afternoon. You don't feel pumped, but you feel a bit more alive, ready for Friday.</i>
Alison	<i>dodgy on the field.</i>	<i>Little Aths (athletics), from ... 7, 8 till 13.</i>						
21 years	<i>Like I did give it a go.</i>	<i>....At school it was just PE and the compulsory sport.</i>	mins/week	mins/week	steps			

Abbreviations: IPAQ LTPA = self-reported minutes/week spent in LTPA as reported on the IPAQ, IPAQ vig = self-reported vigorous LTPA, Ped = average pedometer step counts

Table 5:2 Comparison of language used across categories of participation

	Identity Based Maintainers	Circumstance Based Maintainers	Increasesers	Decreasers/Inactive
Future PA	<p>Definite about future plans for PA participation:</p> <p><i>'I will always'</i></p> <p><i>'I'm intending to'</i></p> <p><i>'As long as I can'</i></p> <p><i>'I will still continue'</i></p> <p><i>I will always make time for it [swimming] I think. Because it has been such a big part of my life, I don't see that I could just stop doing it forever.</i></p>	<p>Not so definite about future participation. Terms used:</p> <p><i>'I'd like to'</i></p> <p><i>'I hope to'</i></p> <p><i>'I want to'</i></p> <p><i>'I'd love to'</i></p> <p><i>I hope to be in a position where, wherever I am living I can still sort of – I think I will always like bushwalking.</i></p>	<p>Planning to maintain participation but unsure about capacity to do this:</p> <p><i>'hopefully it will stay the same'</i></p> <p><i>'I think I can maintain it'</i></p> <p><i>I think I can maintain it, ... because it's not hard at the moment. ... But I mean again, it depends on your life changes.</i></p>	<p>No plans for participating in PA.</p> <p>PA not a priority.</p> <p><i>I think as long as I'm healthy, I don't really find it that important really.</i></p>
Emotional Response	<p>A sense of belonging and fulfilment associated with participation.</p> <p><i>'when I'm in it [the water] I feel</i></p>	<p>Positive responses, some described flow like experiences. Some distinction when discussing different types of activity.</p>	<p>Positive responses related to enjoyment.</p> <p><i>'I enjoy it while I'm doing it'</i></p> <p><i>'I love playing the game'</i></p>	<p>A range of responses.</p> <p><i>'I got a big rush out of It'</i></p> <p><i>'I usually get quite tired'</i></p> <p><i>'I enjoyed it. It was great'</i></p>

<i>I don't know, at home or</i>		<i>'it gives you a bit of a lift'</i>
<i>something'</i>	<i>'it is like non-stop rush'</i>	<i>'I feel excited ... But also a bit</i>
<i>'it comes just natural really. ...</i>	<i>'it feels good. ...you kind of feel</i>	<i>apprehensive'</i>
<i>it's basically like what you are</i>	<i>a bit free [rowing, now</i>	
<i>here for.'</i>	<i>stopped]'</i>	
<i>'Like I kind of feel lost if I</i>	<i>'you just seemed to forget</i>	
<i>haven't exercised'</i>	<i>everything [dancing, now</i>	
<i>'It's just sort of like an</i>	<i>stopped]'</i>	
<i>express...expressing. And</i>	<i>'I feel good. I do.'</i>	
<i>there's no limit to it.'</i>	<i>'you feel a lot better ... like real</i>	
<i>'Exhilarated, euphoric out on</i>	<i>happy'</i>	
<i>the water'</i>	<i>'get out of my head ... being</i>	
<i>'it's peaceful, and exciting.'</i>	<i>able to see a bigger picture'</i>	
	<i>'you have more energy and you</i>	
Exception	<i>can kind of think better'</i>	
<i>I feel good. ... I always find it</i>	<i>'relaxed is a good word ... sort</i>	
<i>more difficult to initiate</i>	<i>of just free.'</i>	
(repeated surgery over past 10	<i>'you sort of get addicted to it'</i>	
years and in chronic pain).	<i>'you have achieved something'</i>	

Once the different patterns of participation were identified it was possible to examine participant characteristics, PA measures and qualitative data according using the different categories. A summary of interview characteristics and patterns of participation are presented in Table 5:3. No clear pattern or relationship was discernible between participant characteristics and pattern of PA participation.

Table 5:3 Interview participants characteristics and patterns of participation

	Identity Based Maintainers	PA Category		
		Circumstance Based Maintainers	Increasesers	Decreasers/Inactive
Sex				
Female	4	6	2	2
Male	3	4	2	1
Age				
16-18 years	5	6	1	1
19-25 years	2	4	3	2
Education				
Year 10-12	5	7	2	1
Vocational	0	1	0	0
University	2	2	2	2
Current status				
Employed full time	0	4	2	0
Studying full time	2	2	1	3
Employed & studying	5	4	1	0
SES by Area of Residence (SEIFA)				
One (lowest)	3	3	2	0
Two	0	2	0	0
Three	1	0	1	3
Four	1	5	1	0
Five (highest)	2	0	0	0
Type of PA				
Gym	1	3	2	0
Sport	2	4	1	0
Lifestyle	4	2	1	0
None	0	1	0	3
Place of Residence				
Urban	3	8	2	3
Rural	4	2	2	0

The following tables (Table 5:4 and Table 5:5) present a summary of the PA measures (pedometer and IPAQ) according to the PA category. These findings are discussed in more detail for each PA category in section 5.3, but are summarised here. Table 5:4 below presents the activity category based on pedometer step counts and standardised cut points for each PA category. Those participants classified as Maintainers were more likely to be classified as active or high active. No Identity Based Maintainers were classified as low active.

Table 5:4 Activity category (using pedometer step counts) by physical activity category (interviewees)

Activity category (pedometer steps/day)	PA Category				
	All	Identity	Circumstance	Increasesers	Decreasers/ Inactive
		Based	Based		
		Maintainers	Maintainers		
		(n = 7)	(n=10)	(n=4)	(n=3)
Sedentary (<5,000 steps)	0	0	0	0	0
Low active (5,000-7,499)	8	0	3	1	3
Some active (7,500-9,999)	4	2	2	0	0
Active (10,000-12,500)	3	1	1	1	0
High active (>12,500)	2	1	1	0	0
No data	7	3	3	2	0

Table 5:5 presents the median and interquartile range for self-reported LTPA, vigorous LTPA and time spent in active transport for each PA category. Identity Based Maintainers reported the highest levels of vigorous LTPA. Those classified as Decreasers/Inactive reported the lowest levels of active transport.

Table 5:5 IPAQ leisure and active transport for physical activity category

IPAQ Domain*	Identity Based		Circumstance		Increasesers		Decreasers/ Inactive	
	Maintainers		Based					
	(n = 7)		(n = 10)		(n = 4)		(n = 3)	
	Med	IQR	Med	IQR	Med	IQR	Med	IQR
LTPA	480	352.5-740	120	37.5-191.3	255	142.5-450	0	0-10
LTPA Vig	180	150-330	45	0-120	45	0-157.5	0	0
Transport	180	157.5-225	110	79-139.8	195	117.5-250	60	40-120

*measured in mins/week

Abbreviations: Med = median, IQR = interquartile range, Vig = vigorous

5.3 Patterns of participation from childhood to the current day

5.3.1 Maintainers

Following integration of all data it was possible to distinguish two distinct groups of PA Maintainers. Identity Based Maintainers (females = 4, males = 3) were characterised by above average childhood competency, no voluntary periods of physical inactivity, the sense of fulfilment participation in PA provided, the central role PA currently played in their lives, high levels of self-reported LTPA (particularly vigorous LTPA) and their definite plans to remain engaged in physical activity in the future. Circumstance Based Maintainers (females = 6, males = 4) were characterised by less consistent responses across key interview questions, voluntary periods of inactivity, less definite responses to questions about future PA and greater discussion about social, cultural and environmental influences on participation. For this group participation in PA appeared to be contingent upon work, study and social demands. The characteristics of these two groups will be presented in detail below. The names of the subgroups were chosen to represent the relative influence of key characteristics on participation.

5.3.2 Identity based maintainers characteristics

Case studies 1 (Cathy) and 2 (Louis) on page 125 and page 127 respectively present profiles for two of the Identity Base Maintainers. These case studies illustrate the key

characteristics of the Identity Based Maintainers outlined below.

Childhood competency

With one exception all individuals categorised as Identity Based Maintainers reported high childhood competency in some form of PA, commonly sport. This above average competency was sometimes reinforced by selection in representative sports teams in late childhood/early adolescence as Allan and Craig describe:

I already excelled at swimming by the time I got into school...and then I just went into the top. (Allan 17)

I thought I was good, but I wasn't exactly that good but I liked to think I was great. ... I was pretty good [at AFL] at a younger age ...And I made it into the state squad for Under 16s. (Craig 17)

This above average competency did not necessarily apply to all sports as Karen, who was a good swimmer at a young age, differentiated between her above average competency at swimming as compared to running when talking about school sports carnivals:

Like it would be like at a running carnival "oh no I don't want to do that" but then the swimming carnival like "yeah I'll do that because I know I'm good at it". I always did the running carnival but never went well. But then the swimming was my turn to like show that I could do it. (Karen 18)

The exception to above average competency was Kristy (17) who was passionate about horse riding. Her introduction to horse riding had occurred at a young age, but she did not ride regularly until mid-adolescence due to family and socioeconomic circumstances. Since this time she had ridden regularly, even buying her own horse at the age of 16. Kristy described her introduction and involvement with horse riding:

I was five. I went to the Show in Kindergarten, that was the thing. ... So I rode a pony for the first time, and then hooked from then on. But I couldn't really do anything until I started earning my own money in Grade 9. And then from then on we've just been horse crazy. And I've been able to support my sister with that as well.

However, when commenting on childhood sports competency she indicated that:

I wouldn't say I was very good at being sporty at all. I'm not that coordinated. But I enjoy it and that's the main thing. (Kristy 17)

Despite not describing above average competency in sport Kristy's commitment and involvement in horse riding distinguished her from other interview participants and in combination with other key characteristics warranted her categorisation as an Identity Based Maintainer.

Past participation in physical activity

While not specifically asked about the age at which they commenced participating in more regular PA or sport, five members of this group described starting a particular activity (swimming, horse riding, soccer) under the age of seven. One male started playing Australian Rules Football at age 10 and the remaining female did not provide a specific age for commencing sport, but indicated that it was during primary school. Four of these young people also described regular participation in a range of different sporting activities during childhood and adolescence as characterised by Allan and Penny's descriptions of their childhood activity:

I've done a lot of sports. I did three years of squad swimming. ... And then I used to do basketball, soccer – I've always done some type of sports. Sailing, softball, basically anything and everything. ...Prep. Kindergarten. ... soccer was the youngest one, ... I was doing swimming at the same time through all of those – did swimming lessons and then I went to squads, which is just training, long hours of training. ... At one point, I was swimming Tuesday and Thursday, playing soccer on a Saturday – I had training on the Wednesday and I had basketball on the Friday. (Allan 17)

Hockey I got into because the school had a team. And I went to quite a small primary school and like my whole year group pretty much played in the hockey team. And basketball, my parents actually took me along to a basketball day and said you know, see if you like it. And I did, and made lots of friends there and played for many years. (Penny 25)

However, for a few young people regular participation in PA started in a less structured way as Kristy described:

Like we've always been a fairly active family, like playing football and all of that out in the paddock. But that's probably about as far as it goes. (Kristy, 17)

Current involvement in physical activity

For individuals categorised as Identity Based Maintainers it was evident that participation in PA played a central role in their lives. However, all of these young people had made some changes to their participation, either to the type of activity or frequency and intensity of participation. Five young people had ceased participating in organised sport and were now attending the gym or participating in lifestyle activities such as surfing and rafting. The number or type of organised sports they played had changed or decreased for two participants. Despite these changes participation remained a central feature of their daily lives and something they participated in on a regular (weekly +) basis. Craig and Karen's descriptions of their current involvement in PA are characteristic of all those categorised in this group:

I go to the gym every second day. And that will last between an hour and an hour and twenty minutes. And that consists of you know, just general weights for about 50-60 minutes and then you do the cardio at the end of it. Just a nice easy cardio. And if I don't really go to the gym, or if it's terrible weather, or if I can't get to the gym, I'll just do an intense workout like running or just the sprinting and stuff. (Craig 17)

I don't swim anymore. Like I used to swim [squad training] ... I go for a run probably twice a week when I get time to. And sometimes before I work [swim instructor] ... I go for a swim ... I walk my dog every morning on the beach. Because we live near a beach. ... And then on the weekends, because we live near a beach, me and my sister like go surfing probably twice every weekend. ...I always think that to complete a day I have to do something physically. (Karen 18)

In addition to regular participation in LTPA three of these young people had casual employment in areas that promoted and facilitated participation in PA (pool attendant, adventure guide, learn to swim instructor). Cathy was working in order to pay for an

overseas surfing trip while Allan was planning to pursue adventure guiding as a career as he outlined during his interview:

it's (rafting guide) the thing I love. Basically, it's the thing I want to do and really I don't see it as work. I see it as more of a holiday. It's, basically I'm having a holiday and I'm getting paid for having a holiday. ... I'm going to finish year 12 – get my Certificate in Outdoors and then I can either go to TAFE and get Cert 3 and 4 or I can go and um, go to Canada and get some more rafting accreditations, get skydiving accreditations, and then basically travel as I guide. (Allan 17)

Pedometer data was available for four of the seven young people categorised as Identity Based Maintainers (mean steps = 13,830; 10,816; 9,628; 7,501). Median steps per week were 10,222. Three of these young people reported removing the pedometer for 4-8 hours while playing sport or attending the gym. These participants also reported the highest levels of LTPA and active transport using the IPAQ. In particular, they reported participating in more vigorous intensity LTPA than any other group (see Table 5:5, page 46)

Emotional response

When asked to describe how being active made them feel the majority of these young people described an intrinsic connection with the activity that went beyond mere enjoyment or pleasure (see case study 1, Figure 5:1, page 125). These young people described a sense of belonging or fulfilment associated with the activity and/or the environment in which it was undertaken. This response was consistent irrespective of the type of activity undertaken and was seen in those who attended the gym, played sport, swam or surfed as illustrated by the comments below:

It's like a way of forgetting everything. It's always been something, like when I'm in it (the water) I feel I don't know, at home or something. Yeah, it sounds corny but it's always something that I'll relate with. ...I know that like if I am stressed or something; it's a way to forget everything. And then once you have done it you feel good and then you can kind of clear your mind and get on with things. (Karen 18, swimmer)

Future participation in physical activity

When discussing future participation in PA this group of young people used more definite language about their future plans for continuing with PA compared to other groups (see Table 5:2, page 46). As already described above three young people were currently employed in areas that facilitated participation in PA. Two others were planning employment where PA was expected (defence force and trail riding guide). Two young females could not imagine living away from the coast due to their love of surfing and swimming as Karen described:

I'd never live in town. I'd always want to live near the water I think. Because I've got that familiarity with the water, that I'd always feel kind of claustrophobic when I stay somewhere in town. (Karen 18)

These young people were able to picture themselves continuing to be active into the future and some were able to describe older role models who they aspired to emulate (see case study 2, Figure 5:2, page 127).

The one exception in this group was Penny who had experienced yearly hip surgery over the past 9 – 10 years due to congenital hip problems. However, despite chronic pain and regular surgery she remained actively involved in team sports and had adapted her participation to accommodate her physical restrictions or limitations. Unsurprisingly, while she described a really deep sense of enjoyment associated with her participation in sports it was not the same sense of fulfilment others categorised as Identity Based Maintainers referred to. Penny was also less certain about her future participation in PA, although this uncertainty related to what types of activity she might be able to continue with rather than whether or not she would continue to be active. She described her considerations and deliberations during her interview:

I was playing hockey and netball, but ... surgery has meant that I can't do any impact activities anymore ... so instead of hockey and netball I now cycle. I bought a road bike and I cycle two to three times a week, and I'm about to start playing underwater hockey. So I have kind of been swimming and getting into the swing of that a bit. ... I would still like to continue playing sport. I will still continue, like doing cycling and swimming anyway. I'm kind of at a bit of a crossroad in terms of

(surgery). (Penny 25)

Given the challenges she faced in order to continue her participation in PA it was obvious that Penny was deeply committed to ensuring she continued to be active into the future. Penny did not discuss ceasing participation in PA during her interview. This level of commitment despite her physical limitations and restrictions as well as the obvious enjoyment she experienced warranted her categorisation in Identity Based Maintainers.

Figure 5:1 Case Study 1 Identity Based Maintainer**Case Study 1 - Cathy**

When interviewed Cathy (18) was living at home with her parents and working casually as a pool attendant (30 hours per week) as part of a gap year after completing year 12 in 2010. Cathy had always lived near the beach. She recalled a childhood spent at the beach and in the water with her family *“we have always been at the beach, ever since I can remember. ... Mum took us to swimming lessons, I guess. We all learned how to swim when we were about 5”*.

When reflecting on her swimming competency Cathy recalls that *“we [siblings] were all pretty naturally good swimmers, so we were just comfortable with water”* and this meant that she was *“Automatically ... ahead of a lot of the others who weren’t as confident in the water”*. She started playing water polo at the age of 11 and was also involved in surf lifesaving between the ages of 10 and 15 years. When she was in year 10 she made the Australian junior water polo squad and spent one week in Queensland at a training camp. She described her experience:

“I liked it. I was just amazed at some of the people that were there. ... And they were just so dedicated. And they were so good. It just sort of made me want to be like that, and then sort of not, at the same time. Because you’d talk to them, and all they did was train.”

Returning from this training camp Cathy decided that she was not wanting to make a serious commitment to water polo *“Because I just wasn’t, I’m a more relaxed kind of ...it just made me think.”* Similarly, Cathy stopped competing in surf lifesaving at the age of 15 when the expectations with respect to training and competition became onerous. Her primary focus shifted to surfing because *“I just enjoyed it more and thought it was a more relaxing environment definitely”*.

Currently, Cathy was playing water polo for a club *“but it’s just a muck around every once a week thing”* as well as doing *“at least two swims a week. And trying to do two runs. And then just surf as much as I can.”* While Cathy considered surfing a more relaxing

activity she was involved at a competitive level, aiming to win the state surfing championship. At the time of the interview Cathy was working in order to finance a surfing trip to Indonesia later in the year.

Along with her parents Cathy identified her brothers as having a significant influence on her participation in PA as they were all active and played sports and surfed too. She had male friends who had included her in surfing trips where *“they would drag me to places where I was so scared and they were like “no, you’re coming out – you have to come out”, which sort of made me get better.”* She was currently strengthening her relationships with members of the broader Tasmanian surfing community.

When asked about future participation in PA Cathy was planning a life that would enable her to *“always surf and be at the beach... I would never be able to live anywhere apart from on the coast. So that would affect where I live and what job I get I guess.”* When asked to consider the meaning PA had for her Cathy chose Lifestyle because *“it’s more like a lifestyle I guess. Because every holidays or something you go on, you go up the coast or something just to find waves”*. When asked how surfing made her feel Cathy’s response revealed a deep sense of fulfilment and belonging:

“You just, you sit out there and you wait for a wave and you are just sitting in the water. And like we’ve surfed with dolphins before and that sort of thing and it’s just really nice. And then when you do catch a wave you get to do whatever you want to it. It’s just sort of like an express...expressing. And there’s no limit to it. You can never stop getting better. ... you can always get better at surfing. There’s always so inventive things you can do. There’s just no limits. And you get to go everywhere. All over the place. And I just find that being outside is really good. Like the other morning when I went to Eagle Hawk Neck, I just sat there and watched the sun rise in the water. And it was wicked.”

Figure 5:2 Case Study 2 Identity Based Maintainer**Case Study 2 Louis**

At the time of the interview Louis (20 years) was living at home with his parents, studying full time at University and working casually at two jobs (total 10 hours per week). He described an active childhood where he played a lot of different sports starting with soccer in under 7's. Throughout school he played many different sports *"swimming. ... I was at squad kind of level. And then also I did squash, tennis very regularly. ... that was pennant...squash, lacrosse; I still kind of play that. ... I played football for a little bit as well. Cricket in the summer... I've basically had a go at everything"*. He described a high level of competency at many different sports and *"found that when I picked up a lot of sports, it came reasonably easy"*. He had also been selected in representative sports teams during primary school.

Louis's mother was the coach of his soccer team during primary school and he had a group of friends who were all actively involved in playing soccer with him during childhood and adolescence *"we basically went, same group of guys all went through from under 7s basically all the way through primary school. ... Then a few of us all went to a club, and then it's been club based since then, basically"*. When reflecting on the role PA played in his social life Louis described how when he was meeting up with people he would suggest *"instead of going meet me in town for a coffee or something like that, I'd actually say "let's go and do this"... I know that in my group, we would probably go and kick the soccer ball than just talk or something like that."*

Louis was currently playing club A grade soccer, training twice per week and playing on weekends. When asked to choose a word that represented the meaning PA held for him he chose Lifestyle because:

"I think my life does revolve around, at least soccer at the moment. And you know, training, training, game, training, training, game get home and that seems to be pretty central to a lot of things. Like you know, we'll talk about that in my family a lot. I talk about that to my brother constantly, talk about that to my girlfriend. ... my girlfriend plays at the same club as well. So it's kind of like a lot of the conversation is just centred around

that. ... as I said a lot of my friends play at the club, so yeah, I mean it just feels like a lot of my life is literally based around the club. ... definitely I would say sport is, or recreational sport is definitely a lifestyle for me."

When considering future participation in PA Louis was able to describe an older soccer player at his club who was *"48 or something like that ...he's 48, he plays in my team. And he's the oldest player in the league. And he is basically one of our best players, he is an absolute gun. And there's – it's fascinating I think that he has managed to still play. ...And yeah, I potentially want to do that. I want to be able to do what he does."*

When asked about how being active made him feel Louis described an intense sense of fulfilment, wellbeing and belonging associated with playing soccer:

"It gives you a kind of satisfaction I think as well. ... I mean you feel as though you are achieving something. You feel as though you are doing something good, and you feel as though – ... some other things probably don't matter as much. You know, you are doing something which is quite simple and quite, I mean a lot of those other kind of social things, don't matter as much when you are out there. It's just kick the ball or whatever and everyone wants to achieve that single goal. ... it comes just natural really. ... kind of just like, sometimes it's basically like what you are here for. You feel as though that's what you really want to do, you just want that."

Summary Identity Based Maintainers

Participation in PA for the group of young people categorised as Identity Based Maintainers was a central feature in the lives. It pervaded their leisure time, employment considerations and social relationships. Participation was integral to their sense of self and their sense of identity. Ongoing participation was shaping and influencing decisions about work, study and living arrangements as well as other plans for the future. Above average childhood competency appeared to be the most consistent and significant contributing factor for this group. Age, education, sex and type of PA engaged in did not appear to be significant contributing factors (see Table 5:3, page 116). These young people were actively seeking to participate in PA on a regular basis and were

endeavouring to shape the social environment to facilitate this wherever possible.

5.3.3 Circumstance based maintainers characteristics

Case studies 3 and 4, Figure 5:3 and Figure 5:4 on pages 135 and 137 respectively present profiles for two young people classified as Circumstance Based Maintainers. These profiles illustrate the characteristics of the Circumstance Based Maintainers (n = 10) described in detail below.

Childhood competency

Unlike the Identity Based Maintainers participants categorised as Circumstance Based Maintainers reported childhood competency that varied from above average to below average. Some of these participants had made representative teams, but they were generally less confident than Identity Based Maintainers about their skills and competency as illustrated by the range of responses from Lisa and Emily:

Yeah. Like um, obviously I wasn't as good as some people that you know, but I don't know, I don't really see myself as like the worst. So just, you know, average. But yeah sometimes I did wonder should I be doing this? (Lisa 18)

Yep. I always thought that I was pretty good. Like I was in the top divisions for the grades that I was in and I got quite a bit of reinforcement for that. (Emily 24)

Past participation in physical activity

Similar to the Identity Based Maintainers this group of young people had also been active during childhood, although in contrast they did not refer to being active at a particularly young age. Only two females talked about starting an activity before the age of 7 and that was for dancing and gymnastics, for example:

I started off when I was really young, like doing the dancing and gymnastics and then I did hockey. And I'm not sure what made me change to netball. I just did (in grade 4). And stuck to it. (Janet 21)

Other young people talked about being active in a more general manner at school and home:

Well I lived on like a small farm. It was like 24 acres and it had paddocks and it had

some bush. So we had some horses and bikes and that sort of thing. And I grew up without a television as well. So we spent a lot of time outdoors. (Emily 24)

When talking about past participation in sport and PA a few of these young people described being involved a variety of sports and physical activities in childhood, but the majority were not. Participation in organised sport was more likely to have commenced during late primary and high school years as Jack and Emily described:

When we were younger we played lots of sports, like football ...football, basketball, I played a little bit of hockey. Then I got into rowing and yeah. ... I gave that (football) up when I was 13 years old and I concentrated on basketball. (Jack, 19)

I played netball and tennis, primarily. And sort of dabbled in a few other little – like basketball and we had swimming lessons and all of that sort of stuff as well. But netball, I played club netball growing up. (Emily, 24)

Current involvement in physical activity

For two young people, participation in PA was reasonably central to their lives. For Janet this involved playing sport while Steven's PA was associated with his current employment. Janet was playing A grade netball and the season was about to commence so she was training regularly as she described:

At the moment it's, I think it's taking up a fair bit of my time. Cos netball season starts this weekend. So I either netball train or go to the gym every night. And weekends are the game...I play probably competitive netball for about half the year I'd say. And then sometimes I might do a social roster or otherwise I just won't do anything for the second half. (Janet 21)

Steven currently had a traineeship working as an activity officer at a community youth organisation that coordinated sports and activities for young people after school. He was hoping to get an extension or more permanent employment with the same organisation. For Steven his involvement at the centre during adolescence had led to his current employment:

I think it was more hanging around here got me the work. Because I usually come

down here and the boss would come out and say would you mind doing a couple of hours work for us and I would. ... I just went to an appointment at (employment agency) and said can you give me a job at PCYC (Police Citizens Youth Club). And I got the job. So in a way basketball helped me out, kinda. Like hanging around here and helping out and stuff. (Steven 19)

However, for the remainder of this group involvement in PA was not a central feature of their current lives. While they were still active on a regular basis through a weekly game of sport or gym attendance this commitment to PA needed to accommodate family, work or study demands as Jack and Emily describe:

(I) get up about 5 and leave by 6 or can be earlier, depending on what job it is. ... we get home about 7.30, 6.00 pm ... work has come back up and its (PA) had to be a second priority instead of a first. But I still try and go to the gym at least once or twice a week. (Jack, 19, working)

it changes. Like at the moment I'm only committed to one sport activity on a Thursday. And so I guess that sport activity, I'm there every week. ... I'm not calling up at the last minute and saying I'm not making it. So that's high up on the priority scale. ... but in the past I've been in multiple teams and so that's probably slotted higher. (Emily, 24, working)

Similar to Identity Based Maintainers these young people had also made changes to their participation. Four young people had ceased participation in structured activities such as organised sport or dance and were now attending the gym or involved in activities such as bike riding or bushwalking on a casual basis. Six young people were still involved in organised sport, but played for social teams. Only one member of this group (Janet) was still involved in club sport. Pedometer data were available for seven members of this group (mean steps = 18,490; 11,681; 9,421; 8,549; 7,191; 6,901; 6,663). Median pedometer steps per week were 8,549 (somewhat active). This was less than the median steps for Identity Based Maintainers (10,222 steps per week). Two of these young people reported removing the pedometer for 1-4 hours to play sport and one female reported bike riding for 70 minutes. IPAQ data showed median LTPA, median vigorous LTPA and median active transport were less than for Identity Based Maintainers.

Emotional response

When asked about how being active made them feel the majority of responses were positive. It was apparent that they enjoyed their involvement in PA. However, the deep sense of fulfilment and connection described by Identity Based Maintainers was not present in the comments made by these young people (see Table 5:2, page 114). The range of responses and the language used by young people in this group used to talk about participating in PA is illustrated by these comments:

I feel good. I do. When I play I feel good. ... (Steven 19)

I guess relaxed is a good word. But just, I mean I might complain at the time.

Especially on some not so nice bushwalks, but sort of just free. And I guess I really love just wilderness as well. ... I always feel that whenever I'm doing exercise, it is always worthwhile. Like as much as I might not enjoy it at the time it's a worthwhile activity and use of my time. (Erin 17)

Future participation in physical activity

Young people categorised in Circumstance Based Maintainers provided a range of responses when asked about future participation in PA. The majority of young people were hopeful or wanting to continue their participation but were generally less emphatic or definite than the responses made by Identity Based Maintainers (see Table 5:2, page 114 for comparison of language used for different categories). Steven had a traineeship as an activities officer with a community organisation and was hoping to continue with this. No other group members had permanent or casual work that was directly related to PA. While these young people had thought about how they might remain active it was not determining decisions about work, study or living arrangements. None of them made references to needing to live in certain locations to facilitate participation in LTPA. The following comments illustrate the diversity of responses when asked about their future participation in PA:

For the rest of my life I reckon. ... Keep fit and stuff. ... If there's basketball and futsal still going I'd do it, but I would definitely still be doing that (weights). (Steven 19)

I'd like to say I was still playing netball. And I'd like to say I was regularly walking,

or jogging. Um, and I think, yeah there's nothing really stopping me being able to do that now. (Emily 24)

Challenge of categorising individuals

One participant, Janet (21) was difficult to categorise and was finally categorised as a Circumstance Based Maintainer on the basis of the intensity of the language she used to discuss her PA experiences, particularly her response to the question about how participation made her feel. While she had been active during childhood at average or above average competency and was currently actively involved in a team sport, she did not talk about her participation with the same sense of belonging or intensity as others categorised as Identity Based Maintainers. While this intensity is difficult to convey in the written form comments by Louis (Identity Based Maintainer) and Janet about future participation and how PA made them feel are compared below in Table 5:6 in order to highlight the differences in the way they talked about their PA participation. Louis was selected as the comparison as he also participated in a team sport.

Table 5:6 Comparison of comments about future participation in physical activity and how being active made them feel for Janet (Circumstance Based Maintainer) and Louis (Identity Based Maintainer).

	Janet (Circumstance Based Maintainer 21 years, netball)	Louis (Identity Based Maintainer, 20 years, soccer)
Future participation in PA?	<i>definitely continue playing netball. I don't know at what level but definitely still playing netball and going to the gym. Yeah, because it's something that I enjoy. I guess it makes me feel good about myself. So I wouldn't want it to change.</i>	<i>I couldn't see myself not being part of some kind of organised sport. Yeah. I'd have to be part of something. And in saying that, if I couldn't, I'd go to the gym or something like that. I'd do something, I know that for a fact</i>
How does being active make you feel?	<i>just like when I finish at the gym or finish a game of netball you just feel good that yeah you've gone out and done something and haven't just sat around maybe. It feels like you have achieved something in a way. Yeah.</i>	<i>It gives you a kind of satisfaction I think ...you feel as though you are achieving something... you are doing something which is quite simple.... sometimes it's basically like what you are here for. You feel as though that's what you really want to do, you just want that.</i>

The key characteristics of Circumstance Based Maintainers are presented in case studies 3 and 4.

Figure 5:3 Case Study 3 Circumstance Based Maintainer**Case Study 3 Sally**

Sally (aged 24 years) was currently working full-time in an administrative role having completed a University degree and was living at home with her partner and her parents. When asked about past participation in PA she focused on sports participation and indicated that she had played tennis and netball during primary school, commencing netball in year 6 (age 11/12). Then in high school she *“played netball and I did cricket. I played cricket all through high school. ... And for a little while in high school I also did volleyball... And soccer”*.

When asked to consider how good she had been at sports Sally indicated that *“I think I knew that I was a lot better at some things than others. But I don’t know whether or not that that really affected me. I think that as long as I was having fun it was alright. But yeah, I think I was good at some”*. Currently Sally was playing netball once a week with friends and not training. However, Sally indicated that her involvement in PA had fluctuated significantly over the past few years:

“priority for PA changes a lot for me. ... the last couple of years I’ve always been part of a gym ... I worked it into my routine. So it wasn’t such an obligation for me to have to do this or do that. It’s just part of everyday life. But now that I’m sort of you know not doing it so much now, it’s kind of I don’t know, not so important ...I know that I do have time to do it, but whether or not I actually do it is a different story. But before, it was a lot more important for me to make sure I had my time.”

When asked to consider her future participation in PA Sally indicated that she would *“always want to keep doing netball because it’s not a big commitment at all. Like one day a week ... And it’s just like a good chance to catch up with my friends and not having to organise it.”* However, she was unsure about how she would manage to continue playing sport when in the next five years she planned to *“do more travelling and I want to go back to uni and I maybe want to buy a house this year and maybe I want to have kids*

within 5 years. So I don't know. ... I hope that I can continue doing it, because I do like it".

When asked about the meaning PA had for her Sally chose the word Energy but elaborated on various factors that were significant for her:

"Well from a health perspective I think I could relate a lot of things to that as well. Like energy, it boosts your energy levels ...it makes it easier to sleep and just relax and chill out... just health, try and eat well, and try and keep your body healthy, in shape. Not sort of like over the top fitness or anything like that. But just getting a good balance. Yeah, balance is a good word. And I guess health with the weight as well. Just kind of keep it down, keep in control of it, I think."

When asked how being active made her feel she described a positive response that she attributed to the release of endorphins:

"what they say is not really bullshit. You know, like it's true. So that you do know that when you do exercise you feel a lot better than when you kind of go through periods when you don't do much. ... Endorphins yeah. I reckon that's when they kicked in because I would feel like real happy. This was like after about five minutes and I would be like 'oh yeah this is awesome' and I would be like 'oh thank God I came today, I was nearly going to sleep in'. So that's always a good feeling."

Figure 5:4 Case Study 4 Circumstance Based Maintainer**Case Study 4 David**

At the time of his interview David (aged 17 years) was living at home with his mother and had a permanent part-time job in a supermarket storeroom (25 hours per week). David was the only interview participant who smoked (20 cigarettes per day) and had commenced employment three months prior to the interview having left school after completing year 10. When asked about past participation in PA he discussed his participation in sport and how he had commenced playing futsal (indoor soccer) at the age of 11 and had played Australian Rules Football (AFL) until he was 15 years.

When asked how good he was at sport he indicated that *“I didn’t rate myself among the gods or anything like that. But no, yeah had a fair go at it. Like I took it serious and stuff like that. ...I was pretty good”*. His futsal team *“apart from like one player, like our goal keeper ... we have been together since we used to play indoor soccer ... when I was like 11”*. He had played Australian Rules Football with two clubs having made the decision to leave the first club after 5 years as *“I got sick of like, having to ...winning all the time and stuff like that. ... just like having that much pressure to do it and stuff like that”*. He chose to play with a club that his friends played with where *“training was fun. It wasn’t like crazy intense.”*

Having recently started work David was finding it difficult to continue to play futsal because his rostered shifts were now clashing with his rostered games. When work and futsal didn’t clash he was still playing *“like out of the three months that I’ve been working there I’ve played – because you play every weekend of course, and I’ve only probably played about 4 of those weekends”*. Despite the recent decrease in sports participation David indicated that he was active in other ways *“I walk a lot. Like into town and to meet Mum and stuff like that. Like walking is pretty much all I do. But like work is physical enough ... because you walk all day at work”*

When asked to consider future participation in PA David indicated that he hoped to continue to be active but his job and potential injuries would be considerations when choosing activities he might do *“it’s not like I would stop everything completely ... like I*

can't do nothing at all, if you know what I mean. ...like running or something like that or bike riding or something. But I would never go to football or basketball or something like that ever again. Because if you are something like that, it's not worth it because you can't take time off work".

When asked to choose a meaning for PA David indicated that this had changed recently:

"when I was younger the Challenge was what it was but now like with sport, like the challenge is still good, but definitely Relaxing. Because after it you feel better and you are relaxed. Even if it is competition or it's just social or something, you feel like you've done something, so it's better."

When asked to describe how being active made him feel he described the positive feelings associated with playing futsal:

"futsal is good, because it is like non-stop rush, if you know what I mean. So if you have a bad week or something like that and you go and play futsal, you get to boot a ball and there is skill involved and you are just running as well. It's a good way to like, let go of steam, futsal is. Because it is really fast pace and you get adrenalin the whole game."

Summary Circumstance Based Maintainers

While single responses for young people categorised as Circumstance Based Maintainers may appear to match those of Identity Based maintainers the differentiating factor was that across the key areas (childhood competency, past participation, current involvement, future PA and emotional response to participation) individuals did not present the consistent responses of those categorised as Identity Based Maintainers. It was evident that participating in PA was not central to their lives or sense of identity in the way it was for those categorised as Identity Based Maintainers. Social and environmental factors had a greater influence on participation for this group. Participation in PA would be modified in order to accommodate changing life circumstances. Age, education, sex and type of PA engaged in did not appear to be significant contributing factors (see Table 5:3, page 116).

5.3.4 Increasers characteristics

Participants were considered to have increased their participation in PA if they had not been active during childhood or early adolescence but had commenced some type of PA during mid to late adolescence or early adulthood and were currently still involved in the activity. There were four interviewees (females = 2, males = 2) categorised to this group. Case study 5, Figure 5:5, page 142, presents the profile for one of the young people categorised as an Increaser.

Childhood Competency

This group reported average or below average competency in childhood. Some of them had participated in organised sport at different times during their childhood and during adolescence if required to by their school. The comments below summarise their reflections on their competency and past involvement in PA:

like I never thought I was overly good or even good to be honest. I just thought I was below average. I just had a crack at everything. (Chris 18)

Oh I've always loved running. When I was little, like I mentioned, I went to little athletics. And I was always quite good at that. (Tracy 24)

Past involvement in physical activity

Only Alison described regular participation in PA during childhood followed by a requirement to participate in school sport during her high school years:

Did Little Aths (Athletics), from must have been 7, 8 till 13. And just played the netball, hockey. Just whatever school sport because we had to do one, one a year or two a year. And like towards the end of school it was just like "I don't really want to be in town on a Saturday" so I did a sport that yes didn't require much physical, but it also meant that I got the weekends to do a bit more of what I wanted. It went a bit down once I left school. (Alison 20)

The remaining participants described no regular participation in sport or other PA during adolescence as Mark outlined:

Not really, no. I had some sort of minor involvement in school sports, but that was very sort of – yeah I wasn't committed to any particular, like sporting teams or

particular types of sports. (Mark 24)

Current involvement in physical activity

Mark, Chris, Tracy and Alison had commenced their current activity in mid-late adolescence or early adulthood. Mark had commenced weights training at the age of 17 and running in late adolescence while Chris commenced playing club football at age 17 years having not played since primary school. Attending yoga classes and walking to and from work had become regular activities for Tracy in the past 12 months while Alison had commenced weights training 12 months prior to the interview (at the age of 20) and was still attending weekly weights sessions. Friends or family had introduced three of these young people to their activity. Only Tracy had decided to commence yoga independently although she did have active friends and house mates and her partner was a part-time personal trainer.

For Mark involvement in PA played a central role in his life and he considered it essential for his stress management. Here he describes how he schedules his gym attendance and running:

it sort of comes back to that sort of timetabling. The lifestyle that I lead, I try and slot exercise in on like a Monday and a Friday and a Wednesday and a Sunday, or something like that. (Mark 24)

Two of the four young people categorised in this group provided pedometer data (mean steps = 10,847; 6,872) with a median weekly step count of 8,859 which was similar to the median step count for Circumstance Based Maintainers (8,549). This group reported the highest levels of active transport of any group and the second highest total amount of LTPA, although vigorous LTPA was similar to that of Circumstances Based Maintainers.

Emotional response

All four young people responded positively when asked how being active made them feel. While they enjoyed their participation and it left them feeling good certain aspects of their participation that they found less enjoyable tempered their enjoyment, as the comments by Tracy and Chris illustrated:

Oh, I love playing the game. I love waking up in the morning “Yes! I’ve got football

today”, going off playing, win – awesome, lose – couldn’t give a brass razoo. Just training and stuff in general, I just cannot stand it. I hate it. It’s pointless. (Chris 17)

I enjoy it while I’m doing it. But then it’s just finding the motivation to get up there and do it again. I can’t say I love it. (Tracy 23)

None of these young people described the sense of fulfilment or enjoyment experienced by those categorised in either of the groups of Maintainers.

Future participation in physical activity

When asked about future participation in PA these young people indicated that they would like to continue but were unsure about how changes in life circumstances might impact on this. If there was a conflict between PA and work or relationships then they would reconsider their current levels of participation as Chris outlines:

it depends where I’m at. If I’ve got a job that requires a lot from me, I probably, like if it’s on during the week like school, I probably would still play football. Again, if I had like a girlfriend or something, obviously she’d come first. Yep. Oh I don’t think things would change. I would probably still play football. Probably try and take up another sport if I could. (Chris 17)

Even Mark, whose twice weekly 90 minute gym sessions had become an integral part of his life and important for managing stress, was unsure about how things would change once he started full-time employment. He planned to continue his gym sessions indefinitely although he recognised that this might be difficult as the following exchange illustrated:

well hopefully it will stay the same. Like when I actually enter sort of 9-5 employment then I think it will be difficult, to some extent. ... So I think I will have to manage my time better if I want to maintain the time that I invest in exercise at the moment. ...

Figure 5:5 Case Study 5 Increaser**Case Study 5 Mark**

Mark (25 years) was completing postgraduate studies at University (PhD) while working casually 12 hours per week as a kitchen hand. He was living independently. Mark had not been active during his childhood or adolescence beyond some *“minor involvement in school sports”* and when asked to comment on how good he considered himself to be at PA or sport he responded *“I’m not particularly athletic. Can’t really jump. Just can’t. Can’t swim. Well I can swim, I’m just really inefficient and I get exhausted easy”*. Being good at athletics *“wasn’t the important thing like as I said, the school that I went to, or my circle of friends and that sort of thing.”*

Mark started going to the gym at the age of 17 because *“I guess I’m probably naturally quite a skinny guy, so around that age, like during adolescence and that sort of thing, I wanted to bulk up a little bit.”* He had been introduced to the gym by his older brother and had been attending the gym regularly ever since. Mark’s parents were not active and his friends had not been active during adolescence. Mark had a regular routine of running and attending the gym twice per week for 90 minutes. This routine was designed to facilitate recovery as he describes *“I do a sort of a two day split, where I’ll work out half the body on a Monday, and then recover during the week and then on a Friday I’ll do the other half. So basically the idea is to always be in a state of recovery, sort of thing ... And generally running, I will probably run about 21 k a week. ... And that’s usually every third day because that’s how long it takes my legs to recover.”*

While Mark had commenced attending the gym to build muscle bulk his focus had changed and it was now *“fairly important. It’s my stress management.”* Hence when he was asked to consider his future participation in PA he was planning to do some form of activity *“Definitely. Probably till the day I die.”* However, he also recognised that maintaining his routine once he started regular employment might be difficult and that he would organise his time and probably modify his current PA routine to accommodate work demands.

When asked to what PA meant for him he chose the word Pain because if he wasn’t

“feeling like really sore after a workout or whatever, then like basically it’s like I haven’t worked hard enough. ... pain. So that’s basically my measure of how I’ve gone in terms of exercise.” Unsurprisingly when Mark was asked to describe how being active made him feel he described mixed feelings:

“I guess I feel excited to some extent. But also a bit apprehensive because of how much work it’s going to be, so the immensity of it is certainly an element that maybe makes me go 20 minutes later than what I should have or whatever. ... but once I’m there I’m OK. And then I just go until exhaustion ... I think running clears your mind a bit more. It’s sort of a different sort of exertion. Like at the end you feel elated almost”.

Summary Increasers

This group of young people described average or below average childhood competency and a pattern of irregular participation in PA during childhood and adolescence. Only Alison had participated in regular PA during childhood and adolescence and this was largely due to it being compulsory at the school she attended. Chris had participated in sport during primary school, but not at high school. He had recommenced playing a team sport in mid to late adolescence. These young people reported high levels of active transport and moderate levels of LTPA, although not vigorous intensity LTPA. When asked about their future participation in PA they all indicated a desire to continue their involvement while speaking openly of the potential challenges of doing this if life circumstances changed.

5.3.5 Decreasers/Inactive characteristics

The remaining three interviewees, Mel, Libby and Oscar described either a pattern of persistent inactivity (Oscar) or had ceased participation in mid to late adolescence after active childhoods (Libby, Mel). Case study 6, Figure 5:6, page 146 presents a profile of decreasing PA.

Childhood Competency

When asked about childhood competency these three young people described being of average or below average competency:

I didn't think I was very good at sports, and like that kind of thing. Um, probably because I wasn't. No but I always you know tried, and was middle of the field kind of thing. (Oscar 23)

Childhood competency was not an important consideration for determining whether or not they would participate in PA:

It (sport) was just something I enjoyed (Libby 22)

Past participation in physical activity

Libby and Mel described regular participation in sport at school and outside school throughout childhood and adolescence as Libby outlined here:

So during school I played a lot of sport. I coached and I umpired and I played basketball. I was in the firsts basketball team and did all of that. And I was like, probably four nights of the week I would be doing something basketball. I loved it, but when you leave school, you don't play school basketball anymore. Except for the first kind of two years I umpired basketball. That was good. (Libby 22)

Oscar had experienced a rural childhood and described an active childhood where he participated in some sport but not on a regular basis:

Well I actually grew up in the bush. So I when I was quite young, under 10, I used to spend a lot of time outside. But even through primary school and then high school I did play sport occasionally....I was always more of a kind of academic nerdy kind of person. Um, but I still enjoyed phys ed. It was a bit of a, you know a bit of a challenge. But I did enjoy it. I did enjoy participating, yeah. (Oscar 23)

Current involvement in physical activity

These young people were currently not involved in any form of regular LTPA apart from active transport as Oscar described below:

In terms of PA I do a fair bit of walking. I don't have a car. So um each morning 15 minutes to get here and 15 minutes to walk back. (Oscar 23)

All three completed pedometer diaries (mean steps = 7,236; 7,030; 5,775) with median pedometer steps of 7,030 (low active). This was the lowest of all four categories. One

young person in this category reported removing the pedometer while swimming for 90 minutes. This group reported minimal LTPA and no vigorous intensity LTPA on the IPAQ. However, they did report walking for transport.

Emotional response

There were a range of responses to the question about how PA made them feel. These included very positive enjoyable experiences as described by Libby:

it was just something I enjoyed.... I think it was because I enjoyed it (basketball), and I enjoyed the kind of team atmosphere of it. But I think if I was crap at it, I probably wouldn't have enjoyed it as much. Like I think there has to be some element of it that you feel like you can do something competently to actually get some sort of enjoyment out of it. (Libby 22)

to less positive experiences as described by Oscar:

Well first I don't think I'm very fit. I usually get quite tired when I do exert myself. Um, yeah and I always feel after I do that kind of thing that I should get fit and it would be a good investment of my time. (Oscar 23)

These three young people were generally positive about their participation in PA and did not describe any specific negative experiences associated with being active.

Future participation in physical activity

When asked about future participation in PA none of these three young people considered it a priority. Although they did not rule out participating sometime in the future they currently had no intention to do so because there was no indication from a health or fitness perspective that this was necessary:

no I don't have a plan for putting that into action ... I suppose there is a possibility I might take up a sport. That's remote.... I don't think, that's not part of my plan but I won't rule it out. (Oscar 23)

Figure 5:6 Case Study 6 Decreasers/Inactive**Case Study 6 Mel**

Mel was studying full time (year 12), not working and living at home. She had been very active in the past, starting tennis at the age of 5 years and playing for school, club and pennant tennis over the years until stopping in year 10. She had also played soccer from year 3 through to year 10. She felt that she had an active family who went on *“a lot of bushwalks and bike riding, and do a lot as a family.”* When asked about how good she considered herself at sport Mel responded that because *“tennis ... was an individual thing, that was really a big factor in it.”* This differed from team sports where *“you were playing with your friends, like it wasn’t about being good. It was just about being with my friends.”*

Mel also discussed the time when she played a lot of sport during high school *“it was when I was doing sport at school and we were having PE classes. That kind of got me really motivated to be more active. But no it’s just kind of waned off over the past few years.”* She had stopped playing tennis in year 10 when her younger brothers started beating her and she felt there was pressure from her tennis coach and club to *“always you know play a higher division, or just constantly you should be doing this or go play in this tournament or play in this tournament or something.”* Currently her only activity was walking to and from school. When asked to reflect on why she stopped participating in school sport she felt that:

“the reason I dropped a lot of my school sports is because my friends stopped doing it. ... playing hockey and playing soccer together was the thing we did on the weekends to be together. And yeah, as other people kind of started you know, prioritising with other things, I kind of started thinking oh maybe I should go off as well.”

Considering her future participation in PA Mel felt that *“I think as long as I’m healthy, I don’t really find it that important really.”* When asked to choose a word that described the meaning PA had for her Mel found it difficult to restrict herself to one word and chose three, Lifestyle, Fun and Health that applied to different aspects of PA:

“with tennis, like there really was a big you know, it really did kind of take over my life. And really I think, you know, when you play sport, you should really commit to it. Yes, I think that’s why I chose Lifestyle ... so Fun, that would be because of playing team sports, really and being with friends and the whole social side of things. And then Health, that’s probably because like that’s why I’ve been doing exercise at the moment.”

When asked how she felt when being active Mel responded that when she played tennis she *“got a big rush out of it. But it was really good to just kind of ‘unleash’. But no, it was really, yeah I really enjoyed it.”*

Summary Decreasers/Inactive

While these young people may have been involved in regular PA in the past it was no longer a priority for them. None of these three described negative past experiences associated with PA. Spending time with friends and family was a higher priority and did not involve PA.

5.3.6 Fluctuating participation in physical activity

Interview participants were characterised as Maintainers, Increaseers and Decreasers/Inactive according to their long term pattern of participation in PA since childhood. However, many participants also described fluctuations in their participation. These fluctuations could occur for short or long periods and have positive and negative consequences for long term or habitual PA participation.

Short term fluctuations

Despite being categorised as Circumstance Based Maintainers four young people (females = 2, males = 2) reported being less active currently than they had been in the past. For Richard and David the decrease in LTPA was a result of changing work demands. Both these young men worked in manual jobs and reported high levels of occupational PA (30+ hours per week) and no LTPA. During interviews Richard and David described how the physical demands of their work were impacting on their current LTPA:

So do you do much PA then at the moment? (Interviewer)

I was until the workload got heavier. Um, I was probably walking about an hour and a bit every night....I just walked out to [home]. Yeah, every night I was doing that. And then work started to get a bit harder, so I was doing me 8 hours. I was knocking off at 1, so I'd get home and have a rest and then go out and go for a walk and then come back home again. ...I only probably stopped doing that probably about a month ago when work started getting stronger. (Richard 23)

Ellen and Erin, also categorised as Circumstance Based Maintainers, described a decrease in LTPA associated with changing academic demands as they approached the end of year 12 and final exams. They both felt that the increasing academic demands had left them with less time for PA:

I definitely wasn't as concerned about study a year ago as I probably should have been. ... I was involved in sort of regular sport. And that would take a regular amount of my time, whereas now I'm not. So I just sort of fit it in wherever. It's not really a priority. But yeah, study has definitely grown. A lot. (Erin 17)

Ellen and Erin reported low levels of LTPA (<210 mins per week) and were looking forward to the time when academic demands would decrease and they would be able to return to more regular PA as Erin described:

well next year I don't know what I want to do yet but either way um you know sort of evening things out so that I don't have such a huge emphasis on one part will be a big, a big thing to look forward to. So trying to get my life a bit even. (Erin 17)

Despite describing significantly reduced or no current regular involvement in LTPA these four young people were categorised as Circumstance Based Maintainers on the basis of discussions about their past involvement in PA, the fact that they had made some attempts to be active in the past month and were intending to be active again in the future. Other participants categorised as Circumstance Based Maintainers also described voluntary periods of inactivity to accommodate short term work or study demands, but at the time of their interview had recommenced participation in LTPA. Jack described how he had ceased playing sport on commencing work, but was now returning to a different sport after three months:

Because when I spoke to you last time, you were, you had been rowing. That was something you'd done a lot of. (Interviewer)

Yeah I had been. Yeah, um with work it's really hard, so I had to give that up. I gave that up in probably Feb (Interviewed April). So yeah, I missed out on the nationals and stuff like that, but it wasn't too bad. They went really well though, so that was good. (Jack 19)

OK. How did you feel about giving up your rowing? (Interviewer)

a bit disappointed. Because I really enjoy it and I'd really like to go back. It's just a matter of getting the time to go back, even if I just go back for a casual row on the weekend, on a Saturday or a Sunday, if I have time. But I may be getting back into basketball. So yeah, on a Thursday night, just a men's roster. There's no training, it's just a game. (Jack 19)

Other young people also described short term increases in PA. These were associated with seasonal activities, holidays and to aid with employment opportunities. Other factors contributing to short term fluctuating participation included the casual and flexible nature of the work many young people were engaged in which made it difficult to be active on a regular basis.

Long term fluctuations

Longer term fluctuations in participation were commonly associated with more significant changes to life circumstances such as leaving school, moving house or developing relationships with significant others. Steven, (Circumstance Based Maintainer), outlined the changes to participation in PA he experienced on leaving high school:

once I left high school I got a bit unfit. So I thought I'd like to do something about it. That's why I wanted to see if I could get a job here. As I did, I started doing stuff in the weights room. (Steven 19)

Ok. So being unfit after high school, how did that make you feel? (Interviewer)

Not good. Not good at all. I wanted to do something about it. Now I'm doing it, now I feel good, now. (Steven 19)

Four years ago you finished school? (Interviewer)

Yeah, long way away. (Steven 19)

OK. So let's say a year or two ago, before you started here, and you think back to it, and now, what's you know... (Interviewer)

It's a big difference. Because I was just lazy, I was. Had no job, just sitting at home eating and yeah, putting on weight and stuff. Now I'm just coming down here and I'm losing that and eating right now. Because I'm on a diet, well not a diet, but I'm eating proper food and stuff. So it's a big difference now than it was two years ago. (Steven)

Steven was currently working at the local community centre as an activity officer and was active at work and during his leisure time (IPAQ LTPA = 630mins/week, daily steps = 18,490). Emily (Circumstance Based Maintainer, 24 years) reflected on the changes in her engagement in PA over the past 2 years and the circumstances that have contributed to these changes:

it changes. Like at the moment I'm only committed to one sport activity on a Thursday. ... but in the past I've been in multiple teams ... I've gone through the last year and a half, I haven't had the regular routine of walking or running each day. ... I've moved house in that time. And my partner and I have sort of gone from my parents' house to his house and moving around. And that sort of disruption has made me a little bit lazy in the sense of um, I haven't got my set place that I like to walk or run. (Emily 24)

Yep. Yeah, so I mean I will talk to you a little bit more about some of those things as we go along, but if you were looking, like when you said you used to do a lot more, can you pinpoint a time when it might have changed? (Interviewer)

Um, I think when I was single I was a lot more focussed on me and probably my health. And maybe my image a bit more too. ... Also maybe when I was studying full time at university, because I was only at uni two or three hours a day. ...

Whereas now I'm sort of committed till, but then again that's only three days a week I'm fully committed at the moment. So there is possibility there. I sort of, it

fills up with other stuff. And then I sort of, I think I made excuses a little bit in the fact that I'm on the farm, I'm like well that's physical. ... I think, yeah, I think it was the recent change has probably been um, being in a relationship for the last year and a half. Before that, I think the change between, like from high school to uni was sort of when I cut back on the number of extracurricular activities I did. Um, because I think my social life sort of took over a lot more then. And obviously you are not sort of just at home. When you are at high school you are with your parents a lot more and you know, you really look forward to your extracurricular activities and they support you with all of that. You know what I mean. (Emily 24)

Emily identified a number of specific transitions that have led to fluctuations in her PA in the past few years; namely, leaving high school, establishing a significant relationship and changes in employment and study.

The fluctuating pattern of participation described by many participants did not appear to be dependent upon sex or type of PA. It was a common experience for all study participants to describe voluntary fluctuations in PA with the exception of those interviewees categorised as Identity Based Maintainers. Only Allan from the Identity Based Maintainers described a prolonged period of inactivity and this was due to injury not through choice.

Despite fluctuations in participation, including periods of inactivity, it was possible to describe a longer term pattern of PA maintenance for those young people categorised as Circumstance Based Maintainers. For the four young people currently experiencing a decline in activity a return to activity cannot be guaranteed but that was their intention so for the purposes of this study they were categorised as Circumstance Based Maintainers. While the young people categorised as Identity Based Maintainers described similar academic and work demands as other study participants they did not describe periods of inactivity in order to accommodate this.

5.3.7 Summary patterns of participation

Synthesising all available data for interview participants (IPAQ, pedometer, interviews) it was possible to categorise participants according to a pattern of participation from childhood. Three distinct patterns of participation in PA were identified in this study;

Maintainers, Increaseers and Decreasing/Inactive. Two distinct subgroups of Maintainers were identified. In the first subgroup, Identity Based Maintainers, childhood factors, particularly childhood competency and diversity of involvement, were distinguishing characteristics. For this group of Maintainers PA appeared central to their sense of self and identity with participation providing them with a strong sense of fulfilment and deep contentment: feeling “*at home*” in the water (Karen 18) or kicking the soccer ball was “*what you are here for*” (Louis 20). For the second subgroup of Maintainers, Circumstance Based Maintainers, current social and environmental factors such as relationships, social support, work and access to opportunities were more important than childhood factors. While these young people all described participating in PA during childhood/adolescence and enjoying their childhood activities, their ongoing participation was linked with their current social and environmental factors remaining supportive of participation. It was this supportive environment that distinguished them from those categorised as Decreasers/Inactive (who also described enjoying childhood PA) and ensured they were currently engaged in regular PA. There were challenges in categorising some participants who failed to clearly meet key characteristics for a particular category, but these were resolved by careful consideration of all available data. Fluctuating participation in PA was a common experience for study participants with the exception of those categorised as Identity Based Maintainers.

A summary of key characteristics for each category of participation is shown in Table 5:7 over page.

Table 5:7 Summary of the key characteristics for each physical activity category

PA Category	Characteristics
Maintainers n = 17	
Identity Based Maintainers (F=4, M=3)	<ul style="list-style-type: none"> • Above average childhood competency • Commenced PA at young age • Diversity of childhood PA experience • Making decisions about future to facilitate PA involvement • Highest reported LTPA, step counts • PA provided sense of fulfilment • Central to sense of self and identity
Circumstance Based Maintainers (F=6, M=4)	<ul style="list-style-type: none"> • Varied from above to below average childhood competency • Social, cultural, environmental strongly influence PA • Periods of voluntary inactivity common • Less definite about future participation
Increasesers n = 4 (F=2, M=2)	<ul style="list-style-type: none"> • Average or below average childhood competency • Less active childhoods • Unsure about future participation
Decreasers/Inactive n = 3 (F=2, M=1)	<ul style="list-style-type: none"> • Varied from above to below average childhood competency • No plans for future participation

Chapter 6 Results

Perceptions, beliefs, meaning and value of physical activity

6.1 Introduction

This chapter presents interview participants' perceptions, beliefs, meaning and value of PA. Data in this chapter directly addresses the research question 'How do young adults perceive PA?', but also contribute to answering the research questions 'How do young adults make decisions about PA participation?', 'What factors do young adults report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult?' and 'How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into the independent environment of further study or work?'

A summary of walking data from the IPAQ and ambulatory data (pedometers), where available, is presented first. This provides some context for interview participants' perceptions and beliefs about PA, particularly moderate intensity PA such as walking. As described in Chapter 3, section 3.9.2, page 63 a question about walking for exercise was added to the interview guide after participants in early interviews rarely discussed moderate intensity PA, such as walking, unless specifically asked. To facilitate discussion about moderate intensity PA and walking Australia's PA recommendations for adults were summarised for participants (30 minutes of moderate intensity PA, such as walking on at least 5 days of the week). Participants were asked to comment on the recommendations, in particular walking for exercise. Discussions about the PA recommendations for adults and walking reflected participants' perceptions and beliefs about PA.

Interviewees associated various benefits with their participation in PA and these results will be presented here as will findings from the interactive exercise where participants were asked about the meaning of PA. After careful consideration and in depth analysis of all data pertaining to their perceptions of PA, the benefits associated with participation, assigned meaning(s) of PA and responses to question 'What role does PA currently play in

your life?’ it was determined that study participants valued their participation for four key reasons. This analysis and findings are presented in this chapter. The congruence between the meaning, benefits, value and actual PA behaviours were then explored and results of this analysis are also presented in this chapter.

Analysis included consideration of demographic and structural factors such as sex, age and area-level socioeconomic status as well as measures of PA. Consideration of PA category as described in Chapter 5.3 was also incorporated into analysis. Detailed analysis found that these factors had had little influence on perceptions, beliefs, meaning and value associated with PA so will only be presented and discussed in this chapter where applicable. Quotes in this chapter will use pseudonyms, age and category of participation where relevant. Reference will be made to the PA category identified in the Chapter 5 where applicable.

6.2 Walking and ambulatory physical activity

During interviews participants’ discussions about PA commonly focused on high intensity PA such as sport or more structured forms of PA such as gym classes. Incidental moderate intensity PA, such as walking, was rarely discussed unless participants were asked directly. Analysis of self-reported walking data from the IPAQ (walking for leisure and transport) and average step counts from pedometer data, where available, provided insights into the ambulatory activity of study participants. A summary of walking and ambulatory activity data and selected participant characteristics are presented below.

With the exception of one male aged 19 years, all study participants reported walking for transport (IPAQ). Walking for leisure was less common among participants ($n = 9$) with only one male reporting walking for leisure. A summary of demographic characteristics and time spent walking for transport and leisure measured using the IPAQ is presented in Table 6:1. No clear patterns, with the exception of sex differences were identified between demographic characteristics and self-reported walking for transport or leisure.

Table 6:1 Self-reported walking for leisure and transport (median mins/day) by participant characteristics

	Time Spent Walking (mins)					
	Leisure			Transport		
	Yes(n)	Med	IQR ^a	Yes(n)	Med	IQR
Total	9	90	60.0 - 120.0	23	145	88.3 - 210.0
Sex						
Female	8	90	60.0 - 160.0	14	135	105.0 - 201.3
Male	1	45	45.0 - 45.0	9	180	75.0 - 280.0
Age						
16-18 years	5	120	90.0 - 280.0	11	150	120.0 - 260.0
19-25 years	4	60	52.5 - 67.5	12	135	78.8 - 187.5
Socioeconomic Status by Area of Residence (quintiles)³						
One (lowest)	4	68	41.3 - 97.5	8.0	145	87.0 - 184.0
Two	0	0	0.0 - 0.0	1.0	75	37.5 - 112.5
Three	1	315	315.0 - 315.0	5.0	80	60.0 - 120.0
Four	3	60	60.0 - 75.0	7.0	100	135.0 - 270.0
Five (highest)	1	280	280.0 - 280.0	2.0	210	195.0 - 225.0
Education level						
Non-university	4	90	45.0 - 120.0	13	150	91.0 - 240.0
University	5	75	60.0 - 146.3	10	150	105.0 - 202.5
Work/study status						
Working	4	60	52.5 - 115.0	8	180	87.0 - 240.0
Studying	1	45	45.0 - 45.0	6	145	95.0 - 172.5
Work/study	4	105	90.0 - 168.8	9	150	120.0 - 180.0
Current driver's License						
Yes	6	60	48.7 - 82.5	7	140	80.0 - 210.0
No	3	120	105.0 - 217.5	16	145	88.2 - 210.0
Pedometer						
Active/High Active	1	45	45.0 - 45.0	5	140	91.0 - 280.0
Low/Some Active	3	60	45.0 - 75.0	11	150	90.0 - 180.0
LTPA Type						
Lifestyle	5	120	90.0 - 280.0	8	207.5	142.5 - 250.0
Gym	2	37.5	33.7 - 41.2	5	100	75.0 - 140.0
Team sports	2	75	76.5 - 82.5	5	180	120.0 - 210.0
None	0	0	0.0 - 0.0	5	80	60.0 - 180.0

¹Med = Median,²IQR = Interquartile range³ABS Socio-Economic Index for Areas

As described in Chapter 3, section 3.9.2, page 63 pedometers measure ambulatory PA using step counts. A summary of demographic characteristics and activity category using

pedometer step counts is shown in Table 6:2 below. No participants were classified as sedentary using pedometer data. Seven participants did not provide pedometer data. Only one female was classified as active or high active and those with non-university education and from low SES areas were more likely to be classified as active or high active.

Table 6:2 Activity category (using pedometer step counts) by participant characteristics

		Activity Category (av [†] steps/day)			
		Low Active 5,000 - 7,499	Some Active 7,500 - 9,999	Active 10,000 - 12,499	High Active >13,000
Total		8	4	3	2
Age	16-18	3	1	2	2
	19-25	5	3	1	0
Sex	Female	6	2	1	0
	Male	2	2	2	2
Residence	Urban	4	4	1	1
	Rural	4	0	2	1
Socioeconomic Status by Area of Residence (quintiles)^a					
	One (low)	1	1	3	1
	Two	1	1	0	0
	Three	4	1	0	0
	Four	2	1	0	1
	Five (high)	0	0	0	0
Education	University	4	3	0	0
	Non-University	4	1	3	2
Work/study					
	Working	1	2	1	1
	Studying	5	0	0	0
	Work/study	2	2	2	1
LTPA	Lifestyle	1	0	0	1
	Gym	3	1	1	1
	Sport	1	3	2	0
	None	3	0	0	0

[†]av = average

^aABS Socio-economic Index for Areas

6.3 Beliefs about moderate intensity physical activity (walking)

Young people talked about their participation in all forms of PA during interviews, however, few young people referred to walking during the interviews unless asked directly. When asked to comment on Australia's PA recommendations and their implications for walking for exercise, only four young people indicated that they considered walking 'exercise' or that it conferred health or fitness benefits. Of the four young people who identified walking as exercise: all of them reported walking for transport (IPAQ), two reported walking for leisure (IPAQ), three were female, all participated in a range of types of PA and two were categorised as low active (based on daily steps) while two had no pedometer data. These four participants were older (21 - 24 years), three were working full time (administrative or manual labor) and one was on full-time study placement. Two of the four who identified with walking for exercise made qualifying comments about how and where they walked in order to increase the effort, thereby enhancing fitness benefits:

I would say I'd choose vigorous walking, as in I do a lot of hill walking, and its power walking it's not sort of strolling along. So I do feel physically exerted from what I've done. And if I'm going for a walk, I normally wouldn't go for less than 45 minutes to an hour. (Emily 24)

Irrespective of whether or not they reported walking for leisure the remaining young people did not identify walking as exercise. Three key themes were identified that might help explain this finding: the relationship between intensity and the benefits of PA or exercise, the role age and/or physical restrictions played in the potential for walking to confer health benefits ('not for me, not now') and the functional nature ('everydayness') of walking behaviors. In general, these young people focused on the cardiorespiratory or fitness benefits associated with participation in PA. Walking was considered unlikely to provide these benefits, particularly at their age.

Intensity and cardiorespiratory benefits (fitness)

Improvement or maintenance of cardiorespiratory or aerobic fitness was the key benefit or outcome associated with participation in PA by these young people. Without exception all participants discussed the fitness, "energy", "cardio" or training benefits associated

with participation in PA during interviews:

I took gym and running as an alternative, just to maintain fitness and health.

(Craig 17)

Like energy, it boosts your energy levels and I find that. I notice that quite a bit as well. (Sally 24),

Well I'm not really a competitive person. I like to do it more for the social side, the fun and fitness really. (Kristy 17).

The majority of these young people did not believe that participation in moderate intensity PA, such as walking, would result in gains in cardiorespiratory or aerobic fitness. These perceptions existed irrespective of sex, age, employment/study status and PA category identified in Chapter 5. Their discussions showed that they believed that walking was not of high enough intensity to provide any fitness benefits at their age.

I don't know, like, I don't know I never saw walking as exercise. It was always just, like because you walk every day. I don't know, I just never would associate walking as exercise. Maybe because I always, I don't know, because I swim and do stuff that's more vigorous. Yeah, I guess it's the vigour. Like because walking is not very hard, so I don't see it as exercise. (Karen 18)

When specifically asked about walking for exercise many participants indicated that they would choose to do more vigorous activity rather than walk for exercise (see Table 6:3).

Table 6:3 Self-reported leisure time walking (IPAQ) and comments on walking and intensity

IPAQ* Leisure Walking		
Themes	Yes (n = 9)	No (n = 15)
Exercise intensity and benefits	<i>It (walking) wouldn't be enough at all. I would have to undertake pretty hard core running. ... It takes too much time, it's very simplistic, very boring I would say.(Craig 17)</i>	<i>I would see walking as being a bit too, not easy, but I think I'd need to do like a jog. Like go jogging or for a bike ride, a bit more challenging.(Ellen 18)</i>
	<i>I wouldn't really count walking as exercise. Maybe power walking, or like bushwalking is definitely exercise. But no I wouldn't count my walking to school as exercise really (Erin 17)</i>	<i>If I wanted to exercise properly I would still run, I wouldn't walk.(David 17)</i>
	<i>I know it (walking) is exercise but I'd never walk fast enough to actually get my heart rate up, or feel kind of pushed. ... the way I walk I wouldn't consider it to be exercise.(Libby 22)</i>	
	<i>I guess I always think if I'm going to exercise, I should like do something that lifts my heart rate a lot and what not. ... if I was just walking I would probably say I wasn't doing any exercise.(Penny 25)</i>	<i>I feel like walking maybe maintains my health, but not ... improving my health. ... if I was really wanting to go on a health improvement kick, I would be ... jogging more.(Emily 24)</i>

*IPAQ = International PA Questionnaire

Demonstrable physical effort, such as an increased heart rate, tiredness or discomfort was considered an essential outcome of participation in PA and a positive indication that improvements in fitness could be expected. Moderate intensity PA, such as walking, that did not result in demonstrable effort was largely dismissed by participants. One young woman who identified walking as her preferred form of PA felt that people her age did not value participation in moderate intensity PA:

I hear a lot of people saying "oh walking doesn't do anything. It's not really exercise". I'm not doing gym classes or any of those sort of boppy things.(Tracy 24)

Despite walking regularly she felt walking was dismissed by her peers as not vigorous enough to achieve any benefits.

Interestingly, despite not classifying the walking he did as PA one young male did recognise that the walking he did for transport had positive impacts on his fitness:

Well, I do a lot of walking because I don't have my license and I must say it actually does keep you pretty fit. ... I got to footy training there the other week, first training run, and I did a lot better than I thought, because obviously walking has just kept me that much fitter. (Chris 18)

However, when asked about his views on walking as exercise this young male maintained that he did not consider the walking he did exercise, it was just a means of transport.

Three female participants who reported walking for leisure on the IPAQ in the past week did not identify walking as exercise. They talked about walking as something they used as time out from other activities, such as study or work. Walking was something that:

I don't really feel that that is exercising.... I haven't really thought about that being exercise as such, but it's just something that I enjoy doing. ... I just find that that is a good way of making sure I do have a break in the middle of the day. (Penny 25).

Walking was a way of having a break from work or study and was relaxing and enjoyable. All three participants indicated that they would participate in more vigorous activity such as running or sport for exercise.

'Not for me, not now', walking for exercise at older age

Some young people considered walking an appropriate activity for older age (see Table 6:4). The relationship between cardiorespiratory fitness and PA remained central to these discussions. Walking was perceived to have similar cardiorespiratory benefits to more vigorous PA at a younger age. One young male considered the adult PA recommendations inappropriate for young adults. As well as being thought of as an appropriate activity in older age, walking was also considered an activity that could be undertaken by those who were unable to do other forms of more vigorous PA due to time restrictions or physical limitations. Walking was better than doing nothing, but not the activity of choice for

these young people.

Table 6:4 Self-reported leisure walking (IPAQ) and comments about age and functional nature of walking

IPAQ* Leisure Walking		
Themes	Yes (n = 9)	No (n = 15)
Not for me, not now	<i>I think that (walking is) good for people who don't have time for PA, or ... they can't do a lot. ... I'd get bored. (Kristy 17)</i>	<i>Like it (walking) doesn't seem to be exercise to me. Maybe in 20 years it might feel like exercise. (Libby22)</i>
	<i>I think it's a plausible concept (moderate intensity activity) ... people need their exercise. It's just proven. But I would find my exercise elsewhere. (Craig 17)</i>	<i>in middle age. Like later on, but now if I ... wanted to exercise properly I would still run, I wouldn't walk. (David 17)</i>
Everyday	<i>I don't see walking the dog as exercise. It's just the enjoyment of it and just something I do. (Karen 18)</i>	<i>I find it (walking) boring. ... I'll happily walk to the supermarket... But ... going for a half an hour walk ... doesn't really interest me. (Lisa 18)</i>
	<i>I don't see (walking) as PA. That's just something to get you from place to place or just to think. (Kristy 17)</i>	<i>I get bored walking. ... I'd want to get there quicker. (Louis 20)</i>

*IPAQ = International PA Questionnaire

Walking as a functional 'everyday' activity

With the exception of one young male, all participants indicated through the IPAQ that they walked for transport. Irrespective of whether or not they had their driver's license the median distance walked was similar (see Table 6:1). While the majority of study participants walked for transport this was not considered exercise or associated with any fitness benefits. Walking was considered a 'boring' everyday activity that facilitated other aspects of their lives and was not undertaken as exercise (see Table 6:4).

6.3.1 Summary perceptions and beliefs about walking for exercise

It was evident from the IPAQ, pedometer and interview data that the majority of study participants walked regularly in their daily lives, either at work, for transport or leisure or a combination of these. Despite this the majority of the young people interviewed did not associate the walking they did with PA or exercise. The focus on cardiorespiratory benefits of participation in PA, particularly aerobic fitness and their belief that vigorous intensity PA was required to attain this at their age led the majority of participants to discount walking as exercise.

6.4 Benefits of physical activity

Linked with their discussions of PA intensity, participants also discussed a number of benefits they experienced or associated with participating in PA. Without exception all interview participants referred to the cardiorespiratory or aerobic fitness as a benefit associated with participation in PA, particularly PA of higher intensity. In addition to fitness other benefits discussed by participants were:

- physical - weight management, building muscle bulk, health, developing skills
- behavioural - improved sleep and concentration
- social - making new friends, meeting up with old friends
- psychological - managing stress, relaxation, mood enhancing
- emotional - enjoyment, fun, satisfaction

After fitness, the most commonly discussed benefits were health, psychological wellbeing and fun or enjoyment. The least commonly discussed benefits were skill development, behavioural and muscle bulk. Males, particularly males categorised as low SES, only discussed developing muscle bulk. This was usually discussed in the context of commencing weights training during adolescence. Psychological wellbeing was more commonly discussed by female participants ($n = 7$), but male participants ($n = 3$) also referred to the positive impact participation had on managing stress in their lives. The satisfaction associated with meeting the challenges of participating in PA, particularly activities such as bushwalking and rafting was more commonly discussed by females ($n = 5$) than males ($n = 1$). Older participants (19 - 25 years) were more likely to discuss weight management than younger participants. Those participants classified as low SES were less

likely to discuss health and psychological benefits of participation.

Those participants categorised as Identity Based Maintainers discussed the fitness and psychological benefits they associated with participation in PA. Other benefits of participation in PA were enjoyment and fun. One Identity Based Maintainer discussed how PA had assisted him to lose weight during adolescence. Circumstance Based Maintainers were more likely to discuss the health and fitness benefits of participation in PA, including weight management. Increasers most commonly discussed the social, psychological and health benefits of participation in PA. Those participants categorised as Decreasers identified fitness, health and enjoyment/fun as potential benefits of participating in physical activity. See Table 6:5 below for comments that reflect the range of benefits participants associated with PA.

Table 6:5 Perceived benefits interview participants associated with their participation in PA

Benefit	Quotes
Physical	
Fitness	<p><i>Well I'm not really a competitive person. I like to do it more for the social side, the fun and fitness really. (Kristy 17, Identity Based Maintainer)</i></p> <p><i>the thing that would be motivating me now to do PA. Like I know I should. Because I would like to be fitter and I know I need to do it for health. (Libby 22, Decreaser/Inactive)</i></p>
Health	<p><i>well I feel healthy. Like I'm flexible and I'm quite strong. Yeah but at the same time I've got heart conditions in my family on my mum's side and stuff like that. (Tracy 23, Increaser)</i></p> <p><i>PA flushes your body. It keeps your blood moving. It's good for your heart. (Emily 24, Circumstance Based Maintainer)</i></p>
Weight	<p><i>Because I used to be quite obese when I was a young kid ... about 14. I was quite obese. I was about 90 something kilos and I just got sick of being called the fat kid and all that. So I sort of took a stand and got into running and then I lost a lot of weight – 26 kilos or something.(Craig 17, Identity Based Maintainer)</i></p> <p><i>Well I think it's really important generally as you are getting older too to look after yourself; particularly these days there's so much emphasis on like eating and your weight and just being generally healthy with all the health conditions and yeah it just seems like it's such a big thing. (Janet 20, Circumstance Based Maintainer)</i></p>
Muscle Bulk	<p><i>I guess I'm probably naturally quite a skinny guy, so around that age, like during adolescence and that sort of thing, I wanted to bulk up a little bit. (Mark 24, Increaser)</i></p>
Behavioural	
	<p><i>I think I'd feel horrible if I didn't do something each day. Because I kind of feel like, I remember when I quit swimming I never got tired.(Karen 17, Identity Based Maintainer)</i></p>

Besides keeping me fit, it helps maintain, it helps me concentrate. (Allan 17, Identity Based Maintainer)

Social

But also from that you get the benefits of more friends and different kinds of friends from school friends and socialising and stuff like that. (Jack 19, Circumstance Based Maintainer)

I think it becomes like a social thing later in life. Like more so than when you are younger. ... I think later in life, yeah I think a lot of people just really do do it because they want that social group and they want to be able to participate in that. (Louis 20, Identity Based Maintainer)

makes it a lot easier. Lot more funner, because you've got like friends there to enjoy it with. Have a lot more fun. (Chris 17, Increaser)

Psychological wellbeing

I know that like if I am stressed or something, it's a way to forget everything. And then once you have done it you feel good and then you can kind of clear your mind and get on with things. (Karen 17, Identity Based Maintainer)

More so as my life has become more stressful. Like, you know, becoming an adult you've got certain responsibilities to do and study and that sort of thing. So if I get stressed then I exercise. (Mark 24, Increaser)

Emotional

Enjoyment
and Fun

I found last year in particular, with the school hockey, it got a lot more competitive, and like people weren't having as much fun. Which is the whole reason I play hockey. You know, just for fun and friends. (Kristy 17, Identity Based Maintainer)

Oh it's just enjoying yourself with your mates. Having a game, having a ball. Um, yeah, just having fun I think. Yeah, that's what I think fun is, just enjoying your mates and stuff. (Steven 18, Circumstance Based Maintainer)

Satisfaction

But like sometimes it (rafting) does get really scary. ... That's part of the challenge. And that's why I like the outdoors as well. (Kristy 17, Identity Based Maintainer)

I'd see what they were doing and I'd go no, I want to do that. And so just going with people who are a bit better than you is always good for you, because it means you get better without even knowing (Cathy 18, Identity Based Maintainer)

It was sort of bushwalking and having a challenge and sort of being able to complete it and get to the top or whatever. (Erin 17, Circumstance Based Maintainer)

And I have kept challenging myself. Like I started off with 3 kilo weights I think. And now I'm up to a 5. ... So still challenging along the way. (Alison 20, Increaser)

6.5 Meaning of physical activity

The meaning associated with an activity is an important influence on individual behaviour (188). Participants' discussions of the meaning of PA were linked with the context of their participation, their current life circumstances and broader contextual and social factors. As previously described in section 3.7.2, page 50, during focus groups participants were asked to select a word that encapsulated the meaning PA held for them. This was an interactive exercise used to promote discussion during focus groups, but emerged as a significant factor in understanding PA behaviours so was retained during interviews. Interview participants were asked to reflect on the meaning PA held for them. Those participants who had participated in focus groups (n = 16) were reminded of the word they had chosen to encapsulate the meaning of PA, asked if this still applied and then explored this further. Some participants chose a new word or added an additional word to that chosen during focus groups (n = 4). The interview participants who had not attended focus groups were shown the selection of words and asked to choose one or two or identify their own word that encapsulated the meaning PA held for them. The majority of participants chose more than one word. Table 6:6 summarises the words chosen by interview participants according to their PA category. The words social and friends were not selected by participants to represent the meaning PA had for them.

Table 6:6 Words chosen by interview participants during the interactive exercise about meaning according to pattern of participation

	Identity Based	Circumstacne Based	Increasesers	Decreaser/ Inactive	
Meaning	Maintainer	Maintainer			Total
Health	2	6	0	2	10
Lifestyle	2	2	0	2	6
Challenge	2	3	1	0	5
Fitness	1	1	0	2	4
Fun	0	1	1	2	4
Relaxation	0	2	1	0	3
Competition	3	0	0	0	3
Achievement	0	1	0	0	1
Body shape	1	0	0	0	1
Energy	0	1	0	0	1
Expected	0	0	1	0	1
Pain	0	0	1	0	1
Weight	0	1	0	0	1

Health was the most common meaning given to participation in PA ($n = 10$). It was more commonly selected by female participants ($n = 9$) than males ($n = 1$). However, health represented different things to individuals. For some individuals it was linked to disease and even mortality as David explained:

well that, I'd choose that (health), for the long run, definitely. ... your health, like you don't want to have like a really bad cardio or something like that, or really bad, just like yeah, you don't want your health to be, because if you just don't exercise, your whole lifetime, then later on it's pretty much a common fact that you are not going to live as long. (David 17)

For other individuals health was linked with fitness and these two concepts were interchangeable:

like um that's the thing that would be motivating me now to do PA. Like I know I should. Because I would like to be fitter and I know I need to do it for health. So

that's things that I want to do now.... Like that's where the motivation now would be fitness or health. (Libby 22)

For others health was a broad all-encompassing term that incorporated a range of concepts as Sally elaborated:

Well from a health perspective I think um I could relate a lot of things to that as well. Like energy, it boosts your energy levels and I find that. I notice that quite a bit as well. And also when you are, it makes it easier to sleep and just relax and chill out, ... But yeah, just health, try and eat well, and try and keep your body healthy, in shape. Not sort of like over the top fitness or anything like that. But just getting a good balance. Yeah, balance is a good word. And I guess health with the weight as well. Just kind of keep it down, keep in control of it, I think. And just making sure you are happy where you are. And I think when you are healthy; when you are fit you are sort of a lot more positive towards yourself and your body shape and just stuff like that. (Sally 24)

For others health was a more holistic concept incorporating concepts of self-esteem and self-worth as Erin described:

Health, probably. Just getting out into the sunlight and its good for like, good for your health wise but also for your state of mind I think ... but also just with how you feel about yourself. And how you can, how that affects like how you can approach things. I'll be wearing myself down in the next couple of weeks. (Erin 17)

Challenge and Lifestyle were the second most common meanings associated with PA. Generally speaking there was more consistency between participants when elaborating on what they meant by challenge. Essentially this involved testing and extending individual physical (and mental) capabilities through undertaking physical challenges and was considered a positive process. Successful completion of these challenges was also associated with a sense of achievement or satisfaction as Allan and Ellen explained:

I chose challenge ... a lot of the things I see as a personal challenge. If I get tired or fatigued, I usually take it as a personal challenge. And just push through it. Or if someone says I can't do something, I will usually try as much as I can, and take it

as a challenge until I can do it. (Allan 17)

well I think it's good when doing PA to challenge yourself. Not just do things in your comfort area. Um, you need to go out and do things that perhaps you are not used to and that you haven't done before. That way you kind of experience more, learn more and you enjoy yourself more as well. (Ellen 18)

Lifestyle was chosen by individuals to reflect a number of concepts. For those categorised as Identity Based Maintainers it represented the role PA currently played in their lives:

I chose lifestyle as well, because I am a pretty keen surfer and pretty much my whole lifestyle revolves around the weather. Because like on the weekends I'll plan what I'm doing around where the surf is going to be and where I'm going to go. And after school, the first thing I do is go and check the surf. Just because I don't know, I love doing it. (Cathy 18).

For those categorised as Circumstance Based Maintainers and Decreasers it represented the degree of commitment they considered necessary if they were to be involved in sport:

Lifestyle, PA is a part of your lifestyle. Especially if you want to be into sport, you can't just say you want to do a sport and not make it your life kind of thing. So you've got to work things around your life and that becomes your life and training and playing or rowing, and whatever you are doing. So yeah, I believe it's your lifestyle. Then for PA, I think it needs to be a big priority, in anyone's life. (Jack 19)

Alternatively, it represented the fact that their current lifestyle influenced their participation in PA (negatively):

And lifestyle is a big factor in that. I don't um, the amount of PA I do is quite largely dictated by my lifestyle. (Oscar 23)

Fitness was selected by four participants (categorised as Identity Based Maintainers, Circumstance Based Maintainers, Decreasers/Inactive) and as outlined above was commonly used interchangeably with health as Lisa and Penny's comments illustrated:

staying fit. Staying healthy. So like if I am not fit and stuff there is no way that I

can get my school work done. I'd just be sitting around and tired and all that sort of stuff. (Lisa 17)

I guess fitness has always been important. ... I did play hockey because I enjoy the competitive side of it, but I also played for fitness. ... fitness is definitely, definitely important. But I've never been, having said that, I'm not good at exercising for the sake of exercising. So I have to have that competitive kind of side to it to aid my kind of fitness goals. (Penny 24)

These four young people linked fitness with enabling them to do other daily activities as Lisa described above. For those categorised as Decreasers/Inactive they indicated that an inability to perform daily activities would be an indication that they needed to increase their PA levels.

that's where the motivation now would be fitness or health. ... I don't really, well probably don't notice it (lack of fitness) that much. I think if I did notice it more it would probably get on my nerves and I would do more (Libby, 22)

The one participant who selected energy was also referring to improved fitness and the increased energy he experienced as a result of participating in regular PA.

Four participants (categorised as Circumstance Based Maintainers, Increasesers or Decreasers/Inactive) selected fun as the meaning they associated with participation in PA. This links with the concept of enjoyment and when asked what it was about participating in PA that made it fun, all four participants talked about the pleasure of participating with their friends:

Fun. Oh it's just enjoying yourself with your mates. Having a game, having a ball. Um, yeah, just having fun I think. Yeah, that's what I think fun is, just enjoying your mates and stuff. (Steven 18)

Three participants selected relaxation for their meaning. This seemed to be connected to the idea that PA provided an opportunity to take time out from other responsibilities and expectations:

I suppose you are just in a different frame of mind. You go in there and you do the

weights, you forget about everyone else or try. And I suppose just letting your mind relax. (Alison 20)

Competition was another meaning associated with PA by three participants. All of these participants were categorised as Identity Based Maintainers. For these participants competition was not the only meaning they assigned to participation in PA, but was considered an important element of participation. Competition did not have to be related to team sports but could be less structured as Allan described:

It's a competitive streak, but it's not, it's very personalised, to what I want. It's not like, I mean if I got in the pool and someone egged me on to go into competitive and then said he was going to go into competitive and that he could beat me then I would probably go in. (Allan 17)

Achievement, body shape, energy, expected, pain and weight were all chosen by only one participant each.

6.6 Changing and multiple meaning

Four participants changed the meaning they gave to PA between the focus groups and their interviews and two interview participants who had not been involved in focus groups talked about how the meaning had changed since they were younger. The majority of participants (n = 17) gave multiple meanings to PA. Multiple meanings reflected the role contextual factors play in giving meaning to PA behaviours. Specifically, participants changed their meaning in response to changes in the type of PA they undertook and/or in response to changes in their life circumstances. For example, Erin (17) participated in a focus group during year 11, but was interviewed when she was approaching her final year 12 exams. She was obviously focused on her studies and experiencing a level of stress associated with preparing for her final exams and also decision making about her future. The following discussion illustrated how these changes in circumstances influenced the meaning Erin gave to PA:

I know why I said achievement. It was sort of bushwalking and having a challenge and sort of being able to complete it and get to the top or whatever. And I think that for me is also relevant within a group. ... yeah it's about sort of maybe doing

things as a group that I wouldn't do by myself. (Erin 17)

Yep. OK. And so would you still choose that word do you think? (Interviewer)

Um, I would. I don't know if it would be my first choice. I think relaxing is sort of what I'm craving at the moment maybe. (Erin 17)

And would you think, see your mountain biking and bushwalking as relaxing? (Interviewer)

Yeah. Especially bushwalking I think. Just being somewhere. Where there is nothing you have to do, is really nice. Yeah, I'm not sure. Sort of being just in pleasant company, where there is nothing being forced upon you, would also be really relaxing. (Erin 17)

Lisa (17) had moved towns to attend university since participating in the initial focus group. As a consequence of her move she had ceased her involvement in dancing after 15 years and was now attending a university gym. The meaning she assigned to PA had changed as a result of the change in PA:

I more or less chose that word (achievement) around dancing, cos achieving something from it. Like achieving either praise or a win like from the judge, they liked your group kind of thing. Um, but not really through the gym. (Lisa 17)

so how do you think you would describe what you do at the gym? (Interviewer)

I'd probably go "lifestyle" or "fitness" – so just to keep up general fitness and because it fits with what my life is at the moment kind of thing. (Lisa 17)

Two participants, David (17) and Libby (22) who had not participated in focus groups described how the meaning PA held for them had changed over the past few years:

see when I was younger the challenge was what it was but now like with sport, like the challenge is still good, but definitely relaxing. Because after it you feel better and you are relaxed. Even if it is competition or it's just social or something, you feel like you've done something, so it's better. (David 17)

Some participants associated different meanings with different types of PA. For example, Mel chose three words that she considered equally important when describing the

meaning of PA:

I would probably go lifestyle, fun and health. (Mel 16)

OK. And so is lifestyle the first one you would choose? (Interviewer)

Um, no. I kind of think they're all, all the same.... with tennis, like there really was a big you know, it really did kind of take over my life. And really I think, you know, when you play sport, you should really commit to it. Yes, I think that's why I chose lifestyle. ... so fun, that would be because of playing team sports, really and being with friends and the whole social side of things. And then health, that's probably because like that's why I've been doing exercise at the moment, because I've been feeling that... That's because like you know when I go jogging and things like that just to get some more exercise really. (Mel 16)

Attaching a single meaning to PA was challenging for many study participants and the majority attached more than one. Contextual factors, such as current life circumstances, as well as types of PA undertaken influence the meanings attached to participation.

6.7 Challenges in assigning meaning or benefits to physical activity

Assigning meaning and identifying the benefits associated with participation in PA was inherently challenging for participants. While the factors described in the previous section influenced PA behaviours, they cannot fully explain it. The discussion with Kristy (17) highlighted the complex relationship perceived between benefits and meaning and contextual factors and how these factors combined to influence her participation in PA:

Outdoor, gym, horse riding, all these things. Do you look at them all the same?

Like are they all, do they all sort of mean the same? (Interviewer)

No, I know what you mean. Um, horse riding has nothing to do with fitness for me. It's something I love doing and it's more social. Because my younger sister and I are horse crazy. Yeah, and we have just ridden all the time and it's something that we enjoy to do together. And I don't know, it's something we love doing. And as I've said many times I think by now, enjoyment for the sports and a bit of fitness involved there and fitness just for the gym. And outdoors, I love the

outdoors and it's peaceful, and exciting. So that's the why I like that. And it's not really a fitness thing.

Yeah, so something different out of all of those things. Which brings me back to when we did those focus groups and we had to choose those words, the word you chose at the time was Health. I don't know if you remember, I just wondered if you wanted to talk to me a little bit more about that. (Interviewer)

Yeah, oh I would probably say that mental health would be the most important. Because I do have a stressful life I guess. Everything. Like, lots of people at home and work and school. Because I have like a double course load. Like twice as much as most people do. So yeah it is good. It provides the break that I was telling you about and stress relief and good. Yeah, it's good. I like it.

And it sounds like you get, from what you were saying, you get a bit more of that stress release from the horse riding and being outdoors maybe? (Interviewer)

Yeah. Its cos it's so quiet and relaxing, and I love it. It's good.

Kristy assigned the word health to her participation in PA, emphasising how important it was to her for managing her “stressful life” (psychological benefits). She also discussed the fitness benefits associated with participation in PA and how being outdoors motivated her to be active. Despite this the words ‘health’, ‘fitness’ or ‘nature’/‘outdoors’ failed to capture the way in which she describes her passion for horse riding, the intense pleasure and enjoyment she gets from participating in this activity with her sister, the deep sense of connection and fulfilment she associates with horse riding and the outdoors and how integral this activity was in her life.

This sense of fulfilment, pleasure and deep personal connection was more commonly described by those categorised as Identity Based Maintainers , but the challenges inherent in assigning a meaning and benefits to PA was not restricted to them. Emily (Circumstance Based Maintainer) had selected health and challenge as the meaning of PA. She talked about health and fitness interchangeably when elaborating on the meaning of PA. She associated challenge with particular activities such as bushwalking and playing netball. However, the following exchange illustrated a different element to her participation that the words health, fitness or challenge failed to capture:

OK. So if I was going to ask you sort of what role PA, - and PA is more than just sport, it can be walking, you know, anything that you do – is playing in your life at the moment. What would you say? (Interviewer)

Um, I'd say it sort of slips in and out. For example I use it as a good tool for when I'm feeling a little bit over it. Like for example the other day, I've been applying for jobs and I'd had a couple of setbacks in a row. And I was like "that's it. I'm going for a walk." You know, it's sort of my – but it's not necessarily routine at the moment. So it plays a role of me being able to just get out of my head and get out and appreciate. You know, being able to see a bigger picture of looking around and getting out and getting some fresh air. Um, it's got a social element I guess, with my netball. Um, I get to catch up with my friends. Um, and I also socialise, my Mum and I will go walking together. I've got a dog and I take him for a walk as well. So it plays a couple of roles there around um, sort of catching up. It's a good time to have a chat with someone if you can go for a walk.

Emily's discussion of walking and selection of health and challenge as meaning of PA differ significantly from the Kristy's, but the words health, fitness or challenge also failed to capture an essential element associated with her participation in PA. Consideration of the benefits and meaning associated with their participation in PA in combination with contextual factors assisted in identifying the value these young people placed on their participation in PA.

6.8 Value of physical activity

While identifying and describing the benefits associated with PA as well as assigning a meaning or meanings to their participation assisted in understanding participants' PA behaviours it was apparent that consideration of these two factors alone failed to capture an essential element of their participation. On further reflection and analysis and after reviewing cases such as Kristy's and Emily's, as well as examining the changing and multiple meanings associated with participation, the concept of value appeared significant in understanding participants' PA behaviours. Value is the degree of importance or worth associated with an activity and is informed by elements such as benefits and meaning. While value may appear to be indistinguishable from benefits and

meaning it is possible to perceive an activity as beneficial and even assign it a meaning without necessarily valuing the activity. This is illustrated by those classified as Decreasers/Inactive who acknowledged the health and fitness benefits of participation and were able to assign a meaning to PA, but for who placed no current value on participation in PA. If value is defined as *'the way in which actions become meaningful to the actor by being incorporated in some larger, social totality'* (314 pxii) then individual circumstances and broader social and cultural factors will influence the worth or value attached to an activity. Participants were generally not explicit about the value they placed on participation, but consideration of interview data, particularly those sections where participants spoke about the benefits of PA, meanings, current role PA played in their life and their involvement in PA from childhood revealed that participants valued their participation in PA for four key reasons. These were:

- Relationships – participation in PA was valued for its ability to strengthen existing relationships or facilitate the development of new relationships.
- Health/fitness – participation was valued because of the impact it had on their fitness and energy levels. Health (physical) was a holistic, non-biomedical concept that incorporated, but was not limited to weight management and prevention of disease.
- Time out – participation was valued because it provided a break from other responsibilities and expectations. This commonly, but not exclusively involved connecting with the natural world. This was generally associated with, but not restricted to, managing stress.
- Challenge – participation in PA provided an opportunity to test and extend physical (and mental) limits. Success was accompanied by a sense of achievement and satisfaction. This was associated with all types of PA, not just lifestyle activities.

Individuals commonly valued their participation for more than one reason. The value placed on participation changed according to life circumstances and the type of PA undertaken. Participation was most commonly valued for its ability to facilitate and strengthen relationships (see Table 6:7). This was true across all PA categories assigned in Chapter 5. Participation in PA was valued for the challenge and time out it provided by

those in both subgroups of Maintainers and Increasers. Participation was valued for its health and fitness benefits more commonly by those categorised as Circumstance Based Maintainers and Decreasers. There was no discernible pattern with respect to sex, age or SES category.

Table 6:7 Number of participants and the value associated with participation in physical activity by physical activity category

Value	PA Category				Total (F/M)
	Identity	Circumstances		Decreasers/	
	Based	Based		Inactive	
	Maintainers (n = 7)	Maintainers (n = 10)	Increasers (n = 4)	(n = 3)	
Relationships	6	7	3	2	18 (12/6)
Health/Fitness	2	7	0	3	12 (8/4)
Time Out	5	4	3	0	12 (7/5)
Challenge	5	5	2	0	12 (8/4)

Abbreviations F = females, M = male

6.8.1 Relationships

Despite none of the participants choosing social or friends as the meaning PA had for them many interviewees (n = 18) valued their participation in PA for the way it facilitated and strengthened relationships. PA enabled participants to spend time with family and friends on a regular basis as illustrated by Kristy's discussion about horse riding in section 6.7, page 175 above. Sally valued her weekly netball game for the way it enabled her to keep in touch with friends now that they were working:

it's because I guess when you start full time work, you don't always get the chance to catch up with your mates like you do at uni? So we were playing together, so we got quite close. We thought oh we'll just keep doing it. (Sally 24)

The four interviewees who chose the word fun as the meaning of PA all associated this with participating in PA with friends, as Chris described:

just good to do something with your friends. Just a bonding experience. (Chris 17)

Louis described how any important discussions with friends occurred while being active together when compared to meeting at a coffee shop:

I know that in my group, we would probably go and kick the soccer ball than just talk or something like that. (Louis 20)

Some young people acknowledged that being active had enabled them to make new friends and broaden their social network:

you get the benefits of more friends and different kinds of friends from school friends and socialising and stuff like that. (Jack 19)

For others, friends were essential for encouraging their participation in an activity:

I might not have pursued it um, at such a young age if, if I didn't have friends doing it. (Erin 17)

The majority of interview participants prioritised their relationships with family and friends when asked about priorities in their lives currently (see section 8.3.2, page 228 for full analysis). Participation in PA, either structured team sports or less structured activities was considered one way of facilitating regular contact with friends or developing new friends. It must be noted that this is not the equivalent of individuals indicating that they prefer to participate in group based PA programs.

6.8.2 Health and fitness

In the interactive meaning exercise health was the most commonly selected meaning. Fitness was the most common benefit associated with PA discussed by interview participants. All participants discussed the fitness benefits associated with participating in regular PA. For some participants health and fitness were highly valued. For example, Craig, who reported being obese during early adolescence and losing weight through regular exercise and modifications to his diet valued PA for its health and fitness benefits. Particularly in relation to his body shape and weight maintenance, but also for how it impacted on other aspects of his life as he outlined:

it's a good thing going through your life and you want to be comfortable in your own body. And that sort of boosts your confidence. Being happy in your own body

I think it's a big thing for everybody and it's very significant. (Craig 17)

Janet, who played team sports and attended the gym regularly, also valued her participation in PA for the way it enhanced her health and fitness:

I do it sort of for my fitness and I guess appearance, and losing weight. And also healthy, exercise I guess makes you have a healthy outlook on life. You have more energy to do stuff and you are able to do more things.... I think it's fairly important to keep yourself healthy. And I think because my family is fairly sport orientated, it's just sort of what I've known I guess and some people, like my friends and that, who don't do any PA, I'm "oh how could they?" I would feel, oh not just, maybe yeah lazy, if I didn't do anything. Or wanting to get out there and do something. So it's fairly important to me. (Janet 20)

As previously described, relying on the meaning and benefits associated with participation in PA was inadequate for understanding the value these young people placed on their participation. Despite acknowledging the health and fitness benefits of PA and choosing health during the interactive meaning exercise Kristy was explicit about the fact that this was not why she was involved in horse riding:

horse riding has nothing to do with fitness for me. It's something I love doing. (Kristy 17)

Not all participants were explicit about the value they placed on participation in PA. For example, David talked about the importance of participation in PA for health, even choosing health during the meaning exercise and discussing mortality. However, reviewing interview data it was also apparent that he valued his participation for the social relationships it fostered and because it provided him with time out:

6.8.3 Time out

Some participants valued their participation in PA because it provided them with a break from other responsibilities and expectations and provided them with space in which to just be. Erin described this sense of escape from expectations through being active in the natural world:

Especially bushwalking I think. Just being somewhere. Where there is nothing you

have to do ... nothing being forced upon you, would also be really relaxing. (Erin 17)

Not all participants linked this sense of escape with participation in the natural world. Alison found doing a weights class could also provide this break from responsibilities:

You go in there and you do the weights, you forget about everyone else or try. And I suppose just letting your mind relax. (Alison 20)

Louis experienced time out while playing team sports:

you feel as though ... some other things probably don't matter as much. You know, you are doing something which is quite simple and quite, I mean a lot of those other kind of social things, don't matter as much when you are out there. It's just kick the ball or whatever and everyone wants to achieve that single goal. (Louis 20)

Some participants articulated the importance of PA for their mental health or stress relief as Kristy describes:

oh I would probably say that mental health would be the most important. Because I do have a stressful life I guess. Everything. Like, lots of people at home and work and school. Because I have like a double course load. Like twice as much as most people do. So yeah it is good. It provides the break that I was telling you about and stress relief and good. Yeah, it's good. I like it. (Kristy 17)

This sense of escape or time out was not restricted to those who were active on an individual basis. Interviewees described this sense of escape while participating in team sports as well as when participating in group activities such as gym classes.

6.8.4 Challenge

Some interviewees valued the way in which participation in PA provided an opportunity to challenge themselves both physically and mentally, as Allan appreciated:

I like the edge, I like pushing the boundaries ... I push the boundaries. It's just me and competitive. I like pushing boundaries to see how far I can go. It's a personal challenge. (Allan 17)

Ellen found that being involved in different types of PA provided an opportunity to extend herself:

I think it's good when doing PA to challenge yourself. Not just do things in your comfort area. ... do things that perhaps you are not used to and that you haven't done before. That way you kind of experience more, learn more and you enjoy yourself more as well. (Ellen 18)

Challenges provided an opportunity to demonstrate competency in an activity with immediate feedback. The subsequent sense of satisfaction or achievement was independent of the assessment of other people. Compared to either the work or study environment, where achievement may depend on the assessment of others, this element was an important outcome of their participation in PA. Seeking and valuing PA for the challenge it provided was not dependent upon reporting a high level of childhood competency or particular types of activity. It also provided an opportunity to develop new skills. For example, Steven (18) talked throughout his interview about the team sports he played and chose the word fun as his meaning, but only started talking with a sense of pride and satisfaction when he started discussing his recent introduction to weights training. This was linked with a sense of competency and meeting goals that he had set himself as the following discussion illustrated:

I feel more better in the weights room than in sports. I think I'm better in the weights room. Like lifting heavy weights and stuff, than I am good at playing sports. Two different things they are.... I've got a goal for the end of the year. (Steven 18)

Have you? What's that? (Interviewer)

It's to lift 150 kilos on the bench press. (Steven 18)

Right. How much can you lift now? (Interviewer)

115. (Steven 18)

OK. So it's a realistic goal? (Interviewer)

Yep. I'll get it. (Steven 18)

Yep. What are you going to do when you do that? (Interviewer)

Probably set another goal. (Steven 18)

Yeah. Will you celebrate? (Interviewer)

Oh if I can lift 150 kilos at the end of the year, I will. It will be pretty big. (Steven 18)

Cathy, who surfed regularly, considered surfing an activity that provided her with physical challenges and unlimited potential for improvement and creativity:

And then when you do catch a wave you get to do whatever you want to it. It's just sort of like an express...expressing. And there's no limit to it. ... like you can always get better at surfing. There's always no inventive things you can do. There's just no limits. (Cathy 18)

Despite the physical challenges associated with surfing Cathy found surfing relaxing and pleasurable and meeting these challenges provided a sense of great satisfaction. Physical challenges were also appreciated by those who played team sports as Janet described:

I reckon if I wasn't achieving anything, I wasn't getting anything out of it, I'd probably lose interest in it, I think. Because even like as a team, as you see yourselves improve and work better together. It makes you want to work harder and get better. But if you don't have anything to strive for then it's all a bit ...you wouldn't. (Janet 20)

Not all participants were able to reflect on the reason why they valued their participation in PA, focusing discussions on the perceived benefits or how they participated. However, it was generally possible to discern the value they associated with their participation. Those participants who were currently inactive did not appear to value participation in PA at all except with respect to future health benefits that appeared irrelevant to their current lives:

that's the thing that would be motivating me now to do PA. Like I know I should. Because I would like to be fitter and I know I need to do it for health. ... Like that's where the motivation now would be fitness or health. (Libby 22)

In their interviews two young men, Mark (24) and Craig (17) revealed how the benefits, meaning and value they placed on participation in PA had changed over time. These two young men had commenced weights training in mid-late adolescence in order to build

muscle bulk as Craig described:

I was quite a scrawny little kid. At year 10 I decided to put on a bit of weight, a bit of muscle would be nice. So I just had the motivation to go and it's a good social environment there anyway. (Craig 17)

While building muscle bulk had been the primary motivation for commencing regular weights sessions their continued participation in PA (gym sessions and running) was no longer driven by a desire to develop muscle bulk. When asked about his twice weekly gym sessions Mark explained that he considered these essential for managing the stress in his life:

Probably mainly it's a stress reduction thing. Just helps with managing my stress and sleep better at night, and then all the health benefits and stuff just come as a by-product. That's how I see it. It's functional. Like it's not, I'm not there to get actual big muscles. If that happens then great, but that's not my goal. (Mark 24)

While not equating his gym sessions directly to stress relief Craig indicated that these gym sessions were now a central part of his life:

Because it's become part of my lifestyle. Like I kind of feel lost if I haven't exercised for a while. It sort of fills me and its part of me now. (Craig 17)

The change from a focus on more extrinsic long term benefits as described by Craig and Mark to an activity valued for more intrinsic benefits may be critical in the maintenance of PA over the life course. Whether or not this process is facilitated by meeting ones initial goal(s) was unclear from these interviews.

6.9 Congruence between meanings and value and physical activity behaviours

Given that interviews revealed discrepancies between meaning, benefits and value associated with PA behaviours the concept of congruence was explored to determine if this was important for understanding PA behaviours. In other words was the meaning, benefits and value placed on participation reflected in their participation in physical activity?

Congruence was determined by examining the meanings individuals associated with PA, the benefits they discussed, the role it appeared to play in their lives and consideration of the types of PA undertaken. For example, Allan chose challenge and competition as the meaning he associated with PA. He described really enjoying “*pushing the boundaries*” with the PA he participated in. After a childhood of participating in organised sports he was now involved in rock climbing, rafting and kayaking. He discussed how being active helped him concentrate, relax and “*feel refreshed*” to focus on other activities such as academic studies. He was now employed during school holidays and on weekends as an adventure guide and was planning to pursue this further on completing school. While obviously valuing this type of PA for the employment opportunities it provided, Allan also valued it for the challenge and relationships it fostered. Allan’s discussions revealed a consistency and congruence between the type of PA he participated in and the value he placed on his participation.

It could be said that those who were categorised as PA Decreases/Inactive also presented a congruent picture of participation. Melissa, Libby and Oscar all selected fitness along with a combination of health, lifestyle and fun to describe the meaning PA held for them. With the exception of fitness and health they were referring to PA experiences from their past where participating with friends had been fun or the commitment involved had been significant. Fitness and health was valued in a vague and distant fashion that was largely irrelevant to them at the present as Mel reflected:

I think as long as I’m healthy, I don’t really find it that important really. (Mel 16)

Lack of congruence occurred when there were changes to life circumstances and/or changes in PA. For the five participants who reported significant levels of occupational PA on the IPAQ (Alison, David, Jack, Richard, Steven) this form of PA was inconsistent with the value they placed on participation in PA (relationships, health/fitness, challenge, time out). Occupational PA held no intrinsic value for them and was thus largely meaningless. While there was some acknowledgement of the health and fitness benefits this was substantially different from how they viewed and valued their LTPA. Jack had stopped rowing when he started his manual labouring job three months prior to his interview, but was looking forward to returning to basketball in the week following his interview.

Strongly valuing PA for its ability to foster relationships Jack's plans for future PA included a desire to continue to participate in team sport, possibly with future work colleagues from the police force that he was planning to join in the new year:

I'd love to, even with just a couple of blokes from say the police or something. I know a couple of blokes they go and have a game of whatever, probably basketball. (Jack 19)

The lack of value associated with their occupational PA for Alison, David, Jack, Richard and Steven contrasts with the experience of Allan. Allan was working as an adventure guide (rafting) during the school holidays and planning to pursue this as a career. This work was physically demanding and challenging as he described:

in the holidays I work for an adventure company – Z – again I'm a raft guide. So a lot of – it's a lot of physical demand, both mentally and physically I have to have a very high concentration peak and I can't let that drop for about six hours solid. And then I have to be able to physically cope, demand – while – do both. (Allan 17)

Despite the physical demands and responsibility associated with his work Allan found pleasure and a sense of enjoyment in his work as he outlined:

Basically, it's the thing I want to do and really I don't see it as work. I see it as more of a holiday. It's basically I'm having a holiday and I'm getting paid for having a holiday. (Allan 17)

As described above Allan particularly valued his participation in PA for the physical challenge it provided. His occupational PA was coherent with this and in this case the boundaries between occupational and LTPA are blurred. Allan recognises this but does differentiate between how he approaches rafting for work and the rafting he does during his leisure time:

like there's a work perspective, my priority the entire trip is the clients' safety and their fun. And that I am there to ensure that they have the maximum fun while the highest safety standards possible are kept. ... in my personal time, the main goal is my fun. So you've got a totally different outlook. Or, just not totally different. But you are in a different state of view, and things like that. (Allan 17)

In general, study participants also placed very little value on the PA they undertook for transport (see Chapter 7, section 7.3.5, page 216 for further analysis). This form of PA failed to incorporate any of the key values associated with participation. If active transport was valued at all it was because it was convenient and saved money as Tracy, who had recently bought a house described:

So that's why I've been trying to walk to work and back again, to get the exercise in those sorts of ways that are cost free. (saving for a house). (Tracy 23)

Tracy did value her walk to and from work as it provided her with some time out as she described in this excerpt:

It's actually quite enjoyable as well because it's a chance to debrief mentally and physically before you get home. You don't have to dump on anyone and go "oh crap this happened today". You can kind of work through it on the way home. (Tracy 23)

However, in this study Tracy was the exception in valuing active transport in this way. Other participants valued their leisure time walking for its ability to provide time out, but not the walking they undertook for transport.

Fitness was the most commonly described benefit and some participants, particularly those categorised as Circumstance Based Maintainers and Decreasers/Inactive valued their participation in LTPA for the health and fitness benefits it provided. Janet chose health to describe the meaning PA had for her and made frequent references throughout her interview to the health and fitness benefits of participation in PA. During a recent trip to the USA she had noticed differences between the two countries as she described:

when I was travelling and we were in America you could see a big difference. Like obviously it seemed like they weren't as conscious. Like there's so many take away foods there and so many, I guess it's a bit stereotypical, but like bigger people over there. And we were discussing it, whether it's not such a big thing in the media there or the government is not pushing healthy living and exercise. And it was just interesting to see the two different countries and what's been going on. (Janet 20)

Janet participated in A grade netball as well as attending the gym regularly. For her there

was a sense of congruence between the benefits, meanings, value and type of PA she participated in.

Karen (17) was currently undergoing a significant transition in her PA participation and as a consequence presented a less coherent picture. Karen had swum as a member of a swimming training squad since the age of eight and at the time of participating in the focus groups was only attending training irregularly. At the time of being interviewed she had stopped squad training. She described how she now valued her participation in PA differently as a result of this change:

I guess when I was younger doing the swimming; it was probably more the I don't know, the social side, the enjoyment of it. ... Since I left, probably, probably I said health last year because I think I had stopped competitive swimming by then and it's more changed from being social to being health. Like I don't train anymore, but I still have to do it to stay healthy. (Karen 17)

Once an activity valued for the relationships it facilitated Karen now swam in order to maintain her health and fitness. Karen talks about how regular PA makes her 'feel good' and that she needs to undertake daily PA because:

I always think that to complete a day I have to do something physically. (Karen 17)

While valuing regular participation in PA for its health and fitness benefits Karen placed a greater value on the relational aspects and the time out it provided from daily stressors. While continuing to participate in regular PA Karen was obviously missing the social and relational elements that she had valued highly during her squad training days:

Like if I still was swimming at the club it would still be the social thing, but as I'm not at the club anymore it's not for the social. ... I don't swim anymore. ... I go for a run probably twice a week when I get time to. And sometimes before I work, because I get there earlier. I go for a swim probably only half an hour before. And then just the basic stuff. Like I walk my dog every morning on the beach. ... And then on the weekends, because we live near a beach, me and my sister like go surfing probably twice every weekend. And then kayaking and windsurfing and stuff.

Karen was in a state of transition with respect to PA participation and was openly disappointed and frustrated by her inability to find an activity that included the social elements that she had previously valued so highly. Karen was the only participant categorised as an Identity Based Maintainer who described a less coherent picture of participation.

In contrast to Karen, Lisa had ceased attending dance classes a few months prior to her interview as she had moved towns to attend University. She had danced since the age of three and had obviously loved her involvement and during the focus groups had chosen the word achievement to describe the meaning dancing held for her. During the interviews she described her dancing as something:

I just love the, I don't know, entertainment factor of people and competing. I'm not really a competitive person. But you know when you do win against another dance school it feels good, kind of.

As a result of her move Lisa had commenced attending the University gym three times per week. Lisa did not talk about her gym attendance in the same way that she talked about dancing. Going to the gym was something that she didn't really look forward to, it was something she did early in the morning so that it was “out of the way kind of thing”, but she now felt “I don't really have a choice”. Compared to dancing she found that:

going to the gym, you kind of have to motivate yourself. But going to dancing, you know, the motivation is there because you want to do it kind of thing. It doesn't feel like exercise. (Lisa 17)

Despite the obvious discrepancy between dancing and gym attendance, Lisa did feel “bad” if she didn't do any PA and attending the gym made her feel:

I just feel better about myself, like physically and mentally. I'm just like “wooh, been to the gym today. Done my exercise”. (Lisa 17)

With the change in PA the meaning Lisa gave to PA had changed from achievement to fitness and lifestyle. Lisa selected Lifestyle because gym attendance was flexible enough to accommodate her current lifestyle. There was a distinct difference in the way in which Lisa talked about her dancing and gym attendance. Dancing was a pleasurable activity

undertaken with good friends with the additional pleasure associated with performing at eisteddfods and concerts. Her discussions of the gym did not reflect any real sense of pleasure or enjoyment, more a sense of obligation or expectation and the resulting satisfaction that she had completed a necessary and virtuous activity. However, Lisa was also studying Health and Physical Education, including food studies at University. Attending the gym, the new meaning of fitness and the benefits she associates with her participation in conjunction with her studies did create a new coherent picture of PA participation:

staying fit. Staying healthy. So like if I am not fit and stuff there is no way that I can get my school work done. I'd just be sitting around and tired and all that sort of stuff. (Lisa 17)

Data analysis revealed that it was possible for those who were experiencing transitions in life circumstances or PA to develop a new, coherent pattern of participation. Those participants categorised as Circumstances Based Maintainers and as Increasers were less likely to describe a congruent picture of participation, meaning and value than those categorised as Identity Based Maintainers or Decreasers. The ability to establish or re-establish congruence between meaning, benefits, value and type of activity undertaken might be particularly important for maintenance of PA behaviours during transitional life stages.

6.10 Unintended consequence of associating physical activity with health and fitness

Nine of the interview participants (females = 7) discussed their PA participation using terms such as “*should*” and described how they felt “*guilty*” if they failed to do some regular PA. All of those categorised as Decreasers and half of the Increasers and Circumstance Based Maintainers discussed their participation in this way. All of these participants chose the words health or fitness/ energy as the meaning of PA with the exception of Tracy, who chose *expected* as her word. It also appeared that those from lower SES areas were less likely to use terms such as “*should*” and “*guilt*” with respect to participating in PA. In addition, two of those categorised as Identity Based Maintainers (Karen and Penny) used the word “*should*” with respect to participation, but only during

discussions of PA of higher intensity. Penny felt that she if she was going to exercise that she “should” do something of higher intensity than walking. Karen used the word “should” during her discussions of PA and this was in relation to running and not any of other activities that she participated in such as surfing, horse-riding or walking.

The expectation to be physically active and the feeling that individuals ‘should’ be doing more and the subsequent guilt they experienced when they did not meet theirs and others’ expectations was illustrated in this discussion with Ellen:

I guess it's become more so because I think I should do more, more regular. But yeah, I think I would say so. It sort of, it's a big priority, but it's not that big.... where do you get that sense that you “should” do more? (Interviewer)

I don't know. Like my Mum keeps telling me, come for a walk and you should do more activity. I guess popular culture as well. It's kind of you know, part of it. Kind of think we should do this, should be an idealistic, whatever. ... You kind of feel not disappointed, but like I guess disappointed in yourself. Um, yeah, because it's like you should do this and you kind of feel guilty as well. Definitely, so there's some guilt. (Ellen 18)

Other participants described their participation in the same way:

It was kind of like I worked it into my routine. So it wasn't such an obligation for me to have to do this or do that. It's just part of everyday life. But now that I'm sort of you know not doing it so much now ... It's always on your mind, that oh I should go and do this or I should go and do that. ... You just kind of feel like you should be doing it when you're not. ... You know you should be doing this because it's good for you, makes you feel better and it's a lot easier to control your weight that way. (Sally 24)

Another unintended consequence of focusing on a particular outcome associated with participation, such as weight loss can be that when individuals fail to achieve their weight loss goal they cease participating in PA despite the myriad of other benefits. This was the case for Emily (24) as she described:

we (sister and friend) all sort of thought let's join and we'll all do that together. ... at the end of that year ... we all went up the coast of Australia driving and went to music festivals and up in Queensland and that. So we were like "yeah let's get into shape and all look great for that". But I found the gym, didn't really, oh great for our fitness, pretty much guaranteed. But it didn't motivate me. I just didn't really get the results I don't think.

So what results were you hoping to get? (Interviewer)

I think I was probably hoping for weight loss. And I don't know. Yeah. Fitness I guess. I would have got the fitness, because I was upping the ante. Like I was getting faster and running further on the treadmill and being able to do all that. But it's kind of hard because at that stage I don't think I was, I might have been playing a little bit of netball, but I probably wasn't able to see how that was effective in the rest of my life, that fitness thing. And I don't think being gym fit really, I would like to see my fitness spread into other areas I guess, if you were playing other sports and bushwalking and that sort of thing.

So you didn't really think it translated across to... (Interviewer)

Yeah, so I would have been fit because I was there every day for an hour and a half. We were like really working hard at it. But I guess I just ate more and then, I don't know. My body just likes to be as it is maybe.... and I actually noticed, that's one of the reasons why I ended up stopping at the gym, because I spent all year at the gym and then I had two months at the farm and I sort of lost five or six kilos in the two months. Whereas I'd lost nothing during that gym time. And I thought – well. I have actually, I always feel healthy after a summer at the farm.

In contrast, Emily chose health as the meaning she associated with PA during interviews because:

PA and health sort of go hand in hand as far as: if you want good health, PA is a necessity to kind of be there. Um, and that's probably something that drives me because I like the idea of being healthy. (Emily 24)

It was apparent that she valued her participation in PA for other reasons, particularly the

physical challenge she associated with participation in team sports and bushwalking and time out as she described:

it (walking) plays a role of me being able to just get out of my head and get out and appreciate. You know, being able to see a bigger picture of looking around and getting out and getting some fresh air.

These values were not reflected in her experience of attending the gym and ultimately her gym attendance ceased.

6.11 Negative physical activity experiences

As well as describing the benefits and positive aspects of participating in PA some participants described negative elements associated with their participation. Generally, these negative associations were made in relation to specific types of activity or expectations about participation as illustrated by the following comments by Janet and Richard:

I did play soccer just socially last year. And I'm not playing again this year, maybe because I didn't enjoy it and maybe I wasn't as good at it. (Janet 20)

I didn't like it (gym) very much. No, it was, everybody was looking at you when you are on those machine things. And you've got to share everything, you got to wipe everything down and yeah, just felt out of place. (Richard 22)

For other young people their negative experiences were associated with the expectations in relation to training and competing as Cathy and Mel described:

I just got sick of them (sports), I suppose. Like water polo was, if you are going to play for the State you've got to train, they want you to train every morning and every night. (Cathy 18)

I think um that I don't really miss the atmosphere of playing club and everyone pushing you to be good. (Mel 16)

The physical effort associated with the activity was a negative experience for some participants such as Oscar and Craig:

usually get quite tired when I do exert myself. (Oscar 23)

I think running leaves me feeling depleted. (Craig 17)

Interestingly the word pain was chosen by Mark (24) to reflect the meaning PA held for him. Mark attended the gym twice per week for 90 minute weights training sessions and was describing the ‘delayed onset muscle soreness’ common after particular types of exercise. Two other males who attended the gym to do weights regularly also discussed this. While pain is generally part of the body’s protective system and a negative emotion these males considered this pain a positive sign of adequate effort associated with participating in PA:

you know you’ve done something if you feel pain the next day. If you’re not feeling pain then I don’t know, it just feels like you haven’t done enough and you’ve just wasted your time. (Mark 24)

This positive description of delayed onset muscle soreness is quite distinct from the pain associated with injury or the musculoskeletal problems experienced by Penny:

I’ve got pretty much chronic pain I guess. It’s pain on a day to day basis. It doesn’t ever let up. ... but I’ve always kind of got over it and played sport anyway and kind of got past it I’ve never let it limit me before, but this time it is impacting on how much sport I do. (Penny 24)

Similarly two young females (Cathy and Kristy) talked about times when they had been scared or fearful during surfing and rafting respectively. While these are also generally considered negative and protective emotions their ability to meet these challenges and continue with the activity enhanced their sense of satisfaction. It was considered necessary for developing their skills

When you go out and it’s (surf) really big, you get very scared. I’ve been scared before... I don’t know, because you can get hurt. That’s I suppose when you are by yourself. ... But if I was with a group of people and they all went out, I would go “no I can’t just sit here, they’re going to think I’m really like a wuss”, so I go out. (Cathy 18)

it’s like when you are rafting and stuff, there’s like nothing and you have to paddle

and stuff and it's all peaceful and you can relax and you can just laze around. And then the rapids come and little waterfalls and stuff like that. And you go all excited and you are all pumped up and everyone's happy and stuff. ... But like sometimes it does get really scary. Not necessarily just the rafting side, but in other parts it gets scary but that's all part of it. That's part of the challenge. And that's why I like the outdoors as well. (Kristy 17)

A few participants described negative childhood experiences. Richard (22) lived in a rural area and during primary school participated in school sport that involved travelling to town and playing against other schools from urban settings. This was not always a positive experience as he described:

Whereas when we were at school we had to organise to get everyone on the bus and go down to Hobart (to play sport). And then by the time you got there it wasn't very nice, because the people in town used to tease country kids. (Richard 22)

OK. So not the most positive experiences? (Interviewer)

No. "Get on your tractor and piss off back to the country" we got quite a bit. (Richard 22)

Richard felt that this experience had not impacted on his sports participation during childhood. This could have been because the experience was shared with other children from the same school and they had the support of the teachers. This experience contrasted with his experience when he tried out for club football:

Yeah like when I tried to do football and that sort of stuff, yeah they just said I was crap. So you just give up. (Richard 22)

The experiences outlined in this section illustrate that participation in PA was not positive for all participants. However, none of the participants indicated that they had ceased their involvement in PA because of negative associations with their participation (including those who had decreased their PA participation). Some participants had altered the types of activity they were involved in as a consequence of negative associations, but this was not a universal response. Some negative emotions such as pain

and fear appeared to enhance the experience and subsequent sense of achievement and satisfaction associated with the activity.

6.12 Summary perceptions, beliefs, meaning, value

Exploring the perceptions, beliefs, meanings and value they placed on their PA behaviours contributed substantially to understanding young people's PA behaviours. When asked about PA all study participants talked about high intensity PA and the cardiorespiratory (aerobic fitness) benefits associated with participation in PA of this intensity. Irrespective of whether or not they reported walking during their leisure time these young people considered moderate intensity PA such as walking to be of insufficient intensity to achieve any fitness (or health) benefits. However, study participants also reported experiencing a number of other benefits from their participation in PA beyond that of health and fitness. These included improved sleep and concentration, relaxation or stress management, mood enhancement, social, enjoyment and satisfaction.

When asked about the meaning PA had for them health was the most common response. However, health was a diverse concept ranging from prevention of disease and mortality to positive self-esteem and self-confidence. Lifestyle, challenge, fitness and fun were other meanings associated with PA. It was common for participants to choose multiple meanings or change the meaning PA had for them in response to changes in the PA they engaged in or in response to changes in their life circumstances.

These young people valued their participation in PA for four key reasons; relationships, health/fitness, time out and challenge. PA was commonly valued for more than one reason with those classified as Maintainers more likely to value their participation for a variety of reasons. Valuing participation for its health and fitness benefits appeared least important for Identity Based Maintainers whose participation was linked with their sense of identity. The Decreasers in this study valued their participation for extrinsic factors such as health/fitness or relationships only. The long term nature of health and fitness outcomes and the dynamic nature of relationships mean that valuing PA for these reasons alone may be insufficient to ensure long term maintenance of PA. It appeared that valuing participation for intrinsic factors such as the personal challenge or time out

in combination with social and health/fitness contributed to the maintenance of the behaviour as evidenced by those categorised as Maintainers or Increasers. Some participants described a more coherent pattern between their perceptions, the value they placed on participation and current life circumstances and their reported participation in PA, while others appeared to be seeking to establish this sense of coherence. Some forms of PA, such as active transport or occupational PA were not valued.

Chapter 7 Results

Sociocultural and environmental context for physical activity

7.1 Introduction

In this chapter the sociocultural and environmental factors that influenced participation in PA for study participants will be presented. This chapter addresses the research questions ‘What factors do young adults’ report to influence their willingness and capacity to maintain and prioritise PA participation during the transition period from dependent adolescent to independent young adult?’, ‘How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into independent environment of further study or work?’ and contributes to our understanding of how young adults make decisions about PA participation. Analysis of the CDAH data in Stage One of this study identified a number of childhood sociocultural factors such as parental PA, siblings and playing sport outside the school environment as significant influences on participation during this transitional life stage. The way in which these factors influenced participation PA were explored during interviews and the findings presented here. As well as the influence of family and friends this chapter examines the role of community settings such as high schools and colleges, sports clubs, workplaces, geographical location and the media on PA behaviours. As family and friends and community and environmental influences were also discussed during focus groups, where applicable, relevant focus group data will be presented along with data from interviews.

Analysis included consideration of PA category described in Chapter 5, demographic and structural factors such as sex, age and SES as well as measures of PA. These factors will only be presented and discussed in this chapter where applicable. All quotes will be presented using participant pseudonyms and age for interview participants and focus group number, sex and age for focus group data.

7.2 Social factors

7.2.1 Family

All interview participants were asked about the influence of family on their participation in PA. Family members included parents, siblings, grandparents and cousins. Participants responded to these questions in a variety of ways showing that family could be supportive and encouraging without actually participating in PA themselves (emotional and appraisal support). Others discussed family support with respect to transport or coaching sports teams (instrumental support). Some participants talked about the positive role modelling of parents and siblings and how this encouraged their own participation. Interviewees categorised in both subgroups of Maintainers talked about family support and involvement in PA in similar ways. The support was not always provided by parents and could be that of siblings or the extended family. The comments about family below illustrate the range of support provided to those categorised as Maintainers:

Mum plays. She's another kind of inspiration as someone, if I can manage to still play sport as long as Mum it's insane. Because I don't know many people her age who are still playing the amount of sport that she does. She plays hockey and soccer, both competitively. And also, so she trains for that as well. And then she also goes to the gym and sometimes swims and goes for walks all the time. It's ridiculous. (Louis 20)

my Mum works 24/7 and if she's not working she reads, but she always encouraged me to play football. Like she came and she watched some games and stuff like that. ... but Nan was always the one that took me and (cousin) to football and stuff like that. (David 17)

My Dad was my netball coach for quite a while. ... My Mum played netball with me in the social roster. (Emily 24)

While these are largely positive comments about the support provided by families, some participants described families who were less supportive of their participation, particularly in relation to transporting them places. Chris, who lived in the city during the week and returned home to the country for the weekends, outlines the difficulties with

respect to transport:

because Dad said he wasn't going to come down and pick me up on a Friday night, take me back [home] and drive me to wherever I was going the next morning for football. (Chris 17)

The lack of transport ensured he did not play sport during high school years, unless it was a sport that was played during the week. Alternatively some participants described families who just were not active and did not encourage or facilitate their participation as a consequence as Tracy describes:

It was never really encouraged I have to say. My mum is very much a homebody. She likes to read books and stay indoors a lot. I was always interested in athletics and things but it was never really something that was – I did enrol in the Little Athletics and things, but mum couldn't be bothered taking me in the mornings so it never got there in the end. (Tracy 23)

Those participants who were categorised as Increaseers were more likely than the remaining participants to describe inactive families or families who were less supportive of their participation during childhood. Those categorised as Decreasers described families that ranged from inactive and unsupportive to active and supportive.

Only Alison (20) referred to the openly negative comments and pressure from her family to maintain her weight during focus group discussions:

Peer pressure. From family, at times. (Alison 20)

To be active? Or to be not active? (Interviewer)

To be active. And to be slimmer. And I think from family who said it, it's um a big put-down. To be negative rather than be supportive. (Alison 20)

Erin (17) was trying to balance her parent's expectations with respect to her academic commitments as year 12 exams approach and her desire to take a break from study

netball and even just weekends. Like going and doing something on the weekend. Like I would always do something. But now um, like with my parents as well they

don't really, they are sort of like "you should be studying on the weekend, don't spend too much time organising other activities". So I suppose just the pressure of studying has taken away that.

However, these were the only overtly negative comments reported by interview participants with respect to parental support and even Alison and Erin talked about the way their parents supported their participation in PA throughout their interviews.

All interview participants provided information about siblings on the demographic information sheet during interviews. Nine interview participants were the eldest in the family, nine were the youngest and six had a mixture of younger and older siblings, including two who had twin siblings. No participant was an only child and family size ranged from 2 – 6+ children. No other demographic details were recorded about siblings. In analysis of the CDAH data having younger siblings was negatively associated with persisting with physical activity for girls (see Table 4:6, page 87). Comments about siblings from interviews were examined according to family composition. These comments are summarised in see Table 7:1. None of those with only younger siblings talked about younger siblings positively influencing their participation in PA, despite indications that younger siblings were active. One participant talked about going to the gym with her younger sisters, one participant chose to cease her involvement in tennis once her younger siblings could beat her and two participants talked about trying to be a positive influence on their younger siblings. While siblings appeared to influence participation it was difficult to identify a clear pattern with respect to sibling order.

Table 7:1 Family composition and comments about impact of siblings on physical activity

Younger Siblings N = 9	Older Siblings N = 9	Younger and Older siblings N = 6
<i>(My) brother's really active. He's quite into athletics and soccer and all that. (Janet 20)</i>	<i>I was playing a year up in my brother's (football) league because we couldn't be two places at once. So I didn't feel very good because I was up against bigger people... It's a bit intimidating, especially at that age. (Jack 19)</i>	<i>I reckon they are probably a big influence. My older brother is more into diving and golf and surfing. And my little one, he surfs every day even if it's crap. (Cathy 18)</i>
<i>I've got a sister. She probably doesn't play, well she does play, she goes to the gym but she has never really played as much sport as I have. (Penny 24)</i>	<i>I've got one brother. ... probably hasn't got the skill level in some sports, at least in soccer ... he doesn't really play. He coaches Mum's team and his wife's team. (Louis 20)</i>	<i>mainly the boys are the active ones. And yeah, I'm pretty much the only girl. Except for my younger sister. (Kristy 17)</i>
<i>like they were kind of, they were getting better than me. And that really you know took a hit on my self-esteem really. (Mel 17)</i>	<i>And then on the weekends, because we live near a beach, me and my sister go surfing probably twice every weekend. (Karen 17)</i>	<i>My brother was the one who was playing basketball. I usually get up and watch him play when I was a kid. Just probably got me a little bit to play basketball when I'm older. So that's why I joined. (Steven 18)</i>
<i>my younger brother and sister, they sort of had more opportunity to get involved with stuff up here. But I sort of held back a bit knowing that everyone was still sort of down south. (Emily 24)</i>	<i>My brother and sister, or my brother exercises quite a bit, so I guess I was possibly quite influenced by him. But yeah, it is just sort of an inherent drive that I've got, I guess. (Mark 24)</i>	<i>I did it (organised roster) at the start ... Then my sister (twin) ... she came in and took over. And I was like "great, that's cool". And now she's gone I'm having to do it again. (Sally 24)</i>

Older siblings appeared to be more influential on participation in PA for those with only older siblings, but not always positively. Older siblings introduced younger siblings to activities, but where siblings had different skill levels, participating together could have a mixed response as Erin (17) described:

I'd like to try doing it (mountain biking) with different people because my Dad is so super fit. And so is my brother now because he does it all the time, and that sort of takes the joy out of it, being the one at the back. But yeah no I still, it's still really nice.

Two interview participants talked about developing a fear of the water and swimming due to older siblings holding their heads under water during childhood:

my grandmother had a backyard pool, and that's where we were taught how to swim. But my sister was kind of dunking my head down in the water. So it wasn't a very pleasurable experience. And yeah, I've always kind of shied away from water activities, for that reason. (Tracy 24)

There was no apparent pattern according to the sex of the older sibling and that of participants. The comments by Emily and Jack (see Table 7:1) indicated that the presence of siblings (younger and older respectively) had some influence on the type of PA undertaken (particularly organised sport) and where they participated due to logistical considerations when families needed to coordinate activities for multiple siblings. For participants with a mixture of older and younger siblings it appeared that they had a choice of siblings with which to identify and were more inclined to participate in activities together. This involved older siblings in some cases and younger siblings in others with no discernible pattern. Two participants with older and younger siblings did not identify their siblings as influencing their participation in PA.

7.2.2 Partner

Only one study participant was married at the time of being interviewed and seven others talked about having a significant relationship. Those participants who had a significant relationship indicated that spending time with their partner was a priority. Their partners' involvement in PA commonly reflected their own level of involvement.

Those categorised as Identity Based Maintainers described being active with their partners whereas all other interviewees might have active partners, but rarely described being active together as the comments below illustrate:

I should have mentioned as well, my girlfriend plays at the same club as well.

(Louis 20, Identity Based Maintainer)

she is very active herself. She used to be a personal trainer, so yeah she likes to keep active and keep fit and in good shape and stuff like that. (Jack 19,

Circumstance Based Maintainer)

I do run with my partner sometimes. But we've sort of got different schedules. She likes to go in the morning and I'm a pm sort of person (Mark 24, Increaser)

every now and then we will go for a walk together ... but it's not something we intentionally go "we haven't done any exercise this week, let's go for a run". ...I would say that neither of us were particularly active. (Libby 22,

Decreaser/Inactive)

Emily (24, Circumstance Based Maintainer) described how her participation in PA had decreased as a consequence of being in a significant relationship:

I think when I was single I was a lot more focussed on um, me and probably my health. And maybe my image a bit more too. And that's all um yeah about, so that sort of stage. ... I think, yeah, I think it was the recent change has probably been um, being in a relationship for the last year and a half.

Is your partner, does he do any regular PA or not? (Interviewer)

... He um, like he gets out. He goes fishing. He's got a boat. Um, we're looking after my parents' dog at the moment, so he's taken him for a few walks and that sort of thing. But um, he probably has the barrier – he does shift work so that's a barrier for him. He won't commit to anything. And he's also very socially orientated. So I can't imagine him going for a walk just because he wants to go, on his own. ... Yep. Like if he was "do you want to go for a walk?" I'd be like "yeah". Whereas if I am like "do you want to come for a walk with me, he's like "nah". So I'm like "oh what do you want to do?" And he'll come up with another idea and I'm

like “OK, we’ll do that then”. And because he does shift work and I’m quite busy, we do kind of treasure the time we can do stuff together. And so sometimes that’s a higher priority than me going out on my own, to do something that he doesn’t really want to do. ... I think if he was interested, if he’d showed more interest in bushwalking, um I would have done it a lot more. ... And then on our weekends off, when he’s got the weekend off as well as me, often we’ll go camping and stuff like that. Which is getting out there, but it’s not really being overly physically active.... I guess if my partner was more interested in it, I’d do it with him. Because I spend, the time that I would be physically active, of an evening I guess, or early morning, is when I am normally around his company.

Emily valued the relational aspects of participation in PA as evidenced by her commitment to a weekly netball game with a group of friends. She also valued it for its ability to provide time out from demands and expectations as well. While Emily’s partner was supportive of her playing netball and bushwalking she was aware that being active was not equally valued by both of them and was not something that they did together. In this extract above Emily revealed the compromises and negotiations required with respect to time use in order to maximise the time she spends with her partner. She recognised that this reduced her participation in PA.

7.2.3 Friends

As previously discussed relationships with family and friends were important for study participants and were the most common reason for valuing participation in PA. All interview participants were asked about the role their friends played in their participation in PA. Participating with friends was of particular importance for those who were involved in team sports such as Louis and David:

I remember when I was in Grade 7, 8 and 9 the whole group of us, at least all the boys, we would all go off and we would just play soccer or play rugby, or play football for the whole hour. (Louis 20, soccer)

the team we have got now, apart from like one player... we have been together since we used to play indoor soccer ... when I was like 11, and 12 and 13. We used to play indoor soccer; we’ve been together since then. (David 17, futsal)

The importance of participating with friends was reflected in the fact that the majority of interview participants (n = 18) valued PA for the relationships it supported and promoted. While participating with friends appeared less important for those involved in more individual activities such as attending the gym or surfing it was still something that was valued by those who participated in these activities.

Participants also described friends as active in their own right or as supportive and encouraging without necessarily participating in the same activity:

I have one friend that's a good runner and soccer and all of that. And I have a few friends that don't do sport, a few friends that do karate and that and squash ... the ways that we like to enjoy sport and stuff like that is completely different.
(Kristy 17)

My friends just know it's me ... and they support me because they like me for who I am. ... the other ones more have their own interests and are from different walks of life, but they're my friends. (Allan 17)

Friends had been instrumental in introducing some participants to their current PA or were acknowledged as having a role to play for those who not currently active:

a few of my mates played for them and they were like "oh we need players" and I was like "righto, I'll put on the boots". (Chris 17)

like the reason I dropped a lot of my school sports is because my friends stopped doing it. (Mel 17)

Oscar (23) reflected that:

I would say, people choose friends who are kind of like them anyway. So, um, but I suppose if I had friends that took part in sport or even activities, I'd just be tempted to join in.

While Oscar believed that friendships would develop out of a shared interest in a particular form of PA this was not essential for participants classified as Maintainers. What was important for these young people was that friends acknowledged the role PA played in their lives. As Janet (circumstance Based Maintainer) said of her friends:

They are like supportive enough. Like they think it's good that "oh wow you go to the gym that often" sort of thing. And some of them do play sports as well, but not probably as much as I do. (Janet 20)

7.2.4 Others

Participants categorised as Identity Based and Circumstance Based Maintainers described role models or mentors who were continuing to participate in regular PA at an older age. The presence of older role models had a positive impact on their current participation as well as providing support for future participation:

It sort of seems like with netball people that once they start playing they don't really stop. (Janet 20)

Mentors played a pivotal role in training and developing the skills of some participants. The following comments from Kristy, Allan and Cathy (all Identity Based Maintainers) highlight the important role mentors played in developing their PA related skills:

We worked with a (horse) trainer obviously, and he has been teaching us to ride racing way. Not for galloping, just for enjoying. Because you do need lessons when it comes to riding horses and controlling them. (Kristy 17, hors rider)

I once did a drive with a guy called X. He spent the entire drive talking to me about it (rafting) – just cos I kept asking him a series of endless questions. They (other rafting guides) were always happy to sit aside and let me guide in their boat. And then they showed me how to do it. ... they taught me, you stay in the centre of the river, watch the currents, follow the V down. (Allan 17, rafting)

And like there's all the older guys who are really keen on getting the younger people into (surfing), like helping them out and stuff. (Cathy 18, surfing)

Individual participants mentioned a number of other people during interviews as influencing their participation in PA. These included health professionals, work colleagues and community members. Sports coaches were commonly discussed during interviews with participants providing contrasting descriptions of their role in supporting their PA participation. Sports coaches were described as either supportive and encouraging or inflexible and unsupportive in their expectations with respect to training and

competition. For some study participants sports coaches had been instrumental in their decision to continue to participate in a particular activity or not. The role of sports coaches will be discussed further in Chapter 8, section 8.4, page 236.

7.3 Sociocultural, environmental and financial considerations

7.3.1 High schools and college

All participants discussed the role schools played in encouraging and supporting their participation in PA, particularly through PE and school sport. Schools provided opportunities to be active as well as having expectations about participation by creating a culture where PA was supported and encouraged. For a few participants this extended to compulsory participation in school sport. Schools were also responsible for introducing some young people to new and alternative forms of PA such as bushwalking and kayaking through Outdoor Education and extra-curricular programs. Participants often stated that they would have been unable to participate in these types of activities without the support of schools/colleges. For example, the following comments from Louis, Richard and Ellen illustrated the key role their experiences at school had in supporting their PA:

it was definitely a big part of that kind of (lunch) break. All throughout high school. ... And the PE department was always open to go and get balls and stuff like that to go and play. You could go up to the gym and play soccer or go and work out or something like that. (Louis 20)

they (teachers) were encouraging you to do it. They'd just say oh we want people to come along and do it and if you think you want to do it, you don't have to be any good, you just come and have a go. (Richard 22)

And a lot of experiences I probably wouldn't have done [without school] ... it gave me confidence to do more overnight bushwalking as well... (Ellen 18)

Experiences of PE were not the focus of this study and participants were not explicitly asked about this. However, there were no overtly negative comments made about high schools with respect to PA and only Mark described his school as not particularly supportive of PA. For further discussion about the changes in participation experienced on completing high school see Chapter 8, section 8.2, page 222.

Schools and colleges also provided opportunities for young people to gain qualifications in areas related to PA. However, only participants categorised as Identity Based Maintainers had availed themselves of this opportunity. Qualifications included vocational certificates and formal swimming qualifications. Kristy was completing vocational training and certification in outdoor leadership while studying years 11 and 12 and was planning to use these qualifications to find casual employment:

Because I'm doing VET (vocational education and training) as well as ... I'm doing two VET courses in Outdoor and it's about like running your own trips and doing the paperwork behind it and being able to manage groups and all of that sort of stuff. (Kristy17)

Those participants who had gained qualifications while at school (Allan, Kristy, Cathy, Karen) had found casual employment as a result or they were planning to use their qualifications to gain employment in the future.

7.3.2 Sports clubs

The majority of participants categorised as Maintainers had played sport for a club outside the school environment. Some were still playing club sports ($n = 3$). Four other participants were currently playing organised sport, but not through a sports club. Only one participant categorised as an Increaser was playing club sport and one participant classified as a Decreaser had played club sport in the past. Sports clubs played a mixed role in the PA participation of these young people. Some young people had decided not to play club sports due to the financial costs associated with participation as Kristy outlined here:

I was going to play hockey last year for club, but... We looked into the financial side of it, it's very expensive. (Kristy 17)

Other young people felt that playing club sports was only for those of higher ability. They also considered that the social aspects of their participation that they valued would change as a result of joining a club as Sally described with respect to netball:

I could have gone to play club, but then again I always felt quite intimidated with those things. ... because you think you're alright but you're not good enough to go

off and you know, play club sport. And you know, I guess sometimes it loses the social aspect of it. (Sally 24)

Some young people were no longer playing club sport because of the commitment clubs expected them to make in relation to training and competition (see Chapter 8, section 8.4, page 236 for further analysis):

I did swimming lessons and then I went to squads, which is just training, long hours of training. (Allan 17)

I don't miss the playing – I think um that I don't really miss the atmosphere of playing club and everyone pushing you to be good. (Mel 17)

It might be assumed that participation in team sports after leaving school depends largely on joining sports clubs. However, many participants in this study were involved in playing organised sport through associations where participation did not require affiliation with a sports club. Essentially they had formed teams with groups of friends and continued to play in these alternative social sports competitions.

The majority of study participants who played club sports had commenced playing during late childhood or early adolescence. Only Chris (Increaser) described commencing his involvement in club football at the age of 17 years having never played club football before:

Last year was probably my first like club football game and they were like “he went alright” and they told me to come back this year and I was like “cool”. So I got a best and fairest, I got like a few dollars and stuff out of it for playing well. I was like “oh that’s a bonus there”. (Chris 18)

For Louis (Identity Based Maintainer) membership and involvement in his soccer club was a central feature of life for him and his family as he outlined:

I’ve got one brother. ... probably hasn’t got the skill level in some sports, at least in soccer, which in our family at least is based mainly around the soccer. ... he doesn’t really play. He coaches Mum’s team and his wife’s team. Which is Y’s crew. So he is the coach of them which he probably wouldn’t do if he was kind of like playing in

the same team as me or something like that. ... he is really into the administration. And he really likes organising and being the coach and being the ... my life does revolve around, at least soccer at the moment. And you know; training, training, game, training, training, game, get home and that seems to be pretty central to a lot of things. Like you know, we'll talk about that in my family a lot. I talk about that to my brother constantly, talk about that my girlfriend. I should have mentioned as well, my girlfriend plays at the same club as well. So it's kind of like a lot of the conversation is just centred around that. You know, not even intently it's just that's how it happens, quite often. And as I said a lot of my friends play at the club, so yeah, I mean it just feels like a lot of my life is literally based around the club.

This example of the positive aspects of sports club membership such as providing a sense of community and belonging that extends beyond the individual and the actual sport is the ideal that many sports clubs aspire to. In this study only Louis had experienced this strong connection and sense of belonging from club sport. Further analysis and discussion about the role of organised sports and its impact on participation is found in Chapter 8, section 8.4, page 236.

7.3.3 Occupational physical activity

Participants across all categories talked about the PA they undertook at work. Two young people gained access to gym facilities free of charge through their employment. The distinguishing feature across the groups was that participants categorised as Identity Based Maintainers were involved in occupational PA of a more skilled nature, commonly requiring qualifications related to swimming, first aid or vocational certificates in outdoor leadership. The remaining discussions of occupational PA were associated with manual labouring (see Table 7:2).

Table 7:2 Discussions about occupational physical activity according to subcategory of physical activity maintenance

	Identity Based Maintainer	Circumstance Based Maintainer
Occupational PA	<p><i>in the holidays I work for an adventure company ... I'm a raft guide... it's a lot of physical demand, both mentally and physically I have to have a very high concentration peak and I can't let that drop for about six hours solid. ... I'm going to finish year 12 – get my Certificate in Outdoors and then I can either go to TAFE and get Cert 3 and 4 or I can go and um, go to Canada and get some more rafting accreditations, get skydiving accreditations, and then basically travel as I guide. (Allan, 17, adventure guide)</i></p> <p><i>like I did the Auswim course through school. And then I think, I think I did it because I knew I could swim. ... like I can remember, I don't know if they [other instructors] can but I can remember how I learnt to swim. (Karen, 18, learn to swim instructor)</i></p>	<p><i>because I'm in Grocery down the back and stuff like that. So I don't just sit there and buzz items all day. It's like, when it gets busy you are pretty much running around to get the load done and stuff like that. Because yeah the pallets come in with a load. And yeah, you are always walking and pushing and lifting. (David, 17, storeroom worker supermarket)</i></p> <p><i>I'm still getting that fitness ... the work that I'm doing, has still that got that amount. I'm never on my bum, so to speak, doing nothing. I'm always working, or walking around, or running to the car or screeding, which is just concrete finishing, and stuff like that. So it's still got that amount of fitness and um, physical exertion that I like. (Jack, 19, manual labourer)</i></p>

7.3.4 Geographical location

Participants across all PA categories referred to geographical factors that influenced their participation in PA, particularly access to team sports as a result of living in more rural or regional areas. However, the picture was not consistent with some participants

describing restricted opportunities, others describing similar opportunities and still others describing increased or different opportunities as a result of access to the beach or horse riding. The range of responses was reflected in the comments by Craig, Karen and Emily:

I think opportunities are far more restricted since I was in a country sort of area. Definitely I would say. Because there was only two primary sports, football and basketball. There wasn't anything else really offered. ... I think I was quite disadvantaged in a way, yeah. (Craig 17)

Like I walk my dog every morning on the beach. Because we live near a beach. ... And then on the weekends, because we live near a beach, me and my sister like go surfing probably twice every weekend And then kayaking and windsurfing and stuff. (Karen 17)

But netball, I played club netball growing up. Well through high school I played club netball um down at A (country town) and then at B But then there was also like a mixed netball team at C (country town) with adults and I played with that through high school. (Emily 24)

Some participants lived in urban settings during the week while at school but returned to rural settings on the weekend. Living arrangements, transport and preferences to spend time with family all influenced how these young people participated in PA:

heaps of opportunities (to be active), yeah. But it would take up all your weekends and I wanted to be up home at the farm on the weekend. (Richard 22)

because I was living with my brothers, like they didn't really want me down on the weekends because they wanted to party and do all adult stuff. So I sort of had to go homeIt was just like the going from one place to another every week, was sort of a hassle. ... Like they got to play football and cricket and stuff. I played cricket but that was only because it was during the week and I could go to it. (Chris 17)

When asked about how living in a rural area had impacted on her PA participation Erin's response captures the mixed picture associated with living in a rural setting. She considered that opportunities for some activities such as walking and running were

enhanced while participating in team sports is restricted due to her reliance on parents for transport:

I guess I think I would have liked to have played club netball. But we live so far awayin some ways it's (living out of town) harder. Like with the club netball thing. So it's more effort to come in. And if I want to go to the gym in an afternoon after school, someone has to wait around to pick me up. But you know I can go for half an hour walks on the weekend on my own property. And I'm closer to some things out in the bush. It's nice to have my own space. And if I want to go for a run and not have anyone looking at me, it's nice. (Erin 17)

Reliance on parents for transport and not having a driver's license restricted PA opportunities more for those participants who lived in rural or outer urban areas where access to public transport was limited. When asked 'Is there anything that would make it easier for you to be active?' Steven (who lived on the urban fringe) responded:

A car, me (sic) license. ... Because then you could find, you could actually go up there – there'd be no excuses getting there. You got your own car; you can go up there and play. Pick your mates up. (Steven 18)

Geographic location influenced the type of PA undertaken by study participants with three young people indicating that living near the beach had influenced their involvement in surfing and other water based activities. Two participants who participated in horse riding talked about the importance of having access to areas to keep horses. Study participants living in urban settings were more likely to be involved in team sports and be regular gym users than those living in rural settings.

Eight study participants were classified as rural dwelling (315). With small numbers it was difficult to identify any real rural/urban differences with respect to patterns of participation. Seventy eight per cent of young people classified as Circumstance Based Maintainers were urban dwelling, compared to 43% of Identity Based Maintainers. Only four rural dwelling participants had complete pedometer data, of these the three rural dwelling males were all classified as active or high active.

Geography appeared to influence participation in PA in both positive and negative ways.

Its greatest impact was on the type of activities these young people were involved in rather than whether or not they were active.

7.3.5 Active transport, financial considerations and media influences

As previously reported in Chapter 6, section 6.2, page 155 all but one of the interview participants reported walking for transport on the IPAQ. Focus group participants also discussed walking for transport. Discussions about walking for transport incorporated considerations of cost of parking, having a driver's license and proximity to destination and convenience. Some of these elements are captured in the following discussion from focus group 1:

Speaker 1 I think like walking to work is something I should be doing anyway. Like it's not an additional, like it's just keeping me just, from going fat I suppose. I don't know. Whereas I should, I think, yeah add on to the walking with a sport as well or something. (F23)

Speaker 2 I tend to not think about it as any sort of PA really. It's I have to get to work and I walk there. (F24)

Speaker 1 Yeah. Same. (F23)

Speaker 2 Especially like you don't get, it doesn't get my heart rate up that much, it's all downhill to work. (F24)

Speaker 3 Just because the parking is expensive in town as well. Like I work in town. I'm in town every day and so I park up at the Domain and walk to and from every day. And like I don't really think of that as exercise. I think of that as not having to pay twenty bucks to park. (F24)

General Agreement

Speaker 4 Yeah. Same. I park up at West Hobart and walk down. Yeah, it's just you have to. It's just the easiest, cheapest thing to do. It's not really like, "oh I'm going to get my exercise". (F21)

This discussion reflects the functional nature of walking for transport previously described in Chapter 6, section 6.3, page 158 and indicates that it was primarily undertaken to save money and for convenience. More rural dwelling young people talked

about walking for transport than urban dwelling participants. Rural dwellers often combined bus or car travel and walking or walked to local activities such as the beach or horse riding.

Owning and walking a dog had a positive impact on PA for four participants, all female:

It's (walking the dog) just something I do every morning. And something I have to do because otherwise she just hassles me all morning. (Karen, 17)

Libby (22) talked about how she was looking forward to having a dog one day because of the positive influence this would have on her PA.

Financial considerations were discussed by more than half of the study participants, particularly in reference to gym membership and membership of sports clubs. Costs were an active consideration for participants in all PA categories except those categorised as Decreasers as they were not currently involved in any regular PA and did not indicate that their inactivity was due to financial constraints. Financial considerations were most pertinent amongst those categorised as low SES according to area level measures (n=8). The following comments reflected how participants factored in consideration about costs when making decisions about PA participation:

There is a new gym ... And that is quite cheap. Because at the moment I am paying \$20 a week, but this new one is \$12 a week and its 24 hour access. And it's only a five minute walk from the hostel where I board. (Craig 17)

I was going to play hockey last year for club, but ... We looked into the financial side of it, it's very expensive. It's like, we figured out it was going to be over \$1,000 just to have me started. And when we figured it out about each game, it was about \$15 or \$20 for each game or something like that. And I was thinking that's not worth it. (Kristy 17)

Financial consideration impacted on participation in particular types of activities for some of these young people, but had not completely prevented participation. Community based centres offered gym membership and classes at significantly reduced rates that had enabled them to participate:

It's (PCYC gym) actually really cheap, which is really good. Its \$20 for a year membership and \$3 each time you go. And then the classes are about \$4 each if you want to go to any of the classes. (Kristy 17)

Karen, Steven and Lisa received free or cheaper gym rates through their workplace or university residential college. Discount membership made a difference to their ability to join these gyms. Only one participant (Tracy) indicated that she had purchased a house. In order to save money she had decided not to buy gym membership and had limited her attendance at yoga to once per week as she outlined:

My partner and I just bought a house. So in the past six months we have been knuckled down and haven't been able to spend a lot of money on things, such as gym memberships and things like that, because they do get expensive. (Tracy 24)

Many participants discussed the way health and fitness messages, particularly weight management were promoted in the broader community. Participants discussed how this created expectations and pressure to be physically active in order to manage ones weight as illustrated by the comments by Janet and Tracy:

particularly these days there's so much emphasis on like eating and your weight and just being generally healthy with all the health conditions and yeah it just seems like it's such a big thing. And the media is so conscious of it these days that yeah it's a big reason why I want to keep fit and healthy. (Janet 20)

I guess media pressure and things like that. Things like The Biggest Loser⁴ and all that sort of stuff. And reports from the media that come from research ... saying that we should be doing this that and the other, walking this amount of steps and getting 30 minutes a day and all this sort of stuff. So it is a bit of expectation. (Tracy 23)

The sense of expectation and guilt associated with broader social messages has been previously discussed in Chapter 6, section 6.10, page 191. These comments were more commonly, but not exclusively discussed by female participants. Those categorised as Identity Based Maintainers were less likely to discuss the role of the media and broader

⁴ The Biggest Loser is a reality television show where overweight contestants compete to lose the most weight. Contestants and teams vote each other out of the show each week.

social and cultural influences. Craig and Jack used the internet as a source of information for developing their own fitness programs as Jack described:

On the internet ... I was doing research for like rowing programs and stuff like that. How to be fit for rowing and what kind of training you can do and stuff like that ... and magazines, like Men's Health and Men's Fitness. (Jack 19)

7.4 Summary sociocultural and environmental context

In Chapter 6 the majority of participants valued participation in PA for its ability to strengthen and facilitate relationships so it was unsurprising that family, friends and partners appeared to be important factors influencing PA participation. The support of family, which has consistently been found to influence PA participation in children and adolescents, continued to play an important role in engagement in PA for these young people into their 20's. Families provided instrumental support such as transport as well as emotional and appraisal support. Some young people participated in PA with family members (siblings and/or parents). The support of friends and partners also impacted on PA participation. This support was generally not of an instrumental nature, but more an acceptance and understanding of the value study participants placed on their participation and subsequently the time they spent being physically active. Some young people participated in activities with friends but this was not essential to ensure PA maintenance.

Schools and colleges also influenced ongoing participation for young people. While the families of some participants provided them with a range of opportunities to be active throughout childhood and adolescence this was not the case for all young people in the study. Schools and colleges played a particularly important role for these young people, providing opportunities for them to be active in new and alternative ways, such as rafting and bushwalking that would not otherwise have been available to them. They also provided opportunities to gain qualifications in associated areas of sport, recreation and fitness.

Factors such as sex, age, SES and geography influenced participation although the small numbers in this study made it difficult to identify clear patterns. In this study these

factors appeared to have a greater influence on the types of activities undertaken rather than whether or not an individual was active. Study participants focused more on how financial and geographical factors impacted on their participation than considerations of age or sex. Those categorised as Identity Based Maintainers had utilised all possible means of support in order to maintain their participation in PA. In particular, they accessed the support available outside family and friends. Mentors and role models provided encouragement and hands on training and support. These individuals had also accessed formal training and qualifications that incorporated PA offered through high school and college programs. Some had used these qualifications to gain employment and others were planning to do so in the future.

Chapter 8 Results

Impact of transitional life stage on physical activity

8.1 Introduction

This study sought to better understand PA participation during the transition from adolescence to adulthood without focusing on specific life events. All analysis has been informed by an understanding that study participants are currently in a transitional life stage that may involve changes to academic, work, family, relationships, economic and living arrangements. Time pressure was a significant finding from analysis of focus group data in Stage One of this study and during interviews participants were asked about their time use and priority setting (time management). This chapter examines how important characteristics of this transitional life stage; specifically changing expectations about time use, priority setting and commitments and changing responsibilities impacted on participation in PA for study participants. Findings from this chapter address the research questions: ‘What factors do young adults’ report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult? , ‘How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into independent environment of further study or work? These findings also contribute to our understanding of their decision making about participation in PA.

Along with the general transitional life stage participants were experiencing they did refer to some specific transitions that impacted on their PA; particularly leaving high school. Many participants also described a period of time during adolescence when they underwent what is termed here ‘sports transition’. This transition was introduced in Chapter 7, section 7.3.2, page 210, but will be explored in further detail here. Whether or not this sports transition is experienced differently according to the PA category outlined in Chapter 5 will also be examined. As focus group participants, but not interview participants were asked specifically about changes to PA since leaving high school and had important reflections on the changes they were experiencing during this transitional life stage this chapter will incorporate both focus group and interview data. Quotes from

focus groups will be presented using the focus group number, sex and age of participant and quotes from interviews will use the pseudonym and age of participant. Where relevant, supplementary information such as studying, working or type of PA may be provided.

8.2 Changes to physical activity post high school

As previously described in Chapter 2, section 2.3.6, page 28 the majority of Tasmanian high school students complete high school at the end of year 10 and attend a senior secondary college for years 11 and 12. During focus groups participants were specifically asked how their participation in PA had changed since completing High School (year 10). The majority of participants had gone onto further education after completing year 10, attending colleges for years 11 and 12. However, some participants attended schools that incorporated years 11 and 12 (independent schools). Participants were not asked to specify the type of school they attended, but in general most of those who attended independent schools that went through to year 12 identified this during focus group discussions.

When focus group participants were asked about changes in their PA participation they consistently referred to changes to their participation in organised sport since completing compulsory schooling. Only two focus group participants indicated that their participation in PA had increased:

Mine has actually increased. Because the school I go to now offers a wider range of sporting activities, so I've joined a lot more sport teams and also do PE at school, so I think mine has increased. (FG9, F17)

Both these participants were young females (16 - 18 years) who were currently enrolled in College. One had stopped working and consequently had more time to play sport and the other was now boarding in the city in order to complete years 11 and 12 so had more opportunity to play organised sport than previously. Eight participants, of whom more than half were enrolled in years 11 and 12, indicated that their participation had remained the same as these comments illustrated:

mine is pretty much the same like I'm doing a lot of netball and stuff this year that

I couldn't do where I went to school before. (FG7, F17, studying)

Still play netball and soccer and badminton, and that's about it.... I play for a league in X and then I play in town as well. And then I play soccer in town. And Badminton I play at Y. (FG4, F18, working)

The majority of young people described a decline in their sports participation on completing year 10. In the example below, two focus group participants recalled how their participation in PA had decreased or ceased since finishing high school:

At my school I did two different netballs, two different soccers, two different basketballs, I think. So it was just like all my time was just playing sport. And then you finish high school and it was like college and all I did was club stuff after that. All the school stuff stopped. And then I got a job, so then it's like I can only do one sport on the weekend, and that cuts out like another thing. So then all I did was netball. (FG2, F20)

I haven't done any team sport since I left school. (F3, F23)

For the majority of young people leaving the high school environment was associated with changes in their involvement in organised sport. The following discussion from focus group three is representative of the range of responses to the question about changes to PA since completing high school. It illustrated how participation in PA changed for participants, how young people experienced these changes and provided some reflections on the factors (time, choice, priorities) that contributed to these changes. All of these young people were currently working:

But if you think back to high school and compare to now, how has your PA changed since you left school? (Interviewer)

Speaker 1 *Not a lot. (M23, FG3)*

Speaker 2 *I reckon it has because you don't have time anymore. Like at school you have time during school and after school. And now you don't. (F19, FG3)*

Speaker 3 *You didn't have an option at school not to do the physical exercise. (M18, FG3)*

Speaker 4 *You were made to. (M18, FG3)*

Speaker 3 *Yeah, so. And now we've got that option whether to do it or not.*

Sometimes we choose not to. (M18, FG3)

Speaker 5 *Mmm. Your lifestyle as well. (F20, FG3)*

Speaker 6 *As you get older you get more freedom, so you sort of don't – you know, at school you usually have your set PE class that you have to do. And then after you finish you become more social and you choose to go out to a party rather than go and play a game of basketball sort of thing. (F23, FG3)*

Speaker 4 *Your life changes a lot. Yeah. It sort of gets busier and you don't have as much time as when you're at school. You think you should go and do some exercise, but then going to a party sounds better or something like that. (M18, FG3)*

This discussion illustrated some of the key elements of this transitional life stage and how these impact on the PA of study participants. Life has become busier, sport and PA is no longer compulsory or expected and they have more choice about how they use their time. When exercising this choice, many young people in the study chose to decrease their participation in organised sport and socialised with their peers in non-active alternative activities. The issue of competing priorities and expectations also applied to those were currently studying in years 11 and 12. Despite still being in a school environment these participants were experiencing changing academic demands and expectations that were impacting on their PA participation:

It's kind of harder though to fit them in. Because I remember in year 10 I'd have something on every day after school, and if I did that now it would be like yeah a sport on every afternoon and just I don't know it'd be too much, because of the study we have to do. (FG8, F16, year 11)

I exercise because in high school I didn't have such a high workload. I exercised every day after school generally but now with a bit more school work I haven't got as much time and so it's much harder to maintain the PA. (FG7, M17, year 11)

There was a mixed response from study participants to the changes they had experienced

in their participation. Some participants missed the level of participation they enjoyed previously and expressed a sense of regret at the changes, even a number of years after finishing school:

I hated it when I went to college. Because I just loved doing the cross-country and athletics carnivals and swimming carnival. I did all those and did orienteering for a while through the school, did netball and all that stuff but then when you get to college, there's no cross country, there's no athletic carnival. And I missed doing that. I loved doing athletics. It was brilliant. (FG2, F22)

Oh, it's sad. I really enjoyed sport in school. And I'd really like to get back to playing hockey. I still have all my hockey gear. I look at it every time I move house and go no I'll keep it for another year. But it (hockey) just doesn't fit in anymore. (FG3, F25)

Study participants felt that it was easier to participate in PA while at high school because the school organised the activities, participation was structured and encouraged and all ability levels catered for as these comments illustrate:

And it wasn't structured for you. Like I went to a high school where my high school was (years) 7-12, so I didn't have that jump from high school to college. So we did all the way through. And then once you go to uni, and now there's nothing organised, you know? You don't have the hockey team that you sign up for, or the rowing. That was what I did. (FG1, F23)

I think with – because I went from High school A to College B – and then college B had like, I don't know, a thousand or, had a lot of people, and maybe it was a bit more competitive to get into sports. It was only the best most sporty people that did sports. And then the rest of the people, I don't know, there wasn't as much of a lower more social level maybe. (FG1, F22)

However, some other participants were not concerned about the changes and were enjoying the freedom to choose how they spent their time now that they had finished school:

When you're made to do it at school, it's a bit of a "finally! I don't have to do it!"

So yes it's good we do it at school, but also it also puts you off a little bit once you leave school. (FG3, F20)

8.3 Transitional life stage

The transition from high school to further study, work or unemployment is a significant sociocultural transition. Irrespective of whether or not people continue with further education or employment, a combination of both or are unemployed. Young people leave behind an environment in which social norms, expectations of behaviour and social structures and networks are well established. For study participants leaving high school was associated with a number of significant changes including; greater control over how they chose to spend their time, increased academic expectations, commencing employment (full time, part time, casual) and leaving home. Participants were also making plans for their future and accommodating changes in social networks and social support. As previously described in Chapter 4, section 4.3.7, page 97 the common response during this transitional life stage was of increasing time pressure. This is explored further here before discussing priority setting and commitments.

8.3.1 Changing expectations and time pressure

Study participants spoke about the changing expectations they experienced upon completing high school. Craig (17) was in year 11 when he participated in the focus group and described how he found the academic expectations during year 11 greater than he expected:

Ah, the changes are pretty unpredictable. Like I wasn't expecting it to be so serious. Like I expected the changes as you do through adolescence but I wasn't quite expecting the level of maturity that was expected from us. Or the workload, so to speak. (Craig 17)

Yep. So you've found that the study commitments have had ... (Interviewer)

Yep. It's much more than I'd anticipated. So I found that to be a bit sort of confronting. (Craig 17)

Changing expectations were associated with work as well as study during this period of transition from high school. This 23 year old female who was working full time reflected

on how the expectations of others with respect to study and work left her with little 'space' for other activities:

External pressure. Like if you get job, then you've to perform to it. You've still got to do that, and then you don't have the mental space, you know after a big long day at either late school – like when you're studying a lot and got exams, and then there's work and stuff. I know that after a day at work I can't be bothered thinking, let alone ... (FG3, F23)

This participant was not indicating that she has no time for other activities, but rather she was left depleted by the expectations associated with work or study and unable to consider being involved in other activities, such as PA. However, during focus groups many participants did describe the time pressure they experienced, particularly those who were combining work and study at this time:

I was working two jobs and studying full time, and doing other things. You still don't have any money. And barely any time. (FG1, F21)

Study participants associated this period immediately after completing high school with increased freedom to make choices, but also found this period of their lives increasingly complex with increasing responsibility:

Yeah. Like as you get older and different things change. As you get more commitments or as you do different things and everything around you changes and has an effect on how you live your day to day life. And as to whether you have the motivation, it does change your lifestyle. (FG3, F23)

Whereas a commitment to sports participation was encouraged and supported during high school it was felt that this changed as teachers expected students to prioritise their academic studies as this year 11 student described:

And kind of like in high school, if you didn't have something done you could say like because of sport, they would just let you go. But you can't use that in college kind of thing. And it was all school sports that they knew you played and stuff. (FG9, F16, year 11)

Changing expectations associated with academic and work commitments meant that these young people were actively managing their time; making decisions about time use and prioritising some activities over others:

For me it's you know prioritising. Like work fits in, so for me uni's first and then work and then whatever's after that. Now uni's done that'll shift around of course – (that's) a good feeling. (FG1, M24, studying)

Commonly, involvement in sport was reduced in order to accommodate changing expectations about time use.

8.3.2 Priority setting and commitments

As changing expectations and time pressure were commonly discussed during focus groups all interview participants were asked how they managed their time and their priorities for time use. Most interview participants identified work and/or study followed by their relationships with family and friends as their key priorities. Some young people placed their relationships with family and friends as higher priorities than work or study. For the majority of study participants the distinguishing factor was that work and/or study required a defined time commitment while relationships were developed and maintained in a less defined way. PA occurred in the remaining time available to them. When asked about how he managed his time Allan indicated that decisions about time use were a balance between what he is expected or required to do and what he would choose or prefer to be doing:

just thinking about the competing demands on your time at the moment, how do you go about deciding where to spend your time? (Interviewer)

Ah, that's the hardest part. I seem to be dividing between what I want to do and what's necessary. Um, homework, essays and things – hate them but they're necessary. I seem to spend long hours of inactivity, doing essays and things, which drives me slightly mad. Now I actually ache after sitting down for long periods. I usually, at least, make sure I have one day off, of an hour or two in the day at least just for my own personal time and do whatever I want. And then I usually do at least one very high volume activity like surfing or rafting or kayaking a week.

(Allan 17)

While completing high school was associated with increased freedom to choose how they spend their time this freedom was tempered by the expectations associated with a commitment to further education or work. Many study participants were striving to find a balance between expectations about time use associated with their commitment to study and/or work and their own priorities for time use. Family could reinforce expectations about time use during this life stage as Erin described:

Like going and doing something on the weekend. Like I would always do something. But now um, like with my parents as well they don't really, they are sort of like "you should be studying on the weekend, don't spend too much time organising other activities". So I suppose just the pressure of studying has taken away that. And I wasn't part of a school (sports) team this year. So that didn't force me. (Erin 17)

For those who were studying the intense academic focus of years 11 and 12 was considered a temporary period and many were looking forward to regaining balance between activities that were expected and other activities:

well I'm really keen to get back into that balance of having different things. Because doing the same thing all the time is pretty boring. And so doing something different in sport. And we didn't, like I used to not do the same thing each weekend. Like lots of different things, so that was really nice. (Erin 17)

Time use was split between those activities to which these young people had made a commitment or considered a requirement, such as work and/or study, and other aspects of their lives. Where PA was central to their sense of identity, provided time out from the daily pressures associated with changing expectations or was integral to the maintenance of significant relationships then participation in PA was a higher priority and young people were more likely to remain engaged in PA. Kristy described the role horse riding played in providing "balance" in her life:

Well I would have to say, I have to prioritise school, because that's going to be my future obviously, but I have to have time to do stuff like sport and horse riding and

all that sort of stuff that I like doing because it's a good break. And you need that to have balance and socialise and it's good. (Kristy, 17)

Louis prioritised PA above other kinds of social activities although much of his PA was social in nature as it involved playing team sports:

I mean I probably put it (PA); I would probably put it above socialising. I would go and run, rather do a bit of training or something, then actually go out. I'm not one of those people who really likes going out that much. But um, yeah I would probably have ah, school, work, school, work, and then kind of physical activities kind of, basically. Um yeah, I mean I like going to training and all that stuff a lot, yeah and playing on weekends. Yeah, I'd probably put that third I suppose. And kind of social kind of activities after that.

With the exception of Mark (24, Increaser) this more explicit and deliberate prioritising of PA was only described by those young people categorised as Identity Based Maintainers. However, even where Identity Based Maintainers prioritised PA they struggled to manage their time in order to manage all her commitments. Karen (Identity Based Maintainer) had just commenced tertiary studies and described the challenges she faced managing study, work and travel:

now that I'm doing it (Uni) online, like I have to make time, like set time to do different things so that they don't all muddle in together. Like I have to have a plan of the uni. Because we get like a sheet each week, of what we have to do each week. So I have to get through all that and then fit in, because I work in the afternoon doing learn to swim teaching, so fit in getting to work. Because I don't have my license yet so I have to catch a bus. And that's like two hours earlier than work so yeah it takes out time. And then yeah, it's difficult, but (I'm) getting used to it.

While many study participants were adjusting to the increasing complexity of life associated with this transitional life stage and actively managing their time use in response to changing demands there were a few exceptions. Chris lived away from home during the week while he was completing years 11 and 12, but returned home each weekend to work:

So I've got to go all the way back to X to work, for Saturday lunch, Saturday night and Sunday lunch times. But it's alright. Most times I don't have much to do on the weekends anyway. ... It's not a drag, but it gets in the way of some things some times. Can't help that. (Chris 18)

Despite his study, weekend work and football during the winter months Chris did not appear to experience the time pressure some other study participants were experiencing:

I don't really know. I don't really have all that much on at the moment. So it's pretty easy. ... I mean I've got my school, that's my main priority. That's pretty much it really. I've got work on the weekends and footy training tonight. That's pretty much it. (Chris 18)

Whether the lack of time pressure may have been a result of less intense academic expectations was unclear. When asked about her priorities Sally (24) responded in a way that reflected a sense of contentment with her life that was not expressed by other study participants:

Ah, well at the moment my life isn't really busy. I just, you know, work from Monday to Friday, during the nights – oh not really much happening. I've got friends who live next door, so a fair bit with them. I do netball on Thursday nights. And you know, family life is alright. Weekends, normally away because we've got land up in X. Or, just sort of do stuff around the house. So yeah, it's a good balance. I'm not really stressed out or anything like that. There's not really any need for prioritising for me.

Sally was currently in a full time job and had a significant relationship. She was living with her partner at her mother's house in order to save money. Sally remembered that she had found the transition from university to full time work difficult with its different expectations about time use:

It was a hard transition going from a uni life to fulltime. ...just working every day. Just sort of the long hours I think. And not – uni was a bit like oh if you want to sleep in you do it. Rather than having to be there. Obligation I guess.

While content with her current life and describing herself as “settling down” Sally had

plans for the next five years that included travel, further study, buying a house and having children. Sally was the only study participant who described this level of contentment and acceptance about her current life and plans for the future. Sally was one of the older study participants with a significant relationship. While her life was not completely stable (reflected in her current living arrangements) she was content with her current life circumstances.

8.3.3 Impact of time pressure and priority setting on physical activity

PA was considered a discretionary activity by most study participants. The discretionary nature of participation in LTPA has already been described in Chapter 4 and Chapter 5 where fluctuating participation in PA to accommodate work and study commitments was common among study participants. Continuing participation in PA, particularly LTPA during this transitional life stage is threatened by competing demands and expectations about time use. As a discretionary behaviour, ongoing involvement in PA during this transitional life stage was dependent on it not impacting on participants' other priorities. The following discussion during focus group two illustrated how LTPA ceased when there was a direct clash with other commitments. While not actively choosing to cease dancing this young female felt she could not continue due to changes in the provision of classes that resulted in a direct clash with her work commitments:

So what happened with that dancing thing? (Interviewer)

Speaker 1 Work. Because it was like um 6 o'clock in X and I can't get there by that time. I was doing X and city. I was doing two a week, plus all the netball. And it just got too much and they cancelled the city one because there wasn't a teacher for the city and X was just too far. (F21, FG2)

Speaker 2 And you had competition things too. (F22, FG2)

Speaker 1 Yeah. Everything came to one time of the year, and everything was on. So one had to go. (F21, FG2)

OK. So how do you feel about that? (Interviewer)

Speaker 1 Oh, I was pretty upset because I'd done it for 12 years. And the same group of people I'd done it with are still there, so... I only finished it two years ago.

So it was after college when I finished it. (F21, FG2)

Some study participants actively chose to decrease or change their participation in structured PA during this period of changing expectations in order to maximise their flexibility with respect to time use. For example, Craig (17) made a deliberate decision to cease playing club football when he started year 11 in anticipation of his study commitments and the importance of his academic studies in contributing to his plan for the future:

I think it was once again prioritise, like you spoke about at the beginning of the interview. Like I kind of have a significant outlook on life like I want to do my studies, get through all the schooling, set myself up for life and then have fun sort of thing....And I sort of thought well football is not exactly a priority because I knew where I was, I wasn't going to make it any higher, like the AFL or VFL, so to speak. So it was kind of a keep going with football and not really go very far and then sort of do more of the study or go full on study and then just have a regular kick of football and still enjoy having the football around me, but still focus on full studying. So I kind of had to make the choice about where I was in terms of priorities and studying came out on top. (Craig 17)

Craig missed playing sport but felt that:

if I played football or do any other sport right now I wouldn't be able to cope with both that and school. So I had to sort of cut back and make those decisions. (Craig 17)

Despite ceasing participation in sport, Craig had continued to attend the gym regularly during this period and was categorised as an Identity Based Maintainer.

Other study participants determined that a commitment to organised sport was a means of ensuring they continued their participation in PA during his transitional life stage. Penny (24) saw her commitment to team sports as a mechanism for ensuring she was active on a regular basis:

I think if I didn't have, if I hadn't made that commitment and didn't have other people waiting for me there, then I probably would stay at home sometimes. And

that's why I can't exercise for the sake of exercising. Because I do just that. I think "oh well, I'll do it tomorrow. Or do it the next day". And I never get around to doing it.

Participation in PA may also continue if it facilitates or strengthens other important priorities in their lives. Given the importance these young people placed on social relationships where participation in PA facilitated the maintenance of significant relationships this reinforced their involvement in PA as Sally described her weekly game of netball:

I think as more a social thing, than anything. Just it's because I guess when you start full time work, you don't always get the chance to catch up with your mates like you do at uni. So we were playing together, so we got quite close. We thought oh we'll just keep doing it. ... It was just about, you know, catching up and having fun. And being able to socialise, I think. No pressure and it wasn't a big commitment or anything like that. (Sally 24)

As previously described in Chapter 5, section 6.8, page 177 PA may assist young people to cope with the uncertainty and stressors associated with this transitional life stage. Some study participants used participation in PA to provide a break from the expectations they experienced during this transitional life stage. This role for ongoing participation in PA was illustrated in the experience of this young male (18) from focus group three:

when I go for a run at night time and I run just out the back road where there's no-one else you kind of – there's nothing else there that puts you off. And there's no-one else really there to, where you've got to think about something else. You can just forget about everything else and just focus on what you want to do. And think about what you want to do with your life. It's just your time sort of thing. (M18, FG3)

Mark used his participation in regular PA to assist him in coping with the increased responsibilities and stress he associated with this more adult stage of life:

More so as my life has become more stressful. Like, you know, becoming an adult you've got certain responsibilities to do and study and that sort of thing. So if I get

stressed then I exercise. I just go for a run more or whatever, and that exhausts me and then I can sleep at night. (Mark 24)

Participation in PA also provided some of these young people with a sense of satisfaction and achievement that differed from that experienced in other areas of their lives as this young female described with respect to rock-climbing:

with rock-climbing it's like a challenge because you're halfway up the wall and you're going to fall, but then you have to get to this rock and if you get there you're going to fall. Like you just think this is a challenge wow what do I do? And that's kind of like, yeah, the rush and everything. So it's kind of in two ways. But I suppose it all kind of is achieving a goal, like through challenges and like, how you feel after that, I suppose. If that makes sense. (FG9, F16)

The sense of achievement or satisfaction associated with playing well in sport or completing a challenge differed from that associated with activities requiring external assessments by others. Erin differentiated between bushwalking and academic achievement:

Um I picked Achievement, just because, I don't know, I really love the way you feel afterwards, you've done something. Especially with I suppose bushwalking, it's a really good feeling. It's the best. (Erin 17)

Yep. And is it different to the achievement you might feel in other things that you do? (Interviewer)

Um, yeah. Yeah, there's a different sort of feeling that you get if you've got an A in something, or if you've done something really good. I like this feeling more. (Erin 17)

This sense of achievement and satisfaction associated with PA participation may be particularly important during this transitional life stage where expectations and responsibilities are changing and academic, occupational and self-achievement may be less tangible and limited. The subsequent positive impact on self-esteem and confidence may be important during a life stage where individual self-esteem and confidence may be under challenge:

is it different getting it through the sport than say work or some other way? Like is it different? (Interviewer)

Um, I think it is. Because through sport you can probably, like I don't know how to word this, like praise yourself, because you know you've done well. Whereas work, you might have to wait for the boss to do it. To say that "yep, you've done that well". Whereas you don't need it in sport. (FG2, F22)

8.4 Sports transitions

Participation in organised sports played a mixed role in the PA participation of study participants. Twelve study participants had played club sport during childhood, seven had played sport for their school and only two participants had played no organised sport during childhood. Only three participants were currently playing club sport. As previously discussed cost, ability and social factors were all taken into consideration when making decisions about current participation in club sport. In this study, participants had already made decisions about whether or not they would continue to play organised club sport prior to leaving high school. It appeared that this decision was made during mid-adolescence/ late high school. Participants who had played organised sport and reported high sports competency described a time when the expectations and commitment required from the sports club and/or coaches with respect to training and competition no longer matched their own. As high sports competency was a key characteristic of those participants categorised as Identity Based Maintainer this experience was more commonly described by young people in this category. However, it was also described by those young people categorised as Circumstance Based Maintainers and Decreasers/Inactive who also reported high sports competency. This experience resulted in them ceasing to participate in the sport or seeking alternative opportunities to participate. Cathy (Identity Based Maintainer) and David (Circumstance Based Maintainer) explained how this process occurred:

I found that when – I used to do surf lifesaving and probably there was a season where I just decided that I didn't really want to do competition much anymore. And but everyone was really really into the competition so if I went to training and didn't fully bust my guts, then everyone would be like, "oh what are you doing?" or

“why do you even bother coming and stuff?” So that’s probably helped to make my decision to quit that sport, because there’s not many people who just want to do it just for the I don’t know, sake of doing it, instead of competing. (Cathy 18)

I left one of my football clubs, A, that I played for like 5 years, because we like got in the grand finals every year and stuff like that, because we worked real hard to do it and stuff like that. But I got sick of like, having to ...winning all the time and stuff like that. Oh, not winning all the time, but um just like having that much pressure to do it and stuff like that. So I went and played with um, Z down at B. And like we won like two games for the whole season, something like that. But it was still funny though, cos like training was fun. It wasn’t like crazy intense. So as we got older I just got less interested in football I suppose. (David 17)

The focus on competition and winning described here with its concomitant training requirements no longer matched the priorities of these young people. Interestingly, Cathy and David remained involved in competitive aspects of sports (surfing, futsal), but the competitive element was less intense and was more self-directed. There was no indication from Cathy and David that they lacked the ability to meet the expectations of their coaches and clubs rather, they no longer wished to participate at the level of intensity that they had previously. These young people were still interested in playing sport, but not at the level of intensity expected by their sports clubs and coaches. This re-evaluation of their involvement in organised sport appeared to coincide with a time when sports participation became more focused on supporting and fostering young people into elite or professional sport as Cathy described:

It was sort of if you weren’t doing it to become professional or whatever, and you were just sort of cruising along, there weren’t that many people just doing it for that. So you either had to be really serious or you just drop out. (Cathy 18)

Unfortunately Mel (Decreaser/Inactive) felt unable to continue to participate in her sports activity (tennis) in a more social way when this transition occurred and she ceased participating in regular PA at this time. She described this process:

Well there was a time when I was most into playing tennis, like it took up half my time. I was playing, like I was doing school tennis, club tennis and a pennant. So it

was four nights a week. And it was like pretty, you know it was getting pretty – took up a lot of my time. And it was kind of that I didn't really think that I could just go back to playing one night a week. It was kind of I was either doing it seriously or not at all, kind of....oh I don't miss the playing – I think um that I don't really miss the atmosphere of playing club and everyone pushing you to be good, and ...does that make sense? ...it was just always you know play a higher division, or just constantly you should be doing this or go play in this tournament or play in this tournament or something. That kind of stuff. So yeah, there was a bit of pressure. (Mel 16)

This re-evaluation of sports participation coincided with a time when academic expectations increased as well as opportunities for casual or part-time employment became available. The experience of Karen (17, Identity Based Maintainer) encapsulates many of the challenges for young people who exhibit above average sports competency, but who wish to continue their participation at a lower intensity. Karen was still experiencing some frustration and distress at the lack of support she received from her swimming coach during years 11 and 12 when she was prioritising her studies, but still wanting to maintain her involvement in swimming albeit at a lower level of commitment:

it was around Grade 11 when it started like towards the middle of Grade 11 like when you got all the work and the exams and stuff. And it started to get hard to do, to fit it all in. And it was probably, my coach was young, like he was, he would probably be 23 now or something. So he was always a close age to me and I think like he had been through it all. But he thought he was really tough, and he thought like "if I could get through uni or school and swim then you can do it as well." He didn't have, like even though he was a good coach he didn't have that understanding that I wanted to concentrate on my school before I do swimming. So it was kind of like "you either swim every day of the week or I don't really want you". That was kind of what he was like. So yeah I had to kind of, like me and A – she did the interview as well last year – kind of had to find a way to stand up to him and say "we're not going train every day, so either you want us to do the relays and you want our input into the club or we'll leave". (Karen 17)

While Karen was a competent swimmer and had been involved in the sport since the age

of eight years she had realised that she was not going to make it to the elite level so was making alternative plans for her future that involved tertiary education. She had been hoping to combine study and swimming but had felt largely unsupported in her efforts to do this so had ceased swimming as a result as she described:

When I knew that if I kept going with swimming it wouldn't get me, it would take me till I was probably, but I would never get in the Olympics or earn money from it. So I have to have a backup plan, I have to go to uni. Because that is going to be my whole life, whereas swimming is not my whole life, it's just something I do for the fun of it. And he (coach) didn't have, I know that there is some coaches that do I guess, but him and other ones that had, didn't have that understanding that swimming is not my whole life. Like to be in the Olympics you have to be amazing ... I can't make it my whole life.... Yeah, that's how I feel that it happens, that "if you are not going to train all the time then why do you bother coming?" That was kind of the message that I got from my coach. Like he wasn't going to put the effort in if I was only going to train two or three, like if I wasn't going to put the effort in why should he bother wasting his time coaching me or something.

While Karen expressed the most distress associated with her experience this was not an isolated incident and was described more commonly by those with higher levels of sports competency. The expectation to continue to play club sports at a competitive level with the associated time commitment resulted in many of these young people ceasing their participation in club sports completely, changing sports or playing in unaffiliated sports teams.

There was one exception to this experience described during focus group nine. In this instance the athletics coach was willing to support this young female without an expectation that she compete:

Cos I used to do athletics and cross-country but I kind of like, weekends are pretty hard for me because I'm always doing other stuff. And so I just kind of train, like for athletics, but I don't really compete in it. So I like, go to the gym and I have a coach and a club that I train with and he's fine with me kind of ...like I don't really compete competitively, but like sometimes I go up and compete and everything –

and he's fine with that, like training – it's like still getting the fitness benefits and everything. But um, yeah I just like do gym and run. Like, training sessions, just running on the Domain or something like that. (F16, FG9)

As previously described, three interview participants continued to play organised club sports. Two of these young people were playing in senior leagues requiring a significant level of commitment while one was playing at a social level and avoided attending training. These young people were committed to their respective sports and enjoyed the competitive nature of their participation. While this required a significant commitment of time for two of them they valued their club membership and were willing and able to commit themselves to the training and game requirements.

8.5 Summary transitional life stage

In this study the transitional life stage was characterised by changing expectations about time use along with changing priorities and responsibilities. There was a broadening of opportunities with respect to time use, such as combining study and work or involvement in different social and leisure activities. Study participants commonly described experiencing time pressure as they managed academic and/or occupational demands while attempting to maintain important social relationships. This experience was common amongst all young people, with the exception of the unemployed, and involved changing academic expectations during years 11 and 12 and University, as well as work demands. In response to this increase in time pressure young people were attempting to actively manage their time by identifying priorities, making commitments, making decisions about time use, accommodating changing expectations, and attempting to reduce the time pressure they were experiencing. While leaving high school was associated with increasing freedom to make choices about how they spent their time this was tempered by the expectations that accompanied further education, work and relationships. Given the discretionary nature of participation in PA, particularly LTPA, this was one aspect of their lives where young people felt able to make adjustments that accommodated less flexible demands (work, study) on their time.

This increase in time pressure appeared to be a significant and common feature of this transitional life stage. Participants identified the end of high school as a time of changing

expectations about time use as well as decreasing PA participation. This transitional life stage appeared to be characterised by the need for active time management and priority setting as young people make their own decisions about how they used their time. The sports transition described by some participants, where they ceased participation in organised sport, appeared to be an attempt to actively reduce the time pressure created by conflicting expectations with respect to time use by sports coaches/clubs and academic demands. Unfortunately it was more common for these young people to describe sports coaches and clubs who failed to understand the time pressure they were experiencing and the challenges they were having managing their time. Sports participation commonly ceased or young people changed to new clubs where the expectations with respect to training and competition were more accommodating of other commitments.

For participants classified as Identity Based Maintainers participation in LTPA continued to be prioritised. For the remaining study participants continuing participation in LTPA was more likely to continue where it facilitated the maintenance of social relationships, assisted them to manage the expectations and demands of this transitional life stage, or provided them with physical challenges that fostered the development of self-confidence and self-esteem during this period of uncertainty and change.

Chapter 9 Discussion

9.1 Introduction

This thesis has examined the role of PA in the lives of young Australians during the transition from adolescence to adulthood through the analysis of data from a prospective population based cohort study (CDAH Study), focus groups and in-depth interviews with young people aged 16 - 26 years and a range of PA measures; including self-report (IPAQ) and objective (pedometer) measures of PA. The thesis has focused primarily on those young people who maintained their involvement in PA during this transitional life stage.

To date PA research has focused on identifying correlates and determinants of PA and developing interventions that increase PA participation (often in the context of decreasing obesity). Despite long term participation in PA on a regular basis being important for maximising health benefits, the factors that influence the maintenance of PA behaviours are poorly understood. In this chapter the results are discussed in relation to relevant theories and broader public health approaches. This chapter will also include discussion of study limitations, strengths, public health implications and future directions for research.

Guiding the analysis were the following research questions:

1. Which personal, social and environmental factors in childhood and adolescence predict PA in young adulthood?
2. How do young adults perceive PA?
3. Do type and frequency of PA change for those who persist with PA from childhood and adolescence into adulthood?
4. What factors do young adults' report to influence their willingness and capacity to maintain and prioritise PA participation during the transition from dependent adolescent to independent young adult?

5. How do young adults make decisions about PA participation?
6. How do young adults mobilise the support needed to maintain PA participation as they move from the home and school environment into independent environment of further study or work?

Key Findings

The key findings of this unique mixed methods study examining the role of PA in the lives of young people as they transition from adolescence to adulthood were:

- Childhood sports competency, cardiorespiratory fitness and sociocultural factors predicted maintenance of PA for males and females during this transitional life stage.
- Identification of two distinct subgroups of PA Maintainers. In one group, Identity Based Maintainers, childhood competency and diversity of childhood PA experiences were the key features. PA was central to their sense of identity and these young people were attempting to shape their sociocultural and physical environments to facilitate ongoing participation. In the second group, Circumstance Based Maintainers, supportive sociocultural factors and current life circumstances were the key features. These young people had maintained their participation to date because circumstances remained favourable.
- Young people focused on fitness benefits associated with high intensity PA and were less aware of the benefits of lower intensity PA such as walking. Walking was a functional, boring activity not undertaken for exercise.
- Participation in PA was valued for four key reasons: relationships, health/fitness, challenge, and time out. PA Maintainers valued their participation for more than one reason, including either challenge or time out. The meaning and value placed on participation was dynamic and fluid, varying according to changes in life circumstances, type of PA undertaken and the context in which it occurred.
- The most common pattern of PA participation during this transitional life stage

was one of fluctuating participation, commonly in response to changing academic or work demands.

- Sociocultural context in childhood and young adulthood impacted on PA behaviours. The majority of participants experienced increasing time pressure and changing expectations about time use. Leaving the supportive school environment was a significant transition for most participants and impacted on PA behaviours. The support of family and friends continued to be influential. Given the diversity of experiences associated with this transitional life stage, sociocultural factors interacted in different ways for individuals making it difficult to describe clear and easily identifiable patterns.
- Sex differences were found among childhood predictors of PA (positive association with sports competency and negative associations with presence of younger siblings for females; positive associations with cardiorespiratory fitness and playing sport outside the school environment for males), perceptions of PA (health and challenge by females and muscle bulk by males), and type of PA undertaken (females more likely to participate in lifestyle activities). Other demographic factors such as socioeconomic status and education were difficult to quantify for young people in this transitional life stage. While cost of activities was a consideration in decision making around PA, low cost options were often available for participants (with the exception of organised sport). Geography and location impacted the type of activities undertaken as well as the frequency.
- It was common for those participants who reported reasonable competency levels to report a sports transition during mid-late adolescence culminating in changes in participation that provided them with more autonomy and control over time use.

Where the quantitative and qualitative methods used in both stages of this study examined similar concepts there was consistency between the findings. For example, the CDAH analysis for males and females found that childhood individual factors (sports competency and cardiorespiratory fitness) as well as sociocultural factors (siblings, playing sport outside school, active fathers) were significant predictors of PA during this

transitional life stage. Focus group and interview data also found that childhood individual factors (competency) and sociocultural factors (family, siblings, sports clubs and coaches, past participation in PA) influenced participation in PA. Focus group and interview data highlighted the impact of current life circumstances on the PA behaviours of many study participants. In CDAH analysis few childhood factors predicted variable activity indicating that current circumstances may play a greater role in PA for those categorised in this group. This study was not undertaken with an expectation that findings from both the quantitative and qualitative strands would be consistent, but as they are this discussion does not distinguish between the strands except to highlight particular findings or unless indicated.

9.2 Competency and identity

Findings from the CDAH analysis and focus groups and interviews found that childhood factors, such as sports competency and fitness were significant predictors of PA during this transitional life stage, particularly for those who remained active. Longitudinal studies in children and adolescents have shown an association between perceived sports competency and involvement in physical activity during adolescence (316, 317), but no previous longitudinal studies have examined the effect of perceived sports competency in childhood or adolescence on PA in adulthood.

Studies examining the psychological correlates of PA have consistently identified self-efficacy as a key determinant of PA behaviours for all ages (81). One of the key factors influencing self-efficacy is the experience of competency or mastery (318). Interview data from this study revealed that the relationship between competency and PA maintenance is a result of PA's role in identity formation more than self-efficacy (the belief that one has the capabilities to perform a behaviour and that the behaviour will achieve the desired outcome). For one group of young people PA was central to their sense of self and identity. Consequently, Identity Based Maintainers were prioritising participation in PA during this transitional life stage, mobilising all available means of support from family, friends, school, college and the wider community as they actively sought to incorporate PA into all aspects of their lives, not only their leisure time.

The development of identity is a critical element in the lives of young people. Identity

consists of two key components; personal and social identity (319). Personal identity develops as a result of self-experience throughout the life course (319) and is significantly influenced by social context, reflecting relationships, economic circumstances and cultural influences on individuals (320). It is proposed that in a post-modern society, where the influence of social structures such as class, family, education and employment that once directed identity formation have declined, that the process of identity formation is increasingly reliant on an individual's capacity for self-determination (321, 322). In this context, areas of competency such as sport or music may provide new foundations for identity formation. Studies with contemporary young people today show that they do create identities around leisure, work, consumption and location (147, 167, 323).

The critical role LTPA plays in the identity of some young people and the impact this has on ongoing participation in PA during this transitional life stage was also found in the Australian Life Activity Project that followed 18 year 10 students for 3-5 years (138). However, in the Life Activity Project sex and class as determined by the type of school these young people had attended (independent versus government) had shaped the degree to which PA was seen as being central to ones sense of self. Young people from government schools were less likely to view PA as central to their sense of self. These sex and class patterns were not confirmed in this study. Instead, childhood competency and diversity of experiences were the key determining factors with respect to PA being central to ones sense of self. Families, schools and access to community sports and recreational facilities and opportunities supported this process, but above average childhood competency appeared the defining characteristic.

The suggestion that leisure activities are a source of identity for young people is controversial. Some researchers believe that leisure interests are too transient to tell people who they are (174). Other researchers suggest that in contemporary society leisure choices and lifestyles for today's young people are as stable as more traditional factors such as employment or leaving home (145). The ability to envision a life that links more directly with recreational and LTPA is a recent phenomenon, made possible by social changes in recent decades and the growth in the sport, fitness and leisure industries. Participation in LTPA has not been a transient activity for the young people

classified as Identity Based Maintainers in this study, but the way they have spent their leisure time for many years. Those young people for whom PA was central to their sense of identity were seeking ways to incorporate PA in all aspects of their lives; shaping their broader sociocultural and physical environment in ways that facilitated their participation in PA through gaining PA related qualifications, planning to live in areas that enabled them to continue to be active in particular ways and embedding key social relationships within the PA environment. These young people were also able to identify older role models and mentors who were successfully combining PA with work and family responsibilities. Ongoing participation in PA was something they actively considered when making plans for the future. In this study the ability to integrate PA into all aspects of their lives was best represented by Allan, working as an adventure guide; Cathy, who was combining working as a pool attendant with surfing and Louis whose significant social relationships were all linked to his soccer club.

9.3 Sociocultural context

This study also found that sociocultural context in childhood and adulthood played a significant role in the maintenance of PA behaviours during this transitional life stage.

Culture can be understood as the patterned processes of people making sense of their world and the conscious and unconscious assumptions, expectations, knowledge, and practices they call on to do so. (235 p15s).

Social structure is the stable pattern of social relationships that exist within a particular group or society. (324 p99)

The impact of social structures and culture on human experience and behaviours are not always apparent, but observation and analysis can identify some of the mechanisms through which they operate, such as social class, SES, education. In this study analysis of CDAH data identified playing sport outside the school environment as predictive of PA persistence for males. This behaviour may result from broader social and cultural expectations and practices and playing club sport has been found to impact on PA behaviours in other studies of PA (88, 325).

The young people in this study described the transition from the structured, supportive

environment of the school system, particularly high school, to that of post-school environments as being a time of significant changes in participation. Regardless of their post-school experiences these environments were less predictable and commonly less supportive of PA when compared to the school environment. This change corresponded with experiences of increasing time pressure, increasing choice about how they spent their leisure time and changes in social networks and geographic location for some young people. Young people were increasingly reliant on themselves to facilitate PA. Ongoing participation became an individual responsibility although family and friends continued to play a supportive role. Participation in PA was partly contingent upon whether or not it was considered part of their identity, did not directly conflict with or supported other priorities, or helped them to cope with life stressors. While sociocultural factors influenced the behaviours of all participants their influence was most apparent in the lives of Circumstances Based Maintainers identified in this study. Some participants adopted time management strategies such as priority setting and establishing routines.

Psychological approaches have contributed to our understanding of PA behaviours. These theories have focused primarily on predicting or understanding behaviours and motivation to change and have contributed less to understanding an individual's ability or opportunity to change or adopt a behaviour (228, 229). However, less attention has been directed to the maintenance of behaviours over the long term (219). Even amongst participants in this study for whom PA was central to their sense of identity psychological approaches and theories fail to capture the way in which these young people actively shape and modify their social and physical environments to facilitate their participation and maintain their participation. While aiding our understanding of PA maintenance, psychological approaches fail to capture the way complex and dynamic social and cultural processes interact.

In order to deepen our understanding of PA behaviours theories from other disciplines such as sociology, anthropology and leisure have a great deal to offer and are becoming more widely used in the public health field. One sociological theory that assists in explaining PA behaviours within their sociocultural context is that of habitus as described by Pierre Bourdieu and discussed in Chapter 2, section 2.4.2, page 31. Habitus is *'embodied history, internalised as second nature'* (257 p56) and encapsulates the way

past experience, social and socioeconomic conditions inform current behaviours, beliefs and perceptions. Habitus does not operate alone but in conjunction with the field (the social context) and capital (one's position in a field). Behaviours and actions reflect the relationship between an individual's habitus and current circumstances. The habitus and field are constantly evolving so the relationship between the two concepts is dynamic and it is possible for social fields to change more rapidly or in different directions to the habitus (258). During transitional life stages an individual's social circumstances may change considerably and based on this theory individuals will respond to these changes in ways that are consistent with their habitus as well as the options and constraints they experience (or are aware of).

In this study participants were transitioning from dependent adolescent to independent adults. For all participants this change included the transition from compulsory schooling to further study, work, training or unemployment. The familiar environment of formal school was now behind many of them and they were entering new and varied social contexts with new rules of engagement where pre-existing values, expectations and practices may or may not be of assistance. For Identity Based Maintainers their past experiences and engagement in PA appear to have significantly influenced the development of their habitus. Participation and engagement in PA had been a central feature in the lives of these young people, actively supported by family during their childhood. Males and females were equally as likely to be categorised as Identity Based Maintainers and the type of activity participated in during childhood/adolescence had no impact. However, four of the seven Identity Based Maintainers were now involved in lifestyle activities (rafting, surfing, horse riding). Geographical location with respect to place of residence influenced the types of activity undertaken as well as access to opportunities to be active.

Conversely PA appeared to play a less central role in the habitus of the young people categorised as Circumstance Based Maintainers despite regular participation during childhood. Consideration about maintaining participation in PA seemed to exert less influence on their current practices and decisions and choices about the future. Their dispositions and the value they place on participation in PA differed from those categorised as Identity Based Maintainers. As they attempted to accommodate changing

social contexts associated with the transition from adolescence to adulthood it was current circumstances (work and study) and the maintenance of social relationships that were prioritised rather than PA participation. As PA is not central to their sense of self, ongoing participation in PA is linked to facilitating social relationships and not conflicting directly with work, study or family commitments. While participation was valued for its health and fitness benefits these were long term considerations that may or may not influence current behaviours.

These concepts are illustrated by contrasting the experiences of two study participants from similar demographic backgrounds who were both categorised as Maintainers, but belonged to each subgroup. When Jack (Circumstance Based Maintainer) first participated in the focus groups he held a sports scholarship and was rowing on a regular basis. At his interview six months later Jack was no longer rowing or playing any regular sport. He had initially reduced his involvement in competitive rowing in response to a back injury and had ceased participating completely when he started working as a labourer in his family's business. Despite exhibiting high levels of competency in his sport (rowing) and receiving financial support Jack considered helping in the family business a higher priority than his own sporting career (rowing):

I suppose working with family, and family comes first and trying to help out and stuff like that. So you kind of come second to family or in my eyes. (Jack 19)

Conversely Kristy (Identity Based Maintainer), whose participation in PA (horse riding) was central to her sense of identity, had successfully combined her participation with strengthening the significant relationship she had with her sister. Despite being constrained by financial circumstances during childhood Kristy had maintained her interest and passion in horse riding. This was partly through her proximity to horse stables where she rode other people's horses until she was able to support her interest by purchasing her own horse with her younger sister at age 15 years. Kristy had maximised the opportunities created by living next door to horse stables by volunteering and gaining experience with horses. While unable to provide financial support her family was supportive of Kristy and her sister pursuing their interest in horse riding, acknowledging that it might provide future employment. Kristy had also gained

qualifications that would enable her to work as a horse riding guide and was planning to attend university after taking a gap year. Both Jack and Kristy faced financial constraints as well as expectations and experiences that had shaped their lives broadly, including their expectations about the future and their participation in PA. In this instance Jack was adopting a more traditional life course that was consistent with his habitus. However, Kristy had maximised opportunities available to her in ways that were consistent with her habitus (her interest in horse riding had not included participation in pony clubs or competitions). She had also extended her opportunities beyond the boundaries her habitus may traditionally have imposed (gaining qualifications through college and seeking skilled employment associated with horse riding).

A greater understanding of habitus helps to make sense of the way some physical activities and the context in which they are undertaken are socially patterned (246). It may also assist in increasing our understanding of the way past participation in PA influences current levels of participation in PA. While Jack and Kristy both described above average levels of childhood competency, involvement in PA during childhood and supportive families and friends, their respective short and longer term plans for the future, including PA participation were considerably different. These differences may be more easily understood when considered in view of their habitus and not merely in light of individual or social characteristics such as sex or SES. The role of PA in the lives of these young people reflect the dynamic and bidirectional nature of the relationship between habitus and the field (257).

Participation in PA is linked to more than just habitus. Intentions and broader cultural considerations also influence participation. For instance, it is argued that in post-modern society physical appearance and body shape have become symbols of health, success and wealth. Bodies have become social symbols and personal resources (175, 326-328). In this study the majority of participants did not use their participation in PA as a means of shaping their physical appearance or as a social symbol. The only time participants talked about their PA in terms that approximated considerations of the body as a social symbol was during their discussions about commercial gym use. Most study participants had used commercial gyms, but only Craig talked explicitly about how he monitored his food intake and took supplements in conjunction with regular gym attendance in order to gain

the body shape and muscle bulk he desired:

I think I do view my own body as quite, you know, treasured, so to speak. Like try and treat it like as good as I could and try and take as much control of it as I can.
(Craig 17)

While other study participants had attended the gym either as part of training regimes for sports teams or in order to assist them with weight loss, these participants had now either ceased using the gym or were currently attending because they enjoyed the opportunity it provided for them to have time out from work or study commitments. Some participants explained that the gym culture made them feel uncomfortable or that it was a boring form of exercise.

The focus on physical appearance and using the body as a social symbol, monitoring and controlling it as described in this study by Craig, is fostered by today's consumer culture through health and fitness magazines, the commercial fitness industry and the availability of cosmetic surgery (327-330). These messages are reinforced by health messages related to the prevention and management of overweight and obesity (326, 331). Studies with similarly aged young people have found that linking PA with appearance or body shape and weight was significantly more likely to occur among females than males (329, 332). In this study discussions about PA and weight and appearance occurred among males and females. Older females were more likely to choose weight as the meaning PA held for them and males talked about building muscle bulk. However, with the exception of Craig weight loss and appearance were not the major concerns of study participants when talking about PA. The PA identity undertaken by those categorised as Identity Based Maintainers in this study was not related to physical appearance, but to their sense of mastery and competence. It was this mastery that provided them with a personal resource that facilitated participation in particular leisure and recreational activities, created employment opportunities and enabled access to communities thus, creating a sense of belonging. As this study focused on maintenance of PA behaviours these findings indicate that a focus on self-regulation and weight and appearance is not necessarily associated with maintaining PA.

Throughout this study there was purposeful consideration of demographic characteristics

during recruitment for focus groups and interviews and throughout analysis of the nationally based CDAH study, focus group and interview data. While ethnicity was considered in analysis of the CDAH data it was not the focus of this study and not an active consideration during recruitment for focus groups or interviews. No questions pertaining to ethnicity were asked of focus group or interview participants. Tasmania has a relatively homogenous population. The 2011 census showed that 83.6% of the Tasmanian population was born in Australia (compared to 74% nationally), 91.7% spoke only English at home (compared to 81% nationally) and 4% identified as Aboriginal and Torres Strait Islander (compared with 2.5% nationally) (333, 334). With the exception of sex this study found few discernible patterns related to other demographic factors such as socioeconomic status or education. However, geographic location appeared to influence the type of PA undertaken.

Sex differences are consistently found in studies examining PA (81). Sex differences were found in this study in the CDAH analysis of data for childhood/adolescent predictors of PA during the transition to adulthood and during focus groups and interviews. During focus groups females were more likely to discuss social support from family and friends, and weight. However, there were no sex differences with respect to the patterns of participation among interview participants. Female interview participants were more likely to be classified as low active than males using pedometer data and much more likely to assign health related meanings to their participation in PA than males. Females were also more likely to report involvement in lifestyle activities such as surfing, bushwalking and Pilates than males. Only males talked about doing weights at the gym in order to develop muscle bulk and build their physique and were more likely to talk about post exercise pain as a positive indication of sufficient physical effort to gain benefit.

In this study it was difficult to categorise focus group and interview participants according to their socioeconomic position. Common measures of socioeconomic status such as education, employment and income were not easily applied as many participants had not yet completed their education (secondary or tertiary); some were studying or working full time while others were combining study and work. Some young people lived with their parents while others lived independently. Three participants lived in an urban location during the week while at school or work and then spent the weekend in a rural location,

giving this as their primary place of residence. The SEIFA index was used as a measure of area-level socioeconomic status for interview participants. In this study, SEIFA deciles were collapsed into quintiles and interview participants' postcodes were used to categorise them. While SEIFA does not always provide an accurate indicator of individual socioeconomic status it has been shown to correlate with self-rated health independently of individual-level indicators of SES (occupation, income education) (335) and was considered adequate for the purposes of this study. Comparative analysis on the basis of measures of education or income was deemed inappropriate for interview participants. However, those young people classified as low SES using the SEIFA index were more likely to be classified as active or high active using pedometer data and were less likely to discuss the health and psychological benefits associated with participation than those in the highest SES categories. While financial considerations were discussed by all study participants these appeared more pertinent for those categorised as low SES. However, even participants categorised as low SES described having access to cheaper community based gyms if they wished to use them. These cheaper alternatives were less available for team sports although community youth centres did provide an avenue for accessing organised sports in some localities.

Research indicates that demographic characteristics such as geography and location may be important for influencing the type of PA undertaken (137, 336). Tasmania is the most regional and dispersed population of all Australian states with 60% of the population living outside the capital city (337). Over 35% of Tasmania's land mass is designated National Park or Reserve (338) and as an island state the majority of the state's residents have relatively easy access to the coast. Access to the recreational opportunities afforded by Tasmania's natural environment is not restricted to those who live in rural settings with the capital city, Hobart, bordered by Wellington Park, incorporating Mt Wellington and providing opportunities for bushwalking, cycling, horse riding and rock climbing within 30 minutes of the central business district. Residents of Hobart also have ready access to urban beaches (not surf beaches). However, access to many of these areas by public transport may be limited.

In this study geographic location influenced the type of PA undertaken by study participants. For example, living near the beach or having space to keep horses had

facilitated involvement in surfing and horse riding. Bushwalking was an activity undertaken by eight study participants, commonly with their family or through school. With small numbers it was difficult to identify any real rural/urban differences with respect to patterns of participation, but rural participants ($n = 8$) were more likely than urban participants to discuss the challenges they faced accessing opportunities to participate in organised sport due to lack of transport and restricted choice. These young people were aware of the influence of geographic location on the types of PA they engaged in. Study participants living in urban settings were more likely to be involved in team sports and be regular gym users than those living in rural settings.

9.4 Perceptions and value

Young people in this study had positive perceptions of PA and were aware of the many health benefits associated with participation. However, despite moderate intensity PA being incorporated in PA recommendations since 1995 (18) these young people continued to believe that only high intensity PA provided any health or fitness benefits. Moderate intensity PA, such as walking was considered boring and insufficient to achieve any benefits at their age. Intensity has been found to be important in defining PA as legitimate exercise among adults aged 25 to 35 years (122). Despite engaging in moderate intensity exercise, as determined by physical measures (heart rate monitors, calculated walking speed), adult walkers considered this intensity inadequate for achieving health benefits (121). This appeared to be linked with their perceptions of exertion. Young people in this study also believed that demonstrable physical exertion, such as increased heart rate, was required in order to achieve any benefits.

Components of fitness are influenced by genetic factors as well as habitual PA. Cardiorespiratory fitness is amenable to exercise training (339) and high intensity exercise does result in improved physical performance for those with higher baseline fitness (340). However, evidence of additional health benefits from vigorous intensity PA compared with moderate intensity exercise when total volume is the same (measured by total energy expenditure) is not conclusive (13). In this study the participants' focus on the cardiorespiratory benefits associated with PA and the perception that this only occurs in response to high intensity PA is consistent with other studies exploring perceptions of

walking with adolescents and older adults (113, 121, 122). A review of news and current affairs reporting of PA in Australia in 2005 found a focus on vigorous intensity PA with gym use the most commonly reported activity (341).

Participants considered walking to be a boring and a functional everyday activity, not an activity undertaken for exercise. A systematic review of attitudes to walking and cycling for transport found positive attitudes to active transport among children and young people (342). Qualitative studies show that walking behavior and decision making is influenced by an individual's social context (343, 344) and is not necessarily a source of well-being, particularly where walking is a necessity not a choice (343). The meaning associated with walking depends on the physical and social context in which it is undertaken (345). While factors such as age, sex and location have been found to influence attitudes and beliefs about active transport (342) no discernible pattern was found in this study.

The Theory of Needs, discussed in Chapter 2, section 2.4.2, page 34 proposed by medical anthropologist Christie Keifer is a theory that accounts for the sociocultural context of behaviours and the dynamic and changing meaning and value associated with these behaviours (188). She argues that in order to understand or change health-related behaviours it is first important to understand what need the behaviour meets as behaviours are generally meaningful and purposeful for individuals. However, the meaning and purpose of particular activities may alter with changes in circumstances. In this study it was apparent that PA was valued for a variety of reasons; relationships, health/fitness, challenge and time out and that these could change in response to circumstances and with particular types of activity. For example, participation in sport during childhood and early adolescence had provided David with opportunities to experience physical challenges and demonstrate his competence, but now in late adolescence when he has finished high school and started working he has begun to value his participation for its ability to help him relax and the relationships it strengthens.

The strength of this theory is its ability to account for the dynamic nature of needs and values by acknowledging the role that changes in life circumstances may play in how an activity or behaviour is valued. In this study it was common for study participants to value

their involvement in PA for more than one reason. However, PA was valued for four primary reasons: relationships, health/fitness, challenge and time out. These values appear congruent with the sociocultural context of the transitional life stage of these young people and address individual needs and purposes during this life stage. Hence, PA may serve to assist in the maintenance of significant relationships or facilitate the development of new ones, both important at a time when previous social networks may be shifting in response to leaving school or starting work. This was not the same as the concept of social support for exercise or PA commonly promoted as a strategy to increase or maintain participation (346). Rather, PA or exercise was the mechanism for maintaining key social relationships or the mechanism for creating new ones.

Participating in physical challenges, particularly if these activities reinforce a sense of mastery or competency may be important for maintaining and developing self-confidence and self-esteem at a time when changing life circumstances potentially undermine these. In this study, successful completion of challenging activities contributed to positive self-esteem and self-confidence, but it was not possible to discern if this was more important because of the transitional life stage. Research into recently retired men has also found that recreational PA provided opportunities for new personal challenges creating a sense of independence, self-worth and accomplishment during a significant life stage transition(347). Valuing PA for the opportunities it provides for time out may be a positive coping mechanism during times of increased stress such as during academic exams or increasing work demands. However, it may also provide a more general opportunity to escape the pressures of everyday life during this transitional life stage. Health was the most common meaning associated with participation in PA, but this was a diverse concept ranging from prevention of disease and mortality to energy to positive self-esteem and self-confidence. Diverse and broad concepts of health have been found in other studies exploring lay definitions of health (348, 349). When asked about their views on health young people in the UK and Australia commonly referred to fitness and vitality (332, 349). In the current study valuing PA for its health/fitness benefits was generally unrelated to specific long term health outcomes and more commonly reflected the way PA and fitness enabled these young people to participate more fully in other aspects of their lives. Participation in PA provided balance in their lives. These four values

were consistent with this transitional life stage and provide important insights into the positive role PA plays in the lives of these young people.

The value placed on participation in PA appeared to be unrelated to particular forms of PA. Participants who were involved in sport, gym or lifestyle activities all described how their activity provided time out from other pressures, provided opportunities for experiencing challenges, maintaining and developing social relationships, and promoted health and fitness. Those young people classified as Identity Based Maintainers or Increasers valued their participation for multiple reasons, including time out and physical challenge. They were less likely to value their participation for health/fitness reasons than those classified as Circumstance Based Maintainers. These four values may be specific to the transitional life stages experienced by these young people or they may reflect broader values of participation in PA. The previously described review of PA during the transition to retirement found some similarities with participation valued for social relationships, physical challenge and health/fitness benefits as well as assisting in creating new routines and reflecting lifelong patterns of participation (347).

The concept of value is also present in the psychological health behaviour literature and behavioural theories. Here, the concept of value relates to that of relative importance and is discussed in relation to the transition from behavioural maintenance to habit. It is proposed that once an individual is no longer focused on their ability to perform a behaviour or concerned with the outcome of the behaviour that people '*no longer need to verify or test its value*' (219 p138). The implication being that that once behaviour becomes habitual and by extension considered worthy of engaging in then it is subject to less fluctuation.

It is assumed that once people have reached the habit phase, they will continue in this phase until an event of sufficient magnitude causes them to reconsider the value of their behavior (219 p138).

However, this concept of value fails to account for the sociocultural context of the behaviour or that individuals may value their PA for multiple reasons simultaneously or that the value placed on behaviour may change according to the context in which it is undertaken and broader life circumstances. Walking provides a prime example of how

some forms of PA are more highly valued than others and that the meaning or value associated with an activity may depend on the physical and social context in which it is undertaken (345). In this study all but one interview participant walked for transport. However, walking for transport held little value for participants and where it was valued it was primarily for the financial savings it afforded. Walking for leisure was valued for providing time out or its ability to strengthen relationships if undertaken with others, but not for any health or fitness benefits. Walking in the bush was valued for its ability to provide time out and as a personal challenge. The value changed not only with changes in the context of walking, but also with life circumstances. Hence, during times of stress walking was valued for its ability to assist with coping with life stressors *“to just get out of my head”* (Emily 24) while during times of stability it provided a physical challenge.

As PA is increasingly undertaken during leisure time in developed countries the concept of leisure is important in our understanding of PA behaviours and leisure studies have much to offer the field of PA research. Leisure and young people were discussed in the Chapter 2, sections 2.3.1 and 2.3.3 (pages 24-26). To date leisure concepts have rarely been incorporated into PA research. A continuum of leisure experiences reflecting the meaning of leisure has been proposed following research with a small number of Australian university leisure students. This continuum includes the categories of passing time (self-entertainment), exercising choice (self-determination), escaping pressure (self-maintenance) and achieving fulfilment (self-actualization) (194). The four experiences of leisure reflect the value placed on leisure experiences as well as the meanings associated with their experiences. Meanings were considered to evolve from less to more developed meanings (passing time, exercising choice, escaping pressure, achieving fulfilment) (193).

While this leisure continuum has not been tested on a broader section of the population it seems relevant for the findings about value from this study on PA. Participants discussed their participation in LTPA in ways that reflect all four categories in the leisure continuum. Those most likely to describe their participation as achieving fulfilment were those who were categorised as Identity Based Maintainers and/or participated in lifestyle activities such as surfing, horse riding and rafting. Given that participation in PA for participants categorised as Identity Based Maintainers was integrally linked with their sense of self and the proposed outcome from achieving fulfilment is self-actualization it is

unsurprising that their experiences of LTPA would fall into this category on the leisure experiences continuum. Valuing LTPA as a means of escaping or managing pressure was also a common experience for many study participants, particularly those classified as Maintainers (Identity Based and Circumstances Based) or Increasers. The concept of physical challenge is interesting in the context of leisure as it is not consistent with perceptions of leisure as being relaxing and yet could be categorised at any point along the proposed leisure experiences continuum. That leisure meanings are also considered to be dynamic and impacted upon by developmental as well as individual, situational and contextual factors may assist our understanding of PA behaviours (193).

In this study many young people did not consider PA a leisure activity. Perceptions of leisure as something relaxing and requiring minimal effort and participants' focus on high intensity PA may explain their disinclination to identify LTPA as leisure. The concept of serious leisure, described in Chapter 2, section 2.3.2, page 24, may be more applicable for many study participants, reflecting the long term commitment and skill development necessary for ongoing participation.

9.5 Patterns of participation

When considering PA behaviours over time various patterns of behaviour are possible; maintenance of PA or inactivity, increasing, decreasing or fluctuating patterns of participation. Tracking studies reveal that PA behaviours track at low to moderate levels over time (60, 102). However, tracking studies commonly rely on either objective measures of PA over one week or less or self-report measures. Tracking studies are unlikely to capture short or medium term variations in participation and where studies address and adjust for seasonal or short term variations in participation in PA has been found to track at moderate levels (67). However, to date adjusting for variations or measurement error is uncommon in tracking studies (60). The nature of tracking studies is such that they are unlikely to capture the short-term or even longer term fluctuations in participation that from this study appear to be the most common pattern of PA behaviour, particularly for LTPA.

The natural history model of exercise behaviour was developed to account for change in engagement in PA over time, particularly structured exercise programs (350). This model

identifies three transition phases; sedentary behaviour to exercise adoption, exercise adoption to maintenance or dropout, dropout to resumption of exercise. Despite this model being described over 20 years ago little is known about the determinants of adopting exercise or exercise resumption following a period of inactivity (221).

Some unknown proportion of drop outs resume exercise. This transition has been almost totally ignored, but it may be very important to know how dynamic the exercise cycle is. ... Obviously people vary widely in the amount of time that they spend at the various phases and in how many times they drop-out and resume exercise (350 p310).

This model of exercise behaviour acknowledges the fluctuating patterns of participation demonstrated in this study. However, this model focuses on participation in more structured exercise programs and may not apply to other types of PA such as active transport or unstructured PA such as jogging. It also fails to define the term ‘drop-out’ with no indication given about what length of time has to pass before someone is classified as having ‘dropped out’ of an activity. The models proponents acknowledge that the determinants of resumption of exercise may vary for different periods of ‘drop-out’. While this model of exercise behaviour emphasises the fluctuating pattern of participation in PA observed in this study the term ‘drop out’ appears an inaccurate reflection of the way young people in this study modified their participation in PA in response to changing demands on their time. Study participants had commonly ensured that there was some inherent flexibility in their participation in PA either through not participating in organised sport, participating in seasonal activities or adopting individual activities that were inherently more flexible. The change from team based activities to individual PA during the transition from adolescence to adulthood has been found in other studies (128, 132, 137). This uptake of individual based PA with its associated flexibility ensured they could adjust their involvement if required during times of increased time pressure, such as exam periods or changes in work demands.

Time pressure is associated with feelings of lack of control or choice over how one uses ones time in conjunction with the time spent doing particular activities (351). In the most recent report on How Australians Use Their Time compiled from data collected in 2006,

38% males and 48% females aged 15-24 felt always or often rushed or pressed for time (352). The rise of technology and economic, political and social integration on a global scale has resulted in individuals desiring more time (*'proper time'*) for themselves (353 p13).

Time as such is not scarce. The impression of the scarcity of time arises only from the overtaxing of experience by expectation (353 p133).

With the exception of the unemployed, the majority of young people in our study were managing multiple commitments and making decisions about time use on an ongoing basis. Completing high school corresponded with new opportunities for how they used their time as well as changing expectations about time use. Hence it may be that the combination of broadening opportunities for time use in combination with the lack of autonomy they experience as a result of the demands and expectations of others during this transitional life stage may contribute to their feelings of time pressure.

Studies with young people indicate that how they think about time varies according to sex, opportunity (education and training) and social and cultural factors (354). Young people in this study were actively managing their time use in the context of these expanding opportunities for how they used their time as well as perceived expectations from others. Many participants had identified priorities for time use (study/work and relationships) and allocated their time accordingly. Changing involvement in PA in order to accommodate changing priorities and expectations from others and themselves have been found in other studies that included older adolescents transitioning to adulthood (112, 128, 129, 138). Hours spent at work and study and the inflexibility of these hours was found to be the most common source of time pressure in a study of Australian women aged 18-70 years (355). Altering patterns of participation in PA to accommodate particular life events or changing life circumstances appeared to be a successful short term strategy for reducing time pressure for some young people.

9.6 Sports transition

In this study many young people described their involvement in organised sport during childhood and adolescence and seven interview participants described a time during mid-

late adolescence when they had made decisions about whether to not to continue participating in a particular sport. In general, this process had occurred prior to their involvement in this study, but was remembered as a point in time where they felt compelled to change the nature of their participation in a particular sport or sports. The sports transition described by some of the young people in this study has been noted in previous PA research. In a qualitative study exploring decisions about sports participation with 60 young people aged 13-23 (only 3 older than 18 years) in the United Kingdom this was termed the '*participation turning point*' (133). This turning point was experienced by those with high competency who had participated regularly and seriously in sport and was considered a result of the realisation that their skills had peaked.

However, in this study the change in participation appeared to be the result of a clash between the expectations and time commitment associated with ongoing participation in organised sport and their own expectations and changing priorities for time use. These young people considered the time commitment required of them if they continued to play organised sport at a competitive level to be incompatible with other priorities such as academic expectations or social/work activities. For some participants playing sport at a competitive level was having a negative impact on their enjoyment of the activity and they felt unable to continue to participate in this way. This experience was more common among those categorised as Identity Based Maintainers, but also occurred among other young people who described high proficiency or competency at a particular sport. The result of this turning point was commonly a decision to participate in activities where they experienced less external expectations and they were able to participate in sport or PA in a more relaxed manner. These young people wanted more control and autonomy over how they spent their time. Some young people remained involved in organised competitive sport, but with a different club or changed sports.

This appeared an easier process for some young people and for particular sports. Some sports, such as swimming, offered few alternative means of participation. The change in participation may still result in a significant time commitment, but this commitment was self-directed and not associated with external expectations. For example, Cathy ceased her participation in water polo in year 10 following a period of training with the Australian women's junior water polo squad. While she enjoyed the experience she felt

that all they did was train and on reflection she decided that she was not prepared to make the commitment required to participate in sport at an elite level. However, Cathy surfed regularly, but did not see her involvement in surfing in the same way as she saw the commitment required to play water polo at an elite level. While both surfing and water-polo training require significant time commitments surfing is a self-directed activity while a commitment to the water polo team was accompanied by external expectations and constraints that Cathy felt unable or unwilling to adopt. The majority of participants who described this turning point in their participation in organised sport did not cease participation, however, for some young people such as Mel this cessation in organised sport was the period when they ceased all regular participation in PA.

The concept of situated action, as described by sociologist Chris Shilling and outlined in Chapter 2, section 2.4.2, page 33, may contribute to our understanding of the sports transition described in this study. In this theory humans are considered to be always in a state of action, but in differing modes (habit, crisis or creative revelation) depending upon the degree of conflict or equilibrium they experience between their social and physical environment and their needs (261). Situated action has relevance for understanding the experiences described by participants in this study due to the transitional life stage they were experiencing. The most relevant example of situated action in the context of a transitional life stage is that of the sports transition described above. Young people made changes to their sports participation following a period of reflection sparked by increasing time pressure and conflict between external expectations and constraints and their own priorities for time use. This conflict appears to have resulted in a 'crisis' where young people re-evaluated their participation in a particular sport and commonly, although not exclusively, found a satisfactory way of ensuring their continued participation in PA. However, the underlying assumption of this theory is that individuals undergoing this process do so in a reflective and proactive manner. This degree of self-reflection was not apparent in all study participants. For some young people there was not a particular event or crisis that precipitated a significant change in participation. Instead the change in participation in PA occurred more gradually as life became more complex with corresponding changes in priorities.

9.7 Public health implications

The high level of intra-individual variability in PA behaviours is acknowledged and reflected in protocols for objective PA measures such as pedometers and accelerometers (60, 79, 80). However, fluctuating participation over the medium to long term is poorly described in the PA literature and its impact on health outcomes poorly understood. While a commitment to regular participation over longer time is associated with maximal health outcomes it is unknown from current research if fluctuating participation conveys health benefits above a pattern of consistent inactivity. Although given the dose-response relationship between PA and health this is likely. The current focus on improving measurement accuracy through refining objective measures of PA may provide more accurate measures of energy expenditure and sedentary behaviours over the measurement period, but will not necessarily provide information about habitual patterns of participation. In this study it was apparent that periods of inactivity were a common response to increases in time pressure. Periods of inactivity, even prolonged inactivity did not preclude a return to participation, but this was contingent on favourable sociocultural conditions and personal resources. As the experience of time pressure varies for individuals in response to study, work and sociocultural factors then the response to feelings of time pressure may also vary. This fluctuating pattern of participation may need to be accounted for when determining successful outcomes of PA interventions as long term adherence is commonly the objective of such programs.

Research into correlates of PA behaviours has found significant relationships among variables categorised under the broad groupings of psychosocial, behavioural, sociocultural and environmental factors in children, adolescents and adults (83, 84, 309, 356). These studies commonly define the outcome of interest as PA, exercise or exercise adherence with study participants categorised according to whether or not they meet some predetermined frequency or volume of activity such as meeting PA guidelines. In these studies those categorised as 'active' are considered homogenous. However, based on the findings from this study at any one time those categorised as 'active' may include those for whom PA is central to their sense of self and identity, individuals for whom social and environmental factors are currently supportive of PA and those who have increased their PA participation. As this study has shown these three groups are

distinguishable by particular characteristics with differences in the relative influence of personal, social, cultural and environmental factors. To date studies examining the correlates of PA have not considered these differences in the 'active' population. This may partially account for the large number of variables found to be significant in correlates studies and the inconsistency of findings between studies.

A greater understanding of the value placed on participation in PA by individuals provided insight into the role PA plays in their lives. From this study it appeared that valuing participation for a combination of intrinsic (time out, challenge) and extrinsic (health/fitness outcomes, relationships) factors was associated with maintaining participation whereas participating for health/fitness or relationships alone appeared insufficient to ensure maintenance of a behaviour. With the exception of health/fitness the values placed on participation in PA and expressed by participants in this study have little in common with contemporary public health mass media and social marketing campaigns where messages are commonly framed according to weight loss, body shape or appearance and obesity prevention (326, 327, 357). These young adults valued their participation for health/fitness reasons that were more associated with the concept of being fit to manage day to day life rather than disease prevention or management. Self-regulation, such as focusing on fitness or weight loss, are often integral to messages about exercise participation promoted by the fitness industry and are commonly used when goal setting by health practitioners or as outcome measures in intervention studies. However, with only a few exceptions participants in this study categorised as Maintainers valued their participation in PA for a variety of reasons, including but not restricted to health and fitness. These findings indicate that self-regulation and goal setting may assist in the initiation of PA, but may be insufficient to support maintenance of the behaviour. This study indicates that there is scope to promote PA behaviours to young adults in ways that capture and reinforces the values they place on their participation and which would better reflect the role it plays in their lives.

The focus on participation in high intensity PA was a consistent finding in this study. The emphasis on the cardiorespiratory benefits of participation in PA, particularly aerobic fitness and the belief that vigorous intensity PA was required to attain this at their age led the majority of participants to discount walking as exercise. Research into exercise

intensity indicates that intensity impacts on the affective response to PA, with increased intensity reducing pleasure associated with an activity (358). Affective factors such as pleasure are significant motivators for PA participation. The belief that only vigorous PA provides any benefits, as found in this study, may have particular significance for young people potentially acting as a barrier to participation, especially amongst sedentary young people. Walking was also considered boring and irrelevant for their age group, undertaken as a necessity or in order to save money. Given the health benefits of participation in even small amounts of moderate intensity PA, public health campaigns promoting moderate intensity PA such as walking to young adults may be necessary. However, campaigns may need tailoring to address their current beliefs about PA in order to be effective. This may have particular significance when promoting PA to sedentary young people.

Public health interventions have focused on creating supportive environments and developing healthy settings to promote positive health behaviours. Schools are an important environment for children and adolescents thus, many interventions to promote health in children and adolescents are undertaken in schools. The most recent Cochrane review of school based programs for promoting PA and fitness found all interventions with positive outcomes incorporated curricula focused on increasing the time individual children spent being active and building knowledge about the benefits of an active lifestyle (213). Half the studies incorporated workshops or training for parents. The health promoting schools framework aims to improve the health and wellbeing of students by modifying the schools' physical, cultural and social environment. A recent systematic review of school environment interventions on student health (commonly focused on substance use) found that schools that 'add value' (teaching, pastoral support, policies, physical environment) had higher attainment and attendance than would be expected on the basis of student intake had lower rates of substance abuse and violence (359). Policies on smoking and alcohol alone were insufficient to reduce substance use unless incorporated in broader changes. Only one study examined the physical environment and PA and found that students in schools with larger grounds and playground areas had higher rates of accelerometer-measured PA during school hours. In this study supportive schools and families played a positive role in facilitating

engagement with PA during childhood and adolescence, with leaving high school a significant transition that impacted on PA behaviours. The post-school environments entered by these young people were largely unsupportive of PA and frequently reinforced sedentary behaviours. While school based interventions remain important for promoting PA in children and adolescents greater consideration needs to be given to preparing students for the transition to post-school environments such as workplaces and universities. Currently, on leaving school young people are largely responsible for maintaining their own PA behaviours with support (or lack of) from family and friends.

While this study provides evidence for the significant role sociocultural context and physical environments plays in the development and maintenance of PA behaviours it also highlights the fact that supportive environments alone are insufficient to ensure regular participation in PA. In this study some young people had decreased their PA in the presence of supportive school environments while others had increased their PA in the absence of supportive school environments. While Identity Based Maintainers maximised all opportunities that schools provided such as exposure to new activities or gaining relevant qualifications they were not dependent upon this environment. Schools acted to reinforce and support the central role PA played in their identity, but did not initiate this process. Friends and family remained influential in supporting PA behaviours, but it was also possible to decrease or cease participation in the presence of supportive families. PA Increasers in this study were introduced to PA through friends and or work colleagues not through the school environment.

This study also provides evidence for the significant role individual factors, particularly competency plays in the development and maintenance of PA behaviours. However, this study also found that competency alone is insufficient to explain the maintenance of PA for all participants. PA did not become central to the lives and identity of all those who exhibited high levels of childhood competency and some of those who reported high childhood sports competency had ceased participation completely. Those who had increased their PA levels had not reported high levels of competency during childhood or adolescence. This study illustrates that it is in the interplay between individual factors such as competency and the sociocultural context where PA behaviours can best be understood. While some patterns were identified these were not always linked to

particular characteristics or generalisable across particular categories.

In Australia and internationally, participation in organised sport has been considered an important mechanism for ensuring children and adolescents remain physically active. This is because sports participation has been found to contribute to total daily PA as well as to levels of high intensity PA (205). The decline in PA during adolescence (40) corresponds with a decline in participation in club sports (2, 92). This current study found that during mid-adolescence some young people experience a sports transition, described elsewhere as a ‘participation turning point’ (133). A study examining ‘burn-out’ in elite adolescent athletes found that the structure and organisation of sport contributed to what has traditionally been considered an individual’s response to chronic stress (360). Specifically, restricted social relationships due to the commitment to training and competition, limited life experience of athletes, narrow identity formation and lack of control over their lives were significant contributors to the phenomenon of burnout. While none of the participants in this study were elite athletes experiencing burnout they all described above average competency in sport and some of the structural and organisational issues associated with burn-out were pertinent to their experiences. These young people found that the time commitment and expectations associated with participation in the particular sport was having a negative impact on other aspects of their lives such as social relationships and academic pursuits. These expectations were also having a negative impact on their enjoyment of sport. Seeking to retain control over their own lives, not wanting their lives to be dictated by their sports involvement and the external constraints and expectations from clubs, coaches and fellow team mates many young people ceased playing organised club sports or moved to clubs and sports with a more social focus. A few young people ceased playing sport completely.

A recent review into the future of Australian sport identified six megatrends in sports participation that included; increased participation in individualised sport and fitness activity, increased participation in lifestyle or alternative sports, increased recognition of the health and social benefits of participation, demographic, generational and cultural changes in participation and the impact of market forces on the organisation of sport including a rise in the cost of participation in sport (361). The Australian Sports Commission (ASC) recently investigated market segmentation for sports participation

among adults (14 – 65 years) and found that sports club membership is affected by a focus on competition and not participation, inflexible scheduling and delivery, talent based rather than friendship based team organisation and limited opportunities for those of lower competency levels and adolescents to participate in a supportive environment (362). Some of the changes in participation noted in the Future of Australian Sport report, such as the rise of individualised sport and activity and increased participation in lifestyle and alternative sports are reflected in the types of PA undertaken by young people in this current study. The changing patterns of participation outlined by young people in this study were commonly in response to the issues identified in the market segmentation report, namely inflexible scheduling and a focus on competition. The majority of young people in the current study reduced their participation in organised sport when it became a source of time pressure and conflicted with other priorities in their lives such as social relationships, academic and work commitments. Supportive coaches had the potential to mitigate these issues, but this was not the experience of the majority of study participants. It is interesting to note that the majority of those still participating in organised sport were playing in social rosters unconnected to sports clubs. While participation in organised sport has the potential to contribute to maintaining levels of participation in PA, sports clubs will need to address the structural issues identified in the market segmentation report of the ASC if they are to make a significant contribution. In the current study, Louis and his continuing involvement in soccer and the sense of community he experienced through his participation exemplify the positive impact sports participation can have in the lives of young people.

9.8 Mixed methods study strengths

This unique mixed methods PA study examined the role of PA in the lives of young Australians as they transitioned from adolescence to adulthood. Choosing to focus on those who maintained their participation during this transitional life stage and the factors that influence this provided unique insights and understandings into PA behaviours in young people. This mixed methods study incorporated a national population based cohort study of young Australians, validated measures of PA (IPAQ and pedometer) and focus group and interview data.

Using a two stage concurrent mixed methods research design is considered the most challenging of all mixed methods designs due to the need to collect and analyse different forms of data simultaneously (272). Data integration during all stages of analysis poses particular challenges for the mixed methods researcher, but the resulting insights and understandings make the effort worthwhile. This mixed methods study design captured the fluctuating nature of participation in PA and enabled this phenomenon to be explored in more depth. This has not been possible in other study designs where longitudinal observational studies with repeated measures have focused on the stability of PA behaviours over time (47), maintenance of relative rank over time (46) or categorising participants as increasers or relapsers across time points (37). Despite day to day variability being a serious consideration when determining the reliability of objective measures of PA and reflected in measurement protocols, adjustment for this variability may unwittingly reinforce the concept of behavioural stability (67, 363).

Quantitative data from the CDAH study indicated that individual and sociocultural factors influenced PA behaviours in males and females. These factors were consistent with factors identified in studies of correlates and determinants of PA. However, the use of focus groups and interviews enabled greater exploration of the complex interplay between individual and sociocultural and environmental factors and their influence on PA behaviours. The finding that the relative influence of individual and sociocultural factors varies for individuals despite some shared characteristics highlights the complexity of PA behaviours. However, some findings were generalisable to the study population, such as their focus on high intensity PA and perceptions of walking. Combining data from interviews, IPAQ and pedometers facilitated in-depth analysis of behaviours that would have been limited if only one source of data was used. The identification of two subgroups of PA Maintainers was possible through synthesis of all available data (interviews, IPAQ, pedometer). Integrating qualitative and quantitative data facilitated the identification of distinguishing characteristics for each subgroup. High childhood competency and PA opportunities were key characteristics for participants from one subgroup of Maintainers and were linked with their developing sense of identity and plans for the future. Supportive current life circumstances were key characteristics for the other subgroup of Maintainers. These were not necessarily linked to identifiable life

events, but shifts in expectations about time use, broadening opportunities with respect to time use (particularly leisure time) and increasing responsibility for use of one's time during this transitional life stage. Differentiating these two groups was only possible because of the breadth of data available in this study.

9.9 Challenges and limitations

There were some challenges in conducting this study. Recruitment of young people for focus groups was challenging, particularly accessing young people aged 16 - 18 years of age due to presence of gatekeepers, such as school Principals and the education department. Once access to young people was granted in education settings, recruitment proceeded smoothly. While conducting focus groups was considered the most appropriate method of data collection in Stage One of this study this methodology does predicate itself on individuals being comfortable in group situations and able to participate in discussion. The majority of the focus groups consisted of young people who knew each other through shared classes and team or group membership, but they were not necessarily close friends. In many groups this enhanced the discussion as differences in opinion and experiences were openly discussed and explored. In a few groups, however, this appeared to restrict discussions. In one group pre-existing social dynamics and means of communicating between participants were evident and impacted on the ability of some group members to participate freely in discussions. It was important to remain attuned to group dynamics and encourage participation and engagement as much as possible. The researcher had previous experience in group facilitation and the interactive meaning exercise was a useful mechanism for facilitating individual engagement and promoting group discussion in these circumstances.

In the second stage of the study recruitment of inactive young people was a particular challenge. This may have resulted from the title of the study that emphasised participation in PA. Some of the young people who were recruited because they were currently inactive were eventually categorised as Maintainers as the period of inactivity appeared to be a temporary response to current life circumstances. This contributed to the difficulties in capturing data from young people who had been inactive for a longer time period.

This study aimed to explore participation in PA during this transitional life stage. Purposeful sampling ensured participants were physically active at different regularity and in different ways. The focus was on those who maintained their engagement in PA although this study did not set out to formally categorise participants according to a particular pattern of participation in PA. Rather recruitment focused on young people who participated in different types of PA and it was only during data analysis that distinct categories of participation were identified. Hence, there was no *apriori* attempt to ensure equal distribution of participants across the PA categories identified during this study (Identity Based Maintainers, Circumstance Based Maintainers, Increases or Decreases/Inactive). Despite the breadth of data available categorising participants according to their PA behaviours since childhood provided some challenges. In some cases it was the intensity of their discussions and the language they used that were distinguishing factors. These are difficult to convey through the use of quotes. Four young people declined to wear pedometers and three participants did not return their pedometer diaries despite persistent follow-up. This meant that pedometer data was not available for all interview participants, thus increasing the challenge of categorising all interview participants.

A limitation of findings from the CDAH component of this study was the use of the weekly totals from Australia's PA recommendations for children/adolescents and adults to categorise CDAH participants. Using weekly totals fails to capture the daily frequencies embedded within the recommendations; 60 minutes/day for children/adolescents and 30 mins per day for adults. From the HLAQ it was not possible to determine if the average weekly minutes of PA occurred on one day or were distributed across all seven day. Given the inherent intra-individual variability in PA behaviours categorising participant according to weekly totals was considered appropriate for this study.

A further limitation of the CDAH component of this study was the use of the HLAQ that relies on participants' recall of their PA when they were aged 15-29 years. The mitigating factor is that we might expect accuracy of recall to be greater for organised leisure time PA than casual or incidental PA. Furthermore, organised PA is commonly of higher intensity than casual PA and in this study classification was based on time spent in moderate to vigorous PA and not on the other components that sum to total PA. Other

studies have found that recall of PA over ten years is reliable (364, 365) and that the HLAQ is reproducible (364-367). The HLAQ has also been found to be predictive of bone mass in postmenopausal women (367). As previously described in section 3.8.4 Adult measures, Validity of the HLAQ, page 59 consistent associations were found between historical leisure activity measured using the HLAQ and self-report or objective measures of PA in adulthood for males and females. Measuring children's PA and attitudes by self-report is also challenging (78). However, the childhood PA self-report measures used in this study have been shown to be positively associated with the childhood cardiorespiratory fitness measures (89).

Another potential limitation of the CDAH study component was the number of participants lost to follow-up. Compared to participants, non-participants were more likely to be male, smokers and classified as low SES; the effect of this loss to follow-up is not clear. The prevalence estimates we have reported for categories of PA persistence and other study factors may not be generalizable beyond this sample, therefore. More importantly, however, the analytical associations reported should be robust because we have been able to explore associations with and adjust for a wide range of study factors, and none of those factors was so limited in distribution in this sample that estimation was infeasible.

This study did not focus on the role demographic factors played in PA behaviours. With the exception of sex, demographic factors have not been found to be consistent determinants of PA for children or adolescents while education and ethnic origin have been reported as correlates, but not determinants of PA (81). This was supported by our findings from the CDAH study where demographic factors were not significantly associated with participation in PA for males or females. However, they remained important considerations although traditional measures of socioeconomic status were particularly difficult to use in this study population currently undergoing transition as has previously been discussed. The SEIFA index was used as a measure of socioeconomic status, but this measure provides an indication of area level disadvantage and is not a sensitive measure of individual level socioeconomic status. Using the SEIFA index was problematic as three participants lived in urban locations during the week in order to facilitate further education or employment opportunities, but gave their primary

residential address as the alternative (rural) address.

The majority of participants ($n = 16$) recruited for Stage Two of this study had previously participated in focus group discussions about PA. This may have impacted their perceptions about the topics and response to questions. However, as the remaining eight participants showed no systematic differences with respect to their responses to questions about walking or the interactive meaning exercise this did not appear to be the case. Small numbers of interview participants mean that caution is required before generalising findings to other populations. However, small numbers are used in qualitative research to facilitate the collection of information-rich data. In a study of 60 in-depth interviews with women from Ghana and Nigeria the researchers systematically documented coding and thematic variability and found that twelve interviews were generally sufficient to understand perceptions and experiences (368). Despite the small numbers in this study it was possible to identify distinct categories of PA behaviours and some of their distinguishing characteristics. This was particularly the case for those participants classified as Maintainers who were the primary focus of this study. Conducting interviews with participants from the CDAH study would have enhanced the mixing of physical measures with interview data. However, as the youngest CDAH study participants were already aged 26 years at the commencement of this study it was not applicable to conduct interviews when the focus of this study was on PA during the transition from adolescence to adulthood. In the planning of this study repeated interviews with study participants over a 2 year period was initially considered, but the nature of this study with its two stage design and multiple data collection and analysis framework made this unfeasible. Despite this the concept of PA behaviours being dynamic and fluctuating according to life circumstances was a significant finding from this study.

9.10 Future directions

Further research will continue to build the evidence base that may contribute to our understanding of maintenance of PA across the life course. A number of areas for future research are suggested here.

While developments in the measurement of PA continue to focus on refining the

accuracy and specificity of measurement methods in order to capture energy expenditure we still lack reliable measures that capture habitual patterns of PA across the life course. A greater understanding of what lifelong participation in PA actually entails would assist the development of appropriate measures that capture PA behaviours over the life course. The natural history model of exercise behaviour provides a useful starting point as it does at least acknowledge changing patterns of participation over time, but its terminology and focus on structured exercise is a significant limitation.

Current measures of PA, including self-report, objective measures and observational measures fail to capture fluctuations in participation. Longitudinal studies with repeated measures of PA commonly report linear trajectories (active and inactive maintainers, adopters, relapsers) and associated health outcomes. Research is needed into the health outcomes for those whose participation in PA fluctuates in order to identify potential benefits. This would require studies where PA measures are repeated more regularly or a combination of objective, survey and interview methods designed to capture fluctuating participation.

A greater use of mixed methods in PA studies will provide the mechanism to further explore the interplay between sociocultural and individual factors and will contribute to our understanding of the complex way these factors interact in PA behaviours. Studies that further elucidate the origin of young people's perceptions and beliefs about high intensity PA and walking may provide insights into the origin of these perceptions and beliefs and identify points for intervention. Promotion of moderate intensity PA, such as walking to young people may be beneficial.

A greater understanding and acceptance of the fluctuating nature of PA participation may influence the development and expected outcomes from PA interventions. Interventions aiming to promote participation in PA have commonly included group based activity programs or changes in the built environment (walking tracks, bike paths) that support PA. Measuring the success of such initiatives could occur over a longer time frame and take into account fluctuations in participation. Someone who ceases their involvement in a group based exercise program, but commences less structured PA or plans to return in 3 months' time does not constitute a dropout. Strategies that support a return to activity

such as maintaining contact, flexibility of delivery and multiple options for engagement may need to be embedded within interventions.

Intervention programs that reflect the value or role PA plays in the lives of active young people may be more effective than programs with specific disease prevention or weight management focus. These could include promotional campaigns that promote PA as a means of managing daily stressors (not depression or major psychological distress), providing positive achievable challenges (not extreme events and activities) and its ability to keep you connected with friends or make new friends (in the way that facebook promotes social connection for some young people). The current emphasis on disease prevention, weight management and appearance does not capture the positive role that PA played in the lives of those Maintainers in this study.

While school based interventions remain important, all young people eventually leave this environment. Leaving high school was a critical transition and interventions and strategies that better support young people to remain active during this transition are needed. These interventions could be targeted to the senior secondary school years, would need to occur outside the traditional PE environment and could incorporate the positive role of PA in the lives of young people as outlined by Maintainers in this study. Acknowledging the challenges of this transitional life stage and that fluctuating participation may be common could make interventions more accessible. Strategies in sport and recreation that address the structural and organisational issues in sports delivery that currently contribute to the decline in sports club participation during adolescence are needed.

If the findings from this study were to be expanded then consideration of recruiting participants according to the PA categories identified may facilitate further insights into factors that influence participation for each PA category.

9.11 Conclusion

This study has shown that a number of individual and socio-cultural factors in childhood and adolescence predict participation in PA during the transition from adolescence to adulthood. Young adults focus on the fitness benefits associated with high intensity PA

and consider moderate intensity PA, such as walking inadequate to achieve any health or fitness benefits at their age. The type and frequency of PA changes during this transitional life-stage, even among Maintainers. The most common change involved a cessation of organised club sport and involvement in lifestyle activities or social sport. Fluctuating participation in PA was common for many young people, even those who describe a long term pattern of engagement in PA and commonly occurred in response to changes in academic or work demands.

Maintaining PA behaviours over time followed two distinct pathways (Identity Based Maintainers, Circumstance Based Maintainers). For Identity Based Maintainers participation in PA was central to their sense of self and identity, largely resulting from high levels of childhood sports competency and exposure to a range of opportunities to be active during childhood. Circumstance Based Maintainers were dependent on social and environmental factors remaining supportive of ongoing participation in PA. This second group was more likely to describe periods of decreased activity during periods of increased time pressure. Identity Based Maintainers prioritised participation in PA and mobilised all means of support to ensure participation remained a central feature of their lives. Circumstance Based Maintainers were less proactive in this process and participation remained a priority only while it facilitated other aspects of their lives, such as important relationships.

Understanding the meaning and value associated with participation in PA provided the greatest insights into the role of PA in the lives of these young people. Valuing their participation for a combination of extrinsic (relationships, health/fitness) and intrinsic factors (time out, challenge) was common among Maintainers. These values were consistent with this transitional life stage, providing positive outcomes and experiences during a time of uncertainty. Importantly, values and meaning were fluid and dynamic, altering according to the type of activity undertaken and during changes to life circumstances.

Family, friends, sports clubs and coaches, schools and colleges and geographic location all influenced participation in PA participation, but not necessarily in easily predictable ways. Leaving the supportive school environment was a significant transition for most

participants and impacted on PA behaviours. Geographic location influenced the type of PA participated in. The majority of participants experienced increasing time pressure and changing expectations about time use during this transitional life stage with participation in PA commonly modified to accommodate this. Social and cultural factors interacted in different ways for individuals making it difficult to describe clear and easily identifiable patterns. Sex differences were found among childhood predictors of PA, perceptions of PA and type of activity participated in.

Decision making about PA, the willingness of young adults to maintain and prioritise their participation and their ability to mobilise the support they needed to maintain participation was best captured in the value they attached to their participation as well as their category of participation (Identity Based Maintainers, Circumstance Based Maintainers, Increasers, Decreasers/Inactive). Psychological behavioural theories have made important contributions to our understandings of PA behaviours, particularly at the individual level. However, these theories commonly fail to place individual behaviours within their broader sociocultural context. Theories from other disciplines such as sociology and anthropology have much to contribute, particularly with respect to understanding the dynamic and complex interactions between the individual and their social, cultural and physical environments. This study provided evidence that both individual characteristics such as competency and cardiorespiratory fitness and sociocultural and environmental factors play a role in maintenance of PA. It is the interplay between these factors that provides the greatest understanding of habitual participation in PA.

Chapter 10 References

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Chapter 11 Appendices

Appendix 1 Ethics approval

<p style="font-size: 2em; color: blue;">COPY</p> <p>MEMORANDUM</p>	<p>Private Bag 01 Hobart Tasmania 7001 Australia Telephone (03) 6226 2764 Facsimile (03) 6226 7148 Marilyn.Knott@utas.edu.au http://www.research.utas.edu.au/index.htm</p>	
<p>HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK</p>		

MINIMAL RISK ETHICS APPLICATION APPROVAL

7 August 2008

Dr Emily Hansen
Menzies Research Institute
Private Bag 33
Hobart

Ethics reference: H10202

'Physical activity and young adults: What factors help to explain participation in physical activity during the transition from dependent adolescent to independent adult?'

PhD candidate: Kim Jose

Dear Dr Hansen

Acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 4 August 2008.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the *National Statement on the Ethical Conduct in Research Involving Humans 1999* (NHMRC guidelines).

Therefore, the Chief Investigator's responsibility is to ensure that:

- 1) All researchers listed on the application comply with HREC approved application.
- 2) Modifications to the application do not proceed until approval is obtained in writing from the HREC.
- 3) The confidentiality and anonymity of all research subjects is maintained at all times, except as required by law.
- 4) Clause 2.37 of the National Statement states:
An HREC shall, as a condition of approval of each protocol, require that researchers immediately report anything which might warrant review of ethical approval of the protocol, including:
 - a) Serious or unexpected adverse effects on participants;
 - b) Proposed changes in the application; and
 - c) Unforeseen events that might affect continued ethical acceptability of the project.

The report must be lodged within 24 hours of the event to the Ethics Executive Officer who will report to the Chairs.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

- 5) All participants must be provided with the current Information Sheet and Consent form as approved by the Ethics Committee.
- 6) The Committee is notified if any investigators are added to, or cease involvement with, the project.
- 7) This study has approval for four years contingent upon annual review. An *Annual Report* is to be provided on the anniversary date of your approval. Your first report is due [12 months from 'Ethics Committee Approval' date]. You will be sent a courtesy reminder by email closer to this due date.
Clause 2.35 of the National Statement states:
As a minimum an HREC must require at regular periods, at least annually, reports from principal researchers on matters including:
 - a) *Progress to date or outcome in case of completed research;*
 - b) *Maintenance and security of records;*
 - c) *Compliance with the approved protocol, and*
 - d) *Compliance with any conditions of approval.*
- 8) A *Final Report* and a copy of the published material, either in full or abstract, must be provided at the end of project.

Yours sincerely

Ethics Executive Officer

Appendix 2 Tasmanian Department of Education Approval

Department of Education
EDUCATIONAL PERFORMANCE SERVICES

2/99 Bathurst Street, Hobart
GPO Box 169, Hobart, TAS 7001 Australia



File: 808191

27 March 2009

Dr Emily Hansen
Primary Health Care Research Fellow
Menzies Research Institute
Level 2, Surrey House
199 Macquarie Street
HOBART TAS 7000

Dear Dr Hansen

Physical Activity and young adults

I have been advised by the Educational Performance Report Committee that the above research study adheres to the guidelines established and that there is no objection to the study proceeding.

Please note that you have been given permission to proceed at a general level, and not at individual school level. You must still seek approval from the principals of the Further Education campuses and the manager of the Springvale Hostel before you can proceed with your research.

A copy of your final report should be forwarded to Patricia Lloyd, Educational Performance Services, Department of Education, GPO Box 169, Hobart 7001 at your earliest convenience and within six months of the completion of the research phase in the Department of Education schools.

Yours sincerely

Manager
(Educational Performance Services)
Cc Kim Jose

Appendix 3 Good character check**Department of Education****CONDUCT AND INVESTIGATIONS**

GPO Box 169, Hobart, TAS 7001 Australia
Ph 1800 816 057 Fax (03) 6233 0588



18 March 2009

Mrs Kim Jose
20 Marlborough Street
SANDY BAY TAS 7005

Dear Mrs Jose

Good Character Check Application

Recently you applied for a clearance with the Department of Education. Your Good Character Check application has now been processed and I confirm a National Criminal History Check and other internal checks have been conducted and you have been cleared to work/volunteer in the Department of Education, including departmental schools.

This Good Character Clearance is issued with the following provision:

You should note that you will need to inform the Department's Conduct and Investigations Unit of any pending charges that you are aware of or become aware of, which may impact on your eligibility to work/volunteer in a school-based position.

This clearance is valid from 18/03/2009 and expires on 18/03/2012.

Prior to the expiry of your Good Character Clearance, if you are still working/volunteering in school related programs, you must submit a new Good Character Check application form for processing.

Please retain this letter for your records.

Yours sincerely

Jackie Peterson
A/MANAGER (CONDUCT AND INVESTIGATIONS)

Appendix 4 Focus group information and consent form



Physical Activity and Young Adults: What factors help to explain participation in physical activity during the transition from dependent adolescent to independent adult?

Focus Group Information Sheet

Introduction

This study is being conducted by Kim Jose as part of her PhD studies at the Menzies Research Institute, University of Tasmania. We are asking your child to participate in a group discussion (focus group) with other young people. The focus group will be facilitated by Kim Jose. This research has also been approved by the Department of Education and Kim Jose has completed a Good Character Check through the Department of Education.

The Research

During the transition from adolescence to young adult people often become less involved in physical activity. There has been little research into why this happens. This study will explore the factors that impact on physical activity participation for young people of this age.

The Focus Group

We are asking your child to participate in a group discussion (focus group) with other young people focusing on physical activity. It is expected that the focus groups will run for three quarters of an hour and will take place on campus.

During the focus group your child and the other participants will be asked for comments and reflections on their involvement in physical activity, how this may have changed and the role of other factors such as study, employment, friends and family in this. The focus groups will be audio recorded and some written notes will be taken. After the focus group your child may be contacted by the researchers and asked to participate in an interview. Participation in the focus groups and interview is entirely voluntary.

Confidentiality

All focus group participants will be asked to respect each others confidentiality by not giving other people details about the focus group discussion. Focus group recordings and notes will be stored securely on the Menzies Research Institute premises for five years before being destroyed. The recordings and any notes will be marked with a code number not named. Information gathered from the focus group will be treated in a confidential manner and no identifying details will be used in the PhD thesis or any research publications. Findings and recommendations from the project will be made available to all participants on completion of the project.

Possible Benefits

A greater understanding of the factors that impact on physical activity for young adults aged 16-25 will enable more effective health promotion strategies to be developed specifically for people of this age.

Possible Risks

There are no specific risks anticipated with participation in this study.

Your involvement

Your child's participation in this project is voluntary and they may withdraw at any time. There will be no negative consequences for them if you decide not to participate.

Questions or Concerns

If you would like to discuss any aspect of this study please feel free to contact either Kim Jose Ph 62267763. Email: Kim.jose@utas.edu.au or Emily Hansen Ph 62264769. Email: Emily.Hansen@utas.edu.au. Either of us would be happy to discuss any aspect of the research with you.

Ethics

This project has received ethical approval from the Human Research Ethics Committee (Tasmania) Network. You can contact the Ethics Executive Officer with any concerns or complaints regarding the way this research is being conducted phone: (03) 6226 7479; email: human.ethics@utas.edu.au. You will need to quote H10202.

This research has also received ethics approval from the Department of Education.

Kim Jose PhD student Menzies Research Institute 6226 7700 Kim.jose@utas.edu.au	Emily Hansen Research Fellow Menzies Research Institute 62264769 Emily.Hansen@utas.edu.au	Alison Venn Deputy Director Menzies Research Institute 6226 7706 Alison.Venn@utas.edu.au
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**CONSENT FORM – Focus Groups**

Title of Project: Physical Activity and Young Adults

Information Sheet No. _____ Date _____

1. I have read and understood the 'Information Sheet' for this study.
2. The nature of the study has been explained to me.
3. I understand that the study involves my child being involved in a group discussion for three quarters of an hour about physical activity lead by workers associated with the project.
4. I understand that the discussion will be recorded.
5. I understand that my child may be contacted for an interview at a later date.
6. I understand that all research data will be securely stored at the Menzie's Research Institute, University of Tasmania for at least five years following publication of results and will then be destroyed.
7. Any questions that I have asked have been answered to my satisfaction.
8. I agree that research data gathered from my child for the study may be published provided that they cannot be identified as a participant.
9. I understand that the researchers will maintain my child's identity confidential and that any information they supply to the researcher will be used only for the purposes of the research.
10. I understand that while the researcher will maintain the confidentiality of the discussion and other members of the focus group will be asked to maintain confidentiality the researcher can not guarantee confidentiality on the part of other members of the focus group.
11. I give permission for my child to participate in this investigation and understand that they may withdraw at any time without any effect, and if they so wish may request that any data they have supplied to date be withdrawn from the research.

Child's Name: _____

Name of Parent/ guardian: _____

Signature: _____

Date: _____

Statement by Investigator

☐ The parent or guardian has received the Information Sheet where my details have been provided so they have the opportunity to contact me prior to consenting for their child to participate in this project.

Name of investigator _____

Signature of investigator _____

Date _____

Appendix 5 Interview information and consent forms



Physical Activity and Young Adults: What factors help to explain participation in physical activity during the transition from dependent adolescent to independent adult?

Information Sheet No. _____

Date _____

Participant Information Sheet: Interviews

Introduction

Thank-you for your interest in being involved in this study about physical activity and young adults. The study is being conducted by Kim Jose as part of her PhD studies at the Menzies Research Institute, University of Tasmania. We are asking you to participate in an interview with the researcher, Kim Jose.

The Research

During the transition from adolescence to young adult people often become less involved in physical activity. There has been little research into why this happens. This study will explore the factors that impact on physical activity participation for people of this age by asking young people to reflect on their involvement in physical activity and the factors that impact on this.

The Interview

The interview will take approximately 1 hour. The interviewer will ask for comments and reflections on your involvement in physical activity, how this may have changed over time and the role of other factors such as study, your health, employment, friends and family in this. Interviews will take place at a time and location convenient for you (for example your home, workplace, a community centre or a room at the University of Tasmania). Interviews will be audio recorded and some written notes will also be taken. Information from the interview will help us identify key factors that impact on physical activity in young adults. After the first interview you may be asked to participate in a follow up interview in six - eighteen months time.

You will also be asked to complete a physical activity survey and to wear a pedometer for 7 days after the interview. The pedometer is a small device that counts the number of steps taken during the day. It is worn on your waist band and should not stop you from doing any of your regular activities.

Confidentiality

Interview recordings and notes will be stored securely on the Menzies Research Institute premises for five years before being destroyed. The recordings and any notes will be marked with a code number not your name. Information gathered from the interview(s) will be treated in a confidential manner and your name will not be used in the PhD thesis or any research publications. Findings and recommendations from the project will be made available to all participants on completion of the project.

Possible Benefits

A greater understanding of the factors that impact on physical activity for young adults aged 16-25 will enable more effective health promotion strategies to be developed specifically for people of this age.

Possible Risks

There are no specific risks anticipated with participation in this study.

Your involvement

Your participation in this project is voluntary and you may withdraw at any time. There will be no negative consequences for you if you decide not to participate.

Questions or Concerns

If you would like to discuss any aspect of this study please feel free to contact either Kim Jose Ph 62264769. Email: Kim.jose@utas.edu.au or Emily Hansen Ph 62264769. Email: Emily.Hansen@utas.edu.au . Either of us would be happy to discuss any aspect of the research with you.

Ethics

This project has received ethical approval from the Human Research Ethics Committee (Tasmania) Network. You can contact the Ethics Executive Officer with any concerns or complaints regarding the way this research is being conducted phone: (03) 6226 7479; email: human.ethics@utas.edu.au. You will need to quote H10202. This project has also received approval from the Department of Education.

Kim Jose PhD student Menzies Research Institute 6226 7700 Kim.jose@utas.edu.au	Emily Hansen Research Fellow Menzies Research Institute 62264769 Emily.Hansen@utas.edu.au	Alison Venn Deputy Director Menzies Research Institute 6226 7706 Alison.Venn@utas.edu.au
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**CONSENT FORM – Interviews**

Title of Project: Physical Activity and Young Adults: What factors help to explain participation in physical activity during the transition from dependent adolescent to independent adult?

Information Sheet No. _____ Date _____

1. I have read and understood the 'Information Sheet' for this study.
2. The nature of the study has been explained to me.
3. I understand that the study involves being involved in an interview with the researcher associated with the project.
4. I understand that the discussion will be recorded.
5. I understand that I will be asked to fill in a physical activity survey
6. I understand that I will be asked to wear a pedometer for 7 days before returning it to the researchers.
7. I understand that all research data will be securely stored at the Menzies Research Institute, University of Tasmania for at least five years following the publication of results and will then be destroyed.
8. Any questions that I have asked have been answered to my satisfaction.
9. I agree that research data gathered from me for the study may be published provided that I cannot be identified as a participant.
10. I understand that the researchers will maintain my identity confidential and that any information I supply to the researcher will be used only for the purposes of the research.
11. I understand that I might be asked for a follow up interview in the next 6-12 months.
12. I agree to participate in this investigation and understand that I may withdraw at any time without any effect, and if I so wish may request that any data I have supplied to date be withdrawn from the research.

Name of Participant: _____

Signature: _____

Date: _____

Statement by
Investigator



I have explained the project & the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation

Appendix 6 Focus group participant information sheet



Menzies
Research
Institute

Focus group venue:

Date:

Focus Group Participants Information Form 2008

Name: _____

Contact Details:

Address:

Email: _____

Phone/Mobile _____

Age _____

What year are you in? _____

What do you hope to do when you finish year 12? _____

Are you currently working as well as studying? _____

Please give details of the type of work or study you are doing

Would you describe yourself as being mainly active/ inactive? (please circle)

If you would call yourself active what type of activity do you currently do? (e.g. gym, bushwalking, surfing, running, walking, sport)

Would you be happy to be contacted for 1-2 follow up individual interviews over the next 2 years? (At a time and place that is convenient to you)

Yes/ No

This project has received ethical approval from the Human Research Ethics Committee (Tasmania) Network (H10202).

Appendix 7 Focus group guide**Preamble**

Thanks for coming. Before we start I need to explain that I will be asking some questions to the whole group to be answered by anyone. During the discussion everyone is encouraged to participate. Remember, other people may have a different opinion or view to you, but I want to hear all opinions. Everything that is said during the discussion is confidential and not to be spoken about outside this group. I will be recording the discussion as it will help me to remember what you said. The questions will be about PA and its role in your lives. When we talk about PA we don't just mean sport, it can be anything active such as walking to Uni/ TAFE/ work, dancing, bike riding or walking the dog! It may involve an organised activity or might be something you do to get you places. You might not be very active and that's okay too.

1. What sorts of things do you do in your leisure time?
2. How do you make decisions about what to do in your leisure time?

What influences this?

3. Think back to your time at high school. How has your involvement in PA changed since then?

What has influenced this? How do you feel about this (the changes)? When did this happen?

4. What role does PA/ being active play in your life at present? What has influenced this?


How has this happened? How do you feel about this?

5. What influence do family and friends have on your PA?

6. How does being active make you feel?
7. If you could choose one word from the ones shown here to summarise your experiences with PA which would you choose?
8. Would you like to explain why you chose the word you did?

Appendix 8 Childhood questionnaire





[illegible]



AUSTRALIAN HEALTH & FITNESS SURVEY

1985

QUESTIONNAIRE

On the following pages you will find a number of questions about yourself, the exercise you do and your health.

We would like you to answer them all.

Please note that there are no right or wrong answers and that the answers you give are strictly private.

How to fill in your questionnaire:

1. I will read the questions with you and then you can answer each one yourself.
2. For most questions you will tick the box for the answer you want to give.

For example:

Do you watch television? Yes ☒ No ☐

3. For other questions you will need to write the answer in the space provided. Please print clearly.

4. If you have any problems just ask me and I will help you with the answer.

Remember this is not a test, there are no right or wrong answers. What we want to know is what you do, how you think and how you feel.

		Leave this column blank	
3.	Is your answer to the last question typical of your exercise pattern in the last month?	1 I am usually more active	2 The same as usual
4.	In most weeks do you get exercise or activity three or four times which makes you huff and puff and lasts at least 30 minutes each time?	1 Yes	2 No
5.	What do you usually do at recess? (Usually means 3 or more days a week.)	1 Sit and talk to friends	2 Walk around the school
		3 Run around playing sports/games	4 Read/study for the next classes
		5 Nothing much	6 Other (Please print)
6.	What do you usually do at lunch time? (Usually means 3 or more days a week.)	1 Sit and talk to friends	2 Walk around the school
		3 Ride or walk home for lunch	4 Train for school sports teams
		5 Play sport/games on the oval or in the school grounds	6 Study or do homework
		7 Other (Please print)	
7.	Do you enjoy School Physical Education Classes?	1 Very much	2 Quite a lot
		3 Sometimes	4 Not much
		5 Not at all	6 We don't have School Physical Education
		7 I don't do Physical Education	
8.	Do you enjoy School Sports?	1 Very much	2 Quite a lot
		3 Sometimes	4 Not much
		5 Not at all	6 We don't have School Sport
		7 I don't do Sport	
9.	Do you enjoy Physical Activity? (Vigorous playing or exercise that you do by choice)	1 Yes	2 No
	Why/Why not:		
10.	How fit do you think you are compared to others of your age?	1 Fitter than most	2 About average fitness
		3 Not as fit as most	
11.	Is your health usually?	1 Very good	2 Good
		3 Average	4 Poor
		5 Very poor	
12.	Do you enjoy school?	1 Yes, all the time	2 Yes, most of the time
		3 Sometimes Yes/sometimes No	4 Not very often
		5 Never	
13.	How good are you at school work compared to others of your age?	1 Better than most	2 About the middle
		3 Not as good as most	
14.	What time did you go to bed and turn out the lights last night? (For example 10:35)	Hours: 10 Minutes: 35	
15.	What time did you wake up this morning? (For example 06:15)	Hours: 06 Minutes: 15	
16.	Here is a list that describes some of the ways people feel at different times. During the past few weeks, how often have you felt (Tick one box on each line.)	Often	Sometimes
	(a) On top of the world?	<input type="checkbox"/>	<input type="checkbox"/>
	(b) Very lonely or remote from other people?	<input type="checkbox"/>	<input type="checkbox"/>
	(c) Particularly excited or interested in something?	<input type="checkbox"/>	<input type="checkbox"/>
	(d) Depressed or unhappy?	<input type="checkbox"/>	<input type="checkbox"/>
	(e) Pleased about having accomplished something?	<input type="checkbox"/>	<input type="checkbox"/>
	(f) Bored?	<input type="checkbox"/>	<input type="checkbox"/>
	(g) Proud because someone complimented you on something you had done?	<input type="checkbox"/>	<input type="checkbox"/>
	(h) So restless you couldn't sit long in a chair?	<input type="checkbox"/>	<input type="checkbox"/>
	(i) That things were going your way?	<input type="checkbox"/>	<input type="checkbox"/>
	(j) Upset because someone criticised you?	<input type="checkbox"/>	<input type="checkbox"/>

Leave this column blank

6 7

27. In what suburb/town do you live? (State if you live on a farm.)

28. When were you born? (eg 06 / May / 1970)

29. What sex are you?

30. In what country were you born? (If you don't know the country put the city or town.)

31. In which Australian State or Territory were you born?

32. How many years since you first arrived in Australia?

In the next question, when we ask about your brothers and sisters please include step-brothers and step-sisters.

33. How many older brothers do you have at home?

How many older sisters do you have at home?

How many younger brothers do you have at home?

How many younger sisters do you have at home?

The next two questions are about where your natural parents (not your step-parents) were born. If you don't know the country, give the city or town, if you don't know write in "don't know".

34. In what country was your father born?

35. In what country was your mother born?

36. Do you speak a language, other than English, at home?

Leave this column blank

37. During the school week, where do you live?

38. Does your mother or father smoke at home?

39. Does your father exercise regularly (2 or more times a week)?

40. Does your mother exercise regularly (2 or more times a week)?

Leave this
column blank

6

23. How often do you usually drink alcohol?

I don't drink alcohol ☐ 1

Less than once a week ☐ 2

On 1 or 2 days a week ☐ 3

On 3 or 4 days a week ☐ 4

On 5 or 6 days a week ☐ 5

Every day ☐ 6

24. Do you usually eat something before starting school? (Usually means 4 or more times a week.)

Yes ☐ 1

No ☐ 2

25. In your opinion how important is it to you to —

	Very Important	Of some Importance	Of little Importance	Not Important
(a) See a dentist once a year	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Have a doctor's checkup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Know about your body and how it works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Have a good night's sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Eat a good diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Be a non-smoker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Have a good body/figure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Exercise regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Not be fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Have friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Not be stressed and worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) Not drink alcohol or only drink a little	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m) Know about fitness and how to stay fit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

26. How well can you do the following?

	Never tried	Can't do	Can do about average	Can do very well
(a) Play a musical instrument	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Ride a horse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Play tennis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Swim 100 metres non-stop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Play a round of golf	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Ride on a surfboard/sailboard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Ice or roller skate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Play squash/badminton or racquetball	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Play video games	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Play billiards/pool or snooker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Ride on a skateboard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5

Leave this
column blank

17. Have you ever smoked even part of a cigarette?

No ☐ 1

Yes, just a few puffs ☐ 2

Yes, I have smoked fewer than 10 cigarettes in my life ☐ 3

Yes, I have smoked more than 10 cigarettes in my life ☐ 4

18. How many cigarettes have you smoked in the last 7 days? ☐ 1 ☐ 2 ☐ 3 ☐ 4

19. How long have you been smoking regularly? (Regularly means 1 or more times a week.)

I don't smoke ☐ 1

Just started ☐ 2

1 month up to 6 months ☐ 3

7 months up to 1 year ☐ 4

1 year up to 2 years ☐ 5

2 years up to 4 years ☐ 6

More than 4 years ☐ 7

20. How many people smoke at home? (If you smoke — do not include yourself.)

Number of persons ☐ 1 ☐ 2 ☐ 3

21. Do you think you will be smoking this time next year?

Yes ☐ 1

No ☐ 2

Don't know ☐ 3

22. Please say what you think about the following statements about smoking.

	Agree	Disagree	Don't know
(a) It makes you catch cold easily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) It slows your circulation and makes your fingers cold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) It keeps you alert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) It makes you unable to play sport well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) It makes your breathing difficult	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) It can cause lung cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) It calms your nerves	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) It can cause heart disease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) It gives you bad breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) It keeps you slim	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) It is addictive (habit forming)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 9 Historical leisure activity questionnaire

Please use the tables on the following pages to indicate how many years, months per year and hours per week you participated in each of the leisure activities in each of the given age periods.

Include all activities that you may have participated in regularly (on at least 10 occasions) with friends, an organised team, group, club or for your school, but NOT those done during physical education classes. If you participated in an activity that is not listed, please specify this activity in the "other" category.

EXAMPLE BELOW: From the age of 25-29 you walked for 30 minutes five days a week for 10 months of the year.

You played a one-hour basketball match twice a week for 8 months of the year when you were 15-16 years old.

You also surfed for an hour once a week for three months of the year when you were 20.

Activity	15-19 years				20-24 years				25-29 years				30 or more years		
	Years	Months /year	Hours /week		Years	Months /year	Hours /week		Years	Months /year	Hours /week		Years	Months /year	Hours /week
Walking					5	10	2½		5	10	2½				
Basketball	2	8	2												
Surfing					1	3	1								

If you have **NOT** participated in ANY activities please fill in the circle below

☐ I have not participated in any activities

0179213935

Activity	15-19 years			20-24 years			25-29 years			30 or more years		
	Years	Months per year	Hours per week	Years	Months per year	Hours per week	Years	Months per year	Hours per week	Years	Months per year	Hours per week
1 Aerobics												
2 Athletics or track and field												
3 Australian rules football												
4 Basketball												
5 Bushwalking												
6 Cricket												
7 Cycling												
8 Dance including ballet												
9 Fishing												
10 Horseriding												
11 Golf												
12 Snow or ice sports												
13 Martial arts												
14 Netball												
15 Newcombe												
16 Roller sports												

[illegible]

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Appendix 10 Interview guide

1. Given the competing demands on your time how do you prioritise where to spend your time?
2. What role does PA currently play in your life?
 - a. Explore changes and decision making
3. How important is being PA for you?
4. How does being active make you feel?
5. When you were growing up what sorts of PA did you do?
 - a. How good did you think you were at these?
 - b. How did you know this?
 - c. How did this influence your participation?
6. Thinking about your family and friends – how active were/are they?
 - a. How did/does this influence you?
7. Interactive exercise (meaning). In the focus groups (if attended) you chose X as a word that you would use to describe the meaning that PA holds for you. If didn't attend focus group then ask about choosing a word that would use to capture the meaning PA had for them. Provide some words as a prompt.
 - a. Would you like to tell me a little more about this?
 - b. Has it always been like this?
8. Thinking about the future, what role do you think PA is going to have for you?
 - a. Do you think your involvement in PA will change or stay the same?

9. Is there anything else you'd like to tell me about your involvement in PA that we haven't talked about?

Note: the following question was added after four interviews when it became apparent that participants would not talk about walking unless asked directly.

10. Australia's PA guidelines for adults recommend 30 minutes per day of moderate/vigorous PA on most days of the week. This includes walking. I was wondering what you thought of walking for exercise?

Appendix 11 Interview participant information sheet**Interview Information Form 2010**

Place of interview:

Date:

Pedometer number:

Name: _____**Contact Details:****Address:****Email:** _____**Phone/Mobile** _____**Age** _____

Are you studying? Yes/No

What year are you in? _____

What do you hope to do when you finish studying? _____

Are you currently working? Yes/No

How many hours do you work per week(on average)? _____

Please give details of the type of work you are doing

Do you smoke? Yes/No

How many cigarettes do you smoke per day? _____

Do you have your driver's license? Yes/No

Do you currently live with your parents? Yes/No

Do you have brothers and sisters? Yes/No

If yes, how many older _____

If yes, how many younger _____

Appendix 12 International PA questionnaire**INTERNATIONAL PA QUESTIONNAIRE (October 2002)****LONG LAST 7 DAYS SELF-ADMINISTERED FORMAT**

FOR USE WITH YOUNG AND MIDDLE-AGED ADULTS (15-69 years)

The International PA Questionnaires (IPAQ) comprises a set of 4 questionnaires. Long (5 activity domains asked independently) and short (4 generic items) versions for use by either telephone or self-administered methods are available. The purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health-related PA.

Background on IPAQ

The development of an international measure for PA commenced in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken across 12 countries (14 sites) during 2000. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages, and are suitable for national population-based prevalence studies of participation in PA.

Using IPAQ

Use of the IPAQ instruments for monitoring and research purposes is encouraged. It is recommended that no changes be made to the order or wording of the questions as this will affect the psychometric properties of the instruments.

Translation from English and Cultural Adaptation

Translation from English is encouraged to facilitate worldwide use of IPAQ. Information on the availability of IPAQ in different languages can be obtained at www.ipaq.ki.se. If a new translation is undertaken we highly recommend using the prescribed back translation methods available on the IPAQ website. If possible please consider making your

translated version of IPAQ available to others by contributing it to the IPAQ website. Further details on translation and cultural adaptation can be downloaded from the website.

Further Developments of IPAQ

International collaboration on IPAQ is on-going and an ***International PA Prevalence Study*** is in progress. For further information see the IPAQ website.

More Information

More detailed information on the IPAQ process and the research methods used in the development of IPAQ instruments is available at www.ipaq.ki.se and Booth, M.L. (2000). *Assessment of PA: An International Perspective*. Research Quarterly for Exercise and Sport, 71 (2): s114-20. Other scientific publications and presentations on the use of IPAQ are summarized on the website.

INTERNATIONAL PA QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities that people do as part of their everyday lives. The questions will ask you about the time you spent being physically active in the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** and **moderate** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. **Moderate** activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal.

PART 1: JOB-RELATED PA

The first section is about your work. This includes paid jobs, farming, volunteer work,

course work, and any other unpaid work that you did outside your home. Do not include unpaid work you might do around your home, like housework, yard work, general maintenance, and caring for your family. These are asked in Part 3.

1. Do you currently have a job or do any unpaid work outside your home?

Yes

☐

No

☐

➔ **Skip to PART 2: TRANSPORTATION**

The next questions are about all the PA you did in the **last 7 days** as part of your paid or unpaid work. This does not include traveling to and from work.

2. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, heavy construction, or climbing up stairs **as part of your work**? Think about only those physical activities that you did for at least 10 minutes at a time.

_____ **days per week**

☐

No vigorous job-related PA



Skip to question 4

3. How much time did you usually spend on one of those days doing **vigorous** physical activities as part of your work?

_____ **hours per day**
_____ **minutes per day**

4. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** physical

activities like carrying light loads **as part of your work**? Please do not include walking.

_____ **days per week**

☐

No moderate job-related PA



Skip to question 6

5. How much time did you usually spend on one of those days doing **moderate** physical activities as part of your work?

_____ **hours per day**
_____ **minutes per day**

6. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time **as part of your work**? Please do not count any walking you did to travel to or from work.

_____ **days per week**

☐

No job-related walking



Skip to PART 2: TRANSPORTATION

7. How much time did you usually spend on one of those days **walking** as part of your work?

_____ **hours per day**
_____ **minutes per day**

PART 2: TRANSPORTATION PA

These questions are about how you traveled from place to place, including to places like work, stores, movies, and so on.

8. During the **last 7 days**, on how many days did you **travel in a motor vehicle** like a train, bus, car, or tram?

_____ **days per week**

☐

No traveling in a motor vehicle



Skip to question 10

9. How much time did you usually spend on one of those days **traveling** in a train, bus, car, tram, or other kind of motor vehicle?

_____ **hours per day**
_____ **minutes per day**

Now think only about the **bicycling** and **walking** you might have done to travel to and from work, to do errands, or to go from place to place.

10. During the **last 7 days**, on how many days did you **bicycle** for at least 10 minutes at a time to go **from place to place**?

_____ **days per week**

☐

No bicycling from place to place



Skip to question 12

11. How much time did you usually spend on one of those days to **bicycle** from place to place?

_____ **hours per day**
_____ **minutes per day**

12. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time to go **from place to place**?

_____ **days per week**

☐

No walking from place to place



***Skip to PART 3:
HOUSEWORK, HOUSE
MAINTENANCE, AND
CARING FOR FAMILY***

13. How much time did you usually spend on one of those days walking from place to place?

_____ hours per day
_____ minutes per day

PART 3: HOUSEWORK, HOUSE MAINTENANCE, AND CARING FOR FAMILY

This section is about some of the physical activities you might have done in the **last 7 days** in and around your home, like housework, gardening, yard work, general maintenance work, and caring for your family.

14. Think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, chopping wood, shoveling snow, or digging **in the garden or yard**?

_____ days per week

☐

No vigorous activity in garden or yard



Skip to question 16

15. How much time did you usually spend on one of those days doing **vigorous** physical activities in the garden or yard?

_____ hours per day
_____ minutes per day

16. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** activities like carrying light loads, sweeping, washing windows, and raking **in the garden or yard**?

_____ **days per week**

☐

No moderate activity in garden or yard



Skip to question 18

17. How much time did you usually spend on one of those days doing **moderate** physical activities in the garden or yard?

_____ **hours per day**
_____ **minutes per day**

18. Once again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** activities like carrying light loads, washing windows, scrubbing floors and sweeping **inside your home**?

_____ **days per week**

☐

No moderate activity inside home



***Skip to PART 4:
RECREATION, SPORT
AND LEISURE-TIME PA***

19. How much time did you usually spend on one of those days doing **moderate** physical activities inside your home?

_____ **hours per day**
_____ **minutes per day**

PART 4: RECREATION, SPORT, AND LEISURE-TIME PA

This section is about all the physical activities that you did in the **last 7 days** solely for recreation, sport, exercise or leisure. Please do not include any activities you have already mentioned.

20. Not counting any walking you have already mentioned, during the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time **in your leisure time**?

_____ **days per week**

☐

No walking in leisure time



Skip to question 22

21. How much time did you usually spend on one of those days **walking** in your leisure time?

_____ **hours per day**
_____ **minutes per day**

22. Think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **vigorous** physical activities like aerobics, running, fast bicycling, or fast swimming **in your leisure time**?

_____ **days per week**

☐

No vigorous activity in leisure time



Skip to question 24

23. How much time did you usually spend on one of those days doing **vigorous** physical activities in your leisure time?

_____ **hours per day**
_____ **minutes per day**

24. Again, think about only those physical activities that you did for at least 10 minutes at a time. During the **last 7 days**, on how many days did you do **moderate** physical activities like bicycling at a regular pace, swimming at a regular pace, and doubles tennis **in your leisure time**?

_____ **days per week**

☐

No moderate activity in leisure time



***Skip to PART 5: TIME
SPENT SITTING***

25. How much time did you usually spend on one of those days doing **moderate** physical activities in your leisure time?
- _____ **hours per day**
_____ **minutes per day**

PART 5: TIME SPENT SITTING

The last questions are about the time you spend sitting while at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading or sitting or lying down to watch television. Do not include any time spent sitting in a motor vehicle that you have already told me about.

26. During the **last 7 days**, how much time did you usually spend **sitting** on a **weekday**?
- _____ **hours per day**
_____ **minutes per day**
27. During the **last 7 days**, how much time did you usually spend **sitting** on a **weekend day**?
- _____ **hours per day**
_____ **minutes per day**

This is the end of the questionnaire, thank you for participating.

Appendix 13 Pedometer diary

Participant Name:.....

Pedometer ID: □□□□

Day	Date	Start Time	End Time	Display Number	Hours/minutes spent NOT wearing pedometer while participating in PA	Name of activity participated in while not wearing pedometer	List any circumstances which may have affected pedometer reading
1							
2							
3							
4							
5							
6							

7							

REMEMBER TO RESET YOUR PEDOMETER EVERY MORNING

PEDOMETER INSTRUCTIONS

1. After you get dressed in the morning, clip the pedometer firmly on your belt, trousers, skirt, etc. To make sure results are accurate, clip the pedometer above the point where the crease in a pair of trousers would normally be.
2. Open the front case of the pedometer and press the yellow **RESET** button.
3. Close the case and record the **DATE** and time of day (**START TIME**) in your pedometer diary.
4. At the end of the day before changing for bed, open the front case of the pedometer (without removing it from your clothing) and record the time of day (**END TIME**) and the number displayed on the screen (**DISPLAY NUMBER**) in your pedometer diary.
5. Please note on your diary anything that might affect the pedometer reading (such as illness or driving over bumpy roads) or if you removed the pedometer for some activities such as swimming.

6. Please make sure you have completed all relevant sections in your pedometer diary.
7. You need to wear the pedometer for SEVEN days. When you have done this, please contact Kim Jose to arrange collection of the pedometer or place the pedometer and your diary card inside the reply paid post-pack provided. Please send the pedometer back as soon as possible as it is needed for other participants in the study.

If you have any questions or problems, please phone Kim Jose on

6226 7763 or 0419343417

