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15 **What factors are associated with physical activity promotion**
16 **in the podiatry setting? A cross-sectional study**
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Abstract

Objective: To describe the status of and identify factors associated with physical activity promotion by podiatrists.

Design: Cross sectional survey.

Method: In 2016-17 Australian podiatrists were invited to complete an online survey. Items assessed by Likert scale included; frequency of assessing and promoting physical activity and podiatrists' intentions, attitudes, social norms, confidence, barriers, role beliefs and perceived knowledge and skills regarding the promotion of physical activity. Data were analysed using descriptive statistics, exploratory factor analysis and structural equation modelling.

Results: Of 316 respondents, 62% reported always/or often giving general and 39% specific physical activity advice. Attitudes to physical activity promotion were mostly positive and 83% agreed it was part of their role. Many believed they have the knowledge 62%) and skills to promote physical activity. Most podiatrists were confident to carry out basic physical activity promotion activities (83%), but fewer were confident assessing physical activity levels (54%), providing specific advice (47%), monitoring patient physical activity levels (49%) and carrying out physical activity counselling (41%). Modelling revealed intention to promote physical activity was most strongly influenced by experiential beliefs ($\beta = 0.35$, 95%CI 0.20-0.51) and instrumental beliefs ($\beta = 0.27$, 95%CI 0.15-0.40), whereas physical activity promotion was influenced by intention ($\beta = 0.45$, 95%CI 0.35-0.55) and behavioural control ($\beta = 0.43$, 95%CI 0.33-0.53).

Conclusion: Physical activity promotion is feasible and regularly practiced in the podiatry setting, however current practice appears suboptimal. Attitudes and behavioural control appear influential in engagement and deserve consideration when designing strategies to improve delivery in podiatric practice.

Keywords: podiatrist, clinical behaviour, physical activity promotion, health promotion

1. Introduction

All health care professionals are encouraged to promote physical activity (PA) to their patients^{1, 2} because of the numerous benefits of PA to health and well-being. Routine PA reduces the risk for premature mortality and is an effective primary and secondary preventive strategy for at least 25 chronic medical conditions with the greatest relative health benefits occurring at relatively low PA volumes³. However, many health professionals do not promote PA, or do so at low levels, providing much opportunity for improvement^{1, 4, 5}.

Podiatrists could play an important role in PA promotion, given the context of their practice. A podiatrist's patient load includes a high percentage of patients with chronic disease and high risk groups with diabetes⁶, and typical consultations last 20-30 minutes, providing an opportunity for health promotion. In our previous qualitative study⁷ podiatrists were receptive to PA promotion and believed there are opportunities to promote PA during regular consultations. However, their approach to promoting PA was generally opportunistic, informal and un-structured and there were substantial barriers to PA promotion. Whilst this study gave insights into their role and an understanding of their practice, little is known about the extent to which podiatrists incorporate PA promotion into their clinical practice and to what degree particular characteristics or factors influence their engagement in PA promotion. Improving this knowledge could help establish whether podiatry is an appropriate setting for PA promotion, whether PA promotion by podiatrists could improve and if so, how this might be accomplished.

Therefore, the objectives of this study were to:

1. describe current PA promotion practices of podiatrists,
2. describe podiatrists' attitudes, social norms, perceived behavioural control, role beliefs and perceived barriers regarding PA promotion,
3. identify factors associated with podiatrists' engagement in PA promotion.

2. Methods

Between May 2016 and April 2017, Australian podiatrists were asked to complete a self-administered online questionnaire via a cloud-based platform. Due to privacy legislation prohibiting the release of contact details, it was not possible to access details of podiatrists registered to practice within Australia (n=4666). Therefore, all members of the Australian Podiatry Association (n= 2459) were invited to participate via advertisements in a national hardcopy magazine and in state podiatry associations' electronic newsletters. Podiatrists were also recruited via LinkedIn® (a professional networking website) and via direct email contact (n=887) where email addresses were publicly available. An offering of inclusion into a draw for the prize of an iPad mini® was used as a participation incentive. Ethical approval was obtained from the Tasmanian Human Research Ethics Committee (Ref:H0015261).

The questionnaire (Supplement A) was developed based on salient issues specific to podiatrists identified in our previous qualitative work⁷ and on the findings of our systematic review⁸ of the factors associated with PA promotion in non-medical health settings. Elements of the Theory of Planned Behaviour (TPB)⁹ were also used in development of the questionnaire. Where available, existing questions from the literature were used and adapted for use in the podiatry setting^{7, 9-15}. Responses were measured using Likert scales ranging from a negative to a positive response, using a 1 to 5 (for example, 1=Strongly disagree to 5=Strongly agree) or a 1 to 7 scale (for example, 1=Harmful to 7=Beneficial). The survey was pilot-tested among ten purposively selected podiatrists to assess usability, understandability, consistency, and face validity, with minor wording and ordering modifications made as appropriate.

The individual survey items assessing PA assessment and promotion behaviours, and beliefs and attitudes regarding PA promotion were grouped into the following predefined domains including:

- 1) PA assessment behaviour

- 2) PA promotion behaviour
- 3) Intention to promote PA
- 4) Attitudes to PA promotion (beliefs about the behaviour producing a given outcome or experience)
- 5) Social norms (expectations and behaviours of others)
- 6) Confidence in promoting PA
- 7) Control over promoting PA
- 8) Perceived PA promotion knowledge and skills
- 9) PA promotion role perception
- 10) Barriers preventing PA promotion (lack of time, remuneration, resources, guidelines, skills and knowledge; patient risk; patient benefit, patient interest; and won't change patient behavior).
- 11) Undergraduate and postgraduate PA promotion training

The podiatrist's age and gender and practice details (years as a podiatrist, work context and postcode) were also collected. Physical activity behavior was assessed by a single-item measure (days in total of 30 minutes or more of PA, enough to raise breathing rate)¹⁶.

Descriptive statistics were used to summarise participant characteristics, participants' beliefs and attitudes regarding PA promotion and PA promotion. For clarity in presenting the descriptive results, both 5- and 7-point scale responses were collapsed into three categories (Table 2).

A correlation matrix was generated for the survey items and sociodemographic characteristics. Tests for appropriateness of the correlation matrix, including Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity, were conducted. Items that were significantly associated ($p < 0.05$) with the provision of general PA advice were included in an Exploratory Factor Analysis (EFA) to identify the underlying relationships

between the individual items assessed (i.e. survey questions) and how well they fit the predefined domains. Potential factors were extracted by using the principal factors method followed by an Oblique Promax rotation which allows for the likelihood that the factors measured are correlated¹⁷. Parallel analysis determined the number of components or factors to retain. Weak items (i.e., factor loadings < 0.3)¹⁸ and items that failed to load on a potential factor or factors with a Cronbach's alpha of less than 0.7 were removed from further analysis.

Factors identified from the EFA were then used to examine the TPB model using Structural Equation Modelling (SEM). As an extension of multiple regression, SEM allows the examination of how well individual variables are measured and also examines the extent to which the variables are related to each other¹⁹.

Maximum likelihood estimation was used in SEM analysis estimate all factor loadings and coefficients. To standardise the scale of the parameter estimates, the factor loading of one measured variable for each latent construct was constrained to 1.

Model fit was assessed by examining the ratio of chi square to degree of freedom ratio (χ^2/df), comparative fit index (CFI), root-mean-square error of approximation (RMSEA) and Tucker-Lewis-Index (TLI). A satisfactory model fit was indicated by a $\chi^2/df < 3$ ²⁰, a high CFI and TLI (>0.90) and low RMSEA (< 0.08)¹⁸. Significance levels were set at $p < 0.05$ at a 95% confidence interval. Data analysis was carried out using Stata® software version 15 (StataCorp. 2017. College Station, TX).

3. Results

Three hundred and thirty-one podiatrists responded to the survey, however the final sample used for reporting and analysis comprised 316, as 15 participants' responses were incomplete (i.e. did not finished the survey). The sociodemographic characteristics of

podiatrists in this study (Table 1) were similar to those registered nationally through the Australian Health Practitioner Regulation Agency (AHPRA).

Sixty-two percent of respondents reported always or often giving general PA advice to their patients and 39% gave specific PA advice (Table 2). Thirty-four percent always or often followed up on advice and 18% always or often referred to another health professional for PA advice or counselling. Most respondents reported always or often asking a new patient about their PA (86%) with 55% asking the same of established patients. However, half of the respondents (51%) never or rarely asked patients about their sitting time and 73% never or rarely assessed PA using an assessment tool or accepted method of assessing PA levels.

Most respondents (83%) agreed that as a podiatrist it is their responsibility to give general PA advice to their patients. Attitudes to PA promotion were mostly positive with 57% agreeing that patients will appreciate PA promotion, 74% agreed they would feel satisfied promoting PA and 69% felt promoting PA will help patients to be more physically active. Most respondents thought, that for them, PA promotion was beneficial (90%), useful (92%), pleasant (80%) and enjoyable (79%). Eighty-three percent of respondents agreed that they have the confidence to give general PA advice and 84% to discuss PA options with their patients. Sixty-two percent believed they have the knowledge and 67% the skills to promote PA. However, respondents less commonly agreed that they had the confidence to assess PA levels (54%), provide specific advice (47%), monitor patient PA levels (49%) or carry out PA counselling (41%). Barriers that prevent respondents from often or always promoting physical activity included a lack of guidelines (41%), a lack of patient interest (41%), a lack of resources (33%), feeling it would not change the patient's behaviour (29%), a lack of knowledge and skills (24%), and a lack of time (23%).

Exploratory factor analysis yielded 8 factors (Supplement B) that were used to examine the TPB model (Figure 1). The general assumptions of SEM were met with multivariate normality

and an adequate sample size²⁰. Figure 1 shows intention was most strongly influenced by experiential beliefs ($\beta = 0.35$, 95%CI 0.20-0.51) and by instrumental beliefs ($\beta = 0.27$, 95%CI 0.15-0.40). Intention was also influenced by enablers ($\beta = 0.18$, $p < 0.05$). The actual assessment of patient PA levels and then promoting of PA were significantly influenced by the intention ($\beta = 0.45$, 95%CI 0.35-0.55) to assess and promote PA, as well as behavioural control ($\beta = 0.43$, 95%CI 0.33-0.53), which includes confidence, skills and knowledge in promoting PA. The model demonstrated adequate fit using multiple goodness-of-fit criteria.

4. Discussion

This study provides a comprehensive picture of the PA promotion behaviour of podiatrists and the factors associated with this. Many podiatrists are already engaged in at least elementary forms of PA promotion within the confines of their general consultations⁷. However, many podiatrists are not delivering any PA promotion, and most are not engaging in the more involved practices. Positive attitudes to PA promotion along with control and confidence in providing PA promotion appear to be the prime motivators for the level of engagement in PA promotion.

The PA promotion practices of asking new patients about their PA and giving general advice were widespread and are at least comparable, if not higher, than those reported by general practitioners²² and other health professionals²³. There is, however, considerable scope for improvement. Consideration should be given to developing areas recommended for effective PA promotion^{2, 24}, including assessing patient's activity levels, giving more specific advice and or counselling, referral, and following up on patients' PA progress. Assessment of a patient's PA should be considered a vital health measure for every patient at every consult, that is assessed regularly and tracked over time²⁵. PA assessment not only acts as a catalyst for promotion⁸, but also facilitates the subsequent delivery of tailored advice and the monitoring of activity levels²⁶. There is a need for an improvement in the levels of PA assessment by podiatrists and the impact of strategies to increase podiatrists' awareness of

the importance of PA assessment should be explored. Furthermore, the development of efficient and effective assessment procedures, tailored for the podiatry setting that are acceptable to both patient and podiatrist, may prove useful for enhancing PA assessment.

There is also opportunity for development of the level and quality of the delivery of PA promotion. Despite podiatrists describing a preference to refer to other health or exercise professionals to help patients become more active in our previous study⁷, the rates of actual referral reported by podiatrists were very low. The reasons for this are unknown, although it could be due to a number of factors such as lack of knowledge of (local) referral options, and a lack of skills in the referral process. As such, developing strategies to assist podiatrists to seek out and develop referral systems may be beneficial. Following up on advice or monitoring patients' PA behaviours is also less than optimal. This practice has also been shown in a previous study to be mixed amongst podiatrists and typically approached opportunistically and informally⁷. It is important to encourage follow up and monitoring of patient's PA behaviours as well as any advice given, because not only is follow-up recommended, it has also been shown to increase PA^{2, 27}. It is recommended that primary care professionals use brief advice during a consultation that includes engaging in not only verbal advice, but additionally includes further discussion, negotiation or encouragement, with other support or follow-up^{1, 2}. Many participants were supportive of a role that includes not only identifying adults who are inactive and providing general advice, but also providing specific PA advice, PA counselling and monitoring patient PA levels. It is feasible that these additional tasks could be carried out when the opportunity arises during a podiatry consultation.

Positive attitudes including, how it feels to perform the behaviour and whether the behaviour achieves something were leading influences on intention to promote PA in this sample. This is consistent with studies in podiatrists⁷ and in other health professionals, including physiotherapists and mental healthcare professionals⁸. Therefore, strategies to improve the

podiatrist's feelings toward the behaviour, or their evaluation of behaviour's outcomes have the potential to increase podiatrists' engagement in PA promotion. It is suggested that training and education may help to improve attitudes towards PA promotion¹.

Perceived behavioural control had a strong significant direct association with PA assessment and promotion. This factor is a composite of participant's confidence in carrying out particular promotional tasks and their perception of having the sufficient knowledge and the skills to promote PA. Confidence and knowledge are factors that have been shown to be associated with levels of health professionals' engagement in the promotion of PA^{2, 8, 28, 29}. It would appear many podiatrists consider engaging in particular tasks outside their area of expertise or responsibility. A lack of confidence in carrying out the more complex promotional tasks of promotion, including assessing PA levels, providing specific advice and PA counselling was evident amongst a large section of participants. Limited engagement and confidence in these more involved PA promotion practices may reflect a lack of awareness resulting from a lack of podiatry-specific PA promotion guidelines or policies, or limited training opportunities for podiatrists to gain the knowledge and skills to perform these practices. It has been suggested that strategies to improvement confidence along with skills and knowledge in carrying out PA promotion (e.g. through training) would increase the likelihood of performing the behaviour².

Many participants reported having received some form of undergraduate or postgraduate PA promotion training and claim to have sufficient knowledge and skills to promote PA. Even though exposure to training is associated with PA promotion amongst other health professionals⁸, in this study it was not. It is not possible, however, to gauge the fidelity of the exposure to training and its true influence on the degree of engaging in promotion due to the lack of information regarding the content and implementation of the training. Furthermore, the efficacy of the knowledge and skills that the podiatrist has received is unknown and a more thorough assessment of the effect of training in future intervention studies is warranted. This study suggests that training, with an emphasis on enhancing attitudes combined with

improving confidence, skills and knowledge regarding PA promotion, has potential to improve promotion levels amongst podiatrists. There is evidence that provision of training may encourage health professionals to administer brief PA advice². In addition, having enablers like skills, resources and guidelines appear to also have a positive influence on intention to promote PA. The development of PA promotion training combined with resources and guidelines may reduce barriers to podiatrists' and help facilitate engagement in PA promotion. This could be achieved with support from the various healthcare associations, educational institutions and government departments.

It is recognised that patient's characteristics and or beliefs may influence the podiatrist's decision to engage in promotion PA. To better understand the patient's effect on the level of PA promotion, an understanding of the PA promotion interaction from patients' point of view should be considered in future investigations.

This study had some potential limitations. The cross-sectional study design precludes inferences about causality and the influence of time. It is possible that practices and attitudes of podiatrists may naturally change over time with increasing awareness of the benefits of promoting PA. The use of self-report measures risks social desirability bias and recall bias, although reliable/valid measures were used where possible. Selection bias may be an issue with those podiatrists more engaged in the promotion of PA being potentially over-represented and over-inflating the rates of PA promotion. A non-random sample and a lack of information about non-responders may limit generalisability of the data. However, the demographic characteristics of the sample were very similar to Australian podiatrists generally, providing reassurance about generalisability of the sample. The usability and internal consistency of the factor items were tested and determined, but other psychometric properties, such as test-retest reliability and validity, were not examined. The use of a theory-based design, factor analysis to group factors and SEM are strengths of this study, and the EFA demonstrated a factor structure that makes conceptual sense, construct validity and

good internal consistency, and closely resembled the predefined factor constructs. However, future testing with different samples is warranted as construct validity assessment is an ongoing process.

5. Conclusion

This study describes the status of podiatrists' engagement in PA promotion in a clinical setting, and to identify factors associated with PA promotion in this setting. The results provide evidence that podiatry has substantial potential as a setting for PA promotion. Positive attitudes and perceived behavioural control were identified as factors evidently important for engaging in PA promotion. These factors deserve consideration when designing ways to integrate PA promotion into podiatric clinical practice and education settings. Future intervention strategies should include raising podiatrists' awareness of the importance of PA and PA promotion as well as improving their skills, knowledge and confidence in providing PA promotion through training and resources.

Practical Implications

- PA promotion is practical and feasible in the podiatry setting with scope and opportunity to improve the health and wellbeing of patients.
- Improving podiatrists' behavioural beliefs, outcome evaluations and behavioural control may have the potential to increase levels of PA promotion provided by podiatrists.
- The development of PA promotion training, guidelines and resources may reduce barriers to podiatrists' promotion of PA

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Table 1: Comparison of study respondent characteristics with Australian registered podiatrists

Characteristics	Study		AHPRA
	respondents		registered
	N = 316		N = 4666
	n	(%)	(%)
Gender			
Female	189	(60)	60
Age			
20-29	98	(31)	30
30-39	81	(26)	30
40-49	63	(20)	22
50-59	59	(18)	13
60 or older	15	(5)	4
State			
NSW/ACT	102	(32)	27
NT	0	(0)	0.4
QLD	55	(18)	17
SA	44	(14)	9

TAS	21	(7)	2
VIC	64	(20)	32
WA	30	(9)	10

Years as a podiatrist

< 5 years	69	(22)	NA
5-15 years	123	(39)	NA
16- 29 years	79	(25)	NA
30- 40 years	41	(13)	NA
> 40 years	4	(1)	NA

Work context

Private	263	(83)	NA
Public	35	(11)	NA
Community	11	(4)	NA
Academic	7	(2)	NA

Physical activity frequency*

0 -1 day	33	(10)	NA
2 - 3 days	106	(33)	NA
4 - 5 days	109	(33)	NA
6 - 7 days	82	(24)	NA

Received undergraduate PA 222 (75) NA

promotion training

Attended postgraduate PA promotion training	190	(60)	NA
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AHPRA = Australian Health Practitioner Regulation Agency.

(Reporting period Oct -Dec 2016) *PA*= Physical Activity *NA*= Not

Available

*Physical activity frequency: days in total of 30 minutes or more of PA,
enough to raise breathing rate¹⁶

Table 2: Participant responses of PA assessment and promotion behaviours, and beliefs and attitudes regarding PA promotion

Domain constructs	Items	Scale	Mean (sd)	Number of responses (%)	Number of responses (%)	Number of responses (%)
PA assessment behaviour ⁷	Over the last month how often did you:			Never or Rarely	Sometimes	Always or Often
	Ask new patient about their PA	1-5	4.4(0.8)	6(1.9)	37(11.7)	273(86.4)
	Ask established patients about their PA	1-5	3.6(0.9)	33(10.4)	110(34.8)	173(54.7)
	Assess your patient's PA level	1-5	1.9(1.0)	230(72.8)	59(18.7)	27(8.5)
	Ask new patients about their sitting time	1-5	2.3(1.1)	162(51.3)	82(25.9)	72(22.8)
	<i>Range</i>	4-20	12.4(2.9)			
	<i>Alpha 0.73</i>					
PA promotion behaviour ^{7, 10, 11, 30}	Over the last month how often did you:			Never or Rarely	Sometimes	Always or Often
	Give general PA advice	1-5	3.6(0.8)	25(7.9)	95(30.1)	196(62.0)
	Give specific PA advice (type, intensity and amount)	1-5	3.2(1.0)	73(23.1)	121(38.3)	122(38.6)
	Refer to other health professional for advice	1-5	2.7(1.0)	125(39.6)	135(42.7)	56(17.7)
	Follow up on PA advice	1-5	3.0(1.1)	104(32.9)	105(32.9)	107(33.9)
	<i>Range</i>	4-20	12.4(3.0)			
	<i>Alpha 0.73</i>					
Intention to promote PA ^{12, 15}	I intend promoting PA:			1 - 2	3 - 5	6 - 7
	Over the next 6 months	1-7	5.9(1.3)	7(2.2)	99(31.3)	210(66.5)
	In 6 months	1-7	5.9(1.4)	10(3.2)	93(29.4)	213(67.4)
	<i>Range</i>	2-14	11.8(2.7)			
	<i>Alpha 0.95</i>					
Attitudes to PA promotion ¹³	If I promote PA:			Strongly disagree or Disagree	Neither disagree nor agree	Agree or Strongly agree
	Patients will appreciate this	1-5	3.6(0.8)	19(6.0)	116(36.7)	181(57.3)
	I will feel satisfied	1-5	3.9(0.7)	7(2.2)	73(23.1)	236(74.7)
	It will help patients to be more physically active	1-5	3.8(0.7)	11(3.5)	84(26.6)	221(69.9)
	For me promoting PA is:			1 - 2	3 - 5	6 - 7
	Harmful - Beneficial	1-7	6.2(1.2)	4(1.3)	70(22.2)	242(76.6)

Worthless - Useful	1-7	6.2(1.1)	1(0.3)	77(24.4)	238(75.3)
Unpleasant - Pleasant	1-7	5.5(1.4)	8(2.5)	144(45.6)	164(51.9)
Unenjoyable - Enjoyable	1-7	5.5(1.3)	6(1.9)	145(45.9)	165(52.2)
<i>Range</i>	7-43	34.8(5.)			
<i>Alpha 0.87</i>					

Social norms ^{9, 12, 13}			Strongly disagree or Disagree	Neither disagree nor agree	Agree or Strongly agree
My peers think that I should be promoting PA	1-5	3.2(0.7)	32(10.1)	177(56.0)	107(33.7)
It is expected that I promote PA	1-5	3.2(0.9)	67(21.2)	129(40.8)	120(38.0)
Respected colleagues promote PA	1-5	3.6(0.8)	22(7.0)	124(39.2)	170(53.8)
Important people to me think I should promote PA	1-5	3.3(0.8)	36(11.4)	157(49.7)	123(38.9)
Patients think I should promote PA	1-5	3.1(0.8)	64(20.3)	161(51.0)	91(28.8)
<i>Range</i>	5-25	16.4(3.4)			
<i>Alpha 0.86</i>					

Confidence in promoting PA ^{7, 12, 13}	I am confident that I can:			Strongly disagree or Disagree	Neither disagree nor agree	Agree/ Strongly agree
	Assess PA levels of patients	1-5	3.3(1.0)	70(21.2)	74(23.4)	172(54.4)
	Provide general PA advice	1-5	3.9(0.8)	25(7.9)	29(9.2)	262(82.9)
	Discuss PA options	1-5	3.9(0.8)	22(7.0)	30(10.0)	264(83.5)
	Provide specific PA advice	1-5	3.2(1.0)	91(28.8)	75(23.7)	150(47.5)
	Carry out PA counselling	1-5	3.0(1.0)	105(33.2)	81(25.6)	130(41.1)
	Monitor patient PA levels	1-5	3.3(1.0)	75(23.7)	87(27.5)	154(48.7)
	Range	6-30	20.6(4.6)			
	Alpha 0.87					

Control over promoting PA ^{9, 12}				Strongly disagree or Disagree	Neither disagree nor Agree	Agree/ Strongly agree
	I have control over delivering PA promotion to patients?	1-5	3.7(0.8)	32(10.1)	70(22.2)	214(67.7)
				Somewhat difficult or Very difficult	Neither easy nor Difficult	Very easy or Somewhat easy
	For me to promote PA to my patients would be?	1-5	3.6(1.0)	55(17.4)	82(26.0)	179(56.7)
	Range	2-10	7.2(1.4)			
	Alpha 0.87					

PA promotion knowledge and skills				Strongly disagree or Disagree	Neither disagree nor Agree	Agree or Strongly agree
	I have sufficient knowledge to promote PA	1-5	3.6(1.0)	58(18.4)	61(19.3)	197(62.3)
	I have skills to promote PA	1-5	3.6(0.9)	49(15.5)	56(17.7)	211(66.8)
	Range	2-10	7.2(1.8)			
	Alpha 0.87					
PA promotion role perceptions ^{12, 14}				Strongly disagree or Disagree	Neither disagree nor Agree	Agree or Strongly agree
	As a podiatrist, it is my reasonability to:					
	Assess PA levels of patients	1-5	3.8(0.9)	25(7.9)	68(21.5)	223(70.6)
	Provide general PA advice	1-5	4.0(0.8)	8(2.5)	47(14.9)	261(82.6)
	Provide specific PA advice	1-5	3.5(0.9)	44(13.9)	104(32.9)	168(53.1)
	Tailor a PA program to patient	1-5	3.0(1.1)	97(30.7)	106(33.5)	113(35.7)
	Carry out PA counselling	1-5	3.3(1.0)	64(20.3)	104(32.9)	148(46.8)
	Monitor patient PA levels	1-5	3.5(0.9)	41(13.0)	87(27.5)	188(59.5)
	Range	6-30	21.3(4.4)			
	Alpha 0.89					
Barriers preventing PA promotion ^{11, 12, 14}				Always or Often	Sometimes	Rarely or never
	How often do the following barriers prevent you from promoting PA to your patients?					
	A lack of time	1-5	3.1(1.0)	74(23.4)	140(44.3)	102(32.3)
	A lack of PA promotional skills or knowledge	1-5	3.3(1.1)	77(24.4)	103(32.6)	136(43.0)
	A lack of remuneration for promoting PA	1-5	4.0(1.2)	46(14.6)	43(13.6)	227(71.8)
	Feeling it would not change the patient's behaviour	1-5	3.0(1.0)	92(29.1)	128(40.5)	96(30.4)
	Feeling it would not be beneficial for the patient	1-5	3.9(0.9)	18(5.70)	81(25.6)	217(68.7)
	A lack of resources	1-5	3.0(1.2)	103(32.6)	106(33.5)	107(33.9)
	A lack of PA promotion guidelines	1-5	2.9(1.2)	129(40.8)	85(26.9)	102(32.3)
	Low level of patient interest	1-5	2.7(1.0)	130(41.1)	132(41.8)	54(17.1)
	Puts the patient at risk	1-5	3.3(1.0)	59(18.7)	118(37.3)	139(44.0)
	Range	9-45	29.1(6.0)			
	Alpha 0.80					

Notes: PA: Physical Activity. sd: Standard Deviation. Responses were measured using Likert scales ranging from a negative to a positive response, using a 1 to 5 (for example, 1=Strongly disagree to 5=Strongly agree) or a 1 to 7 scale (for example, 1=Harmful to 7=Beneficial).

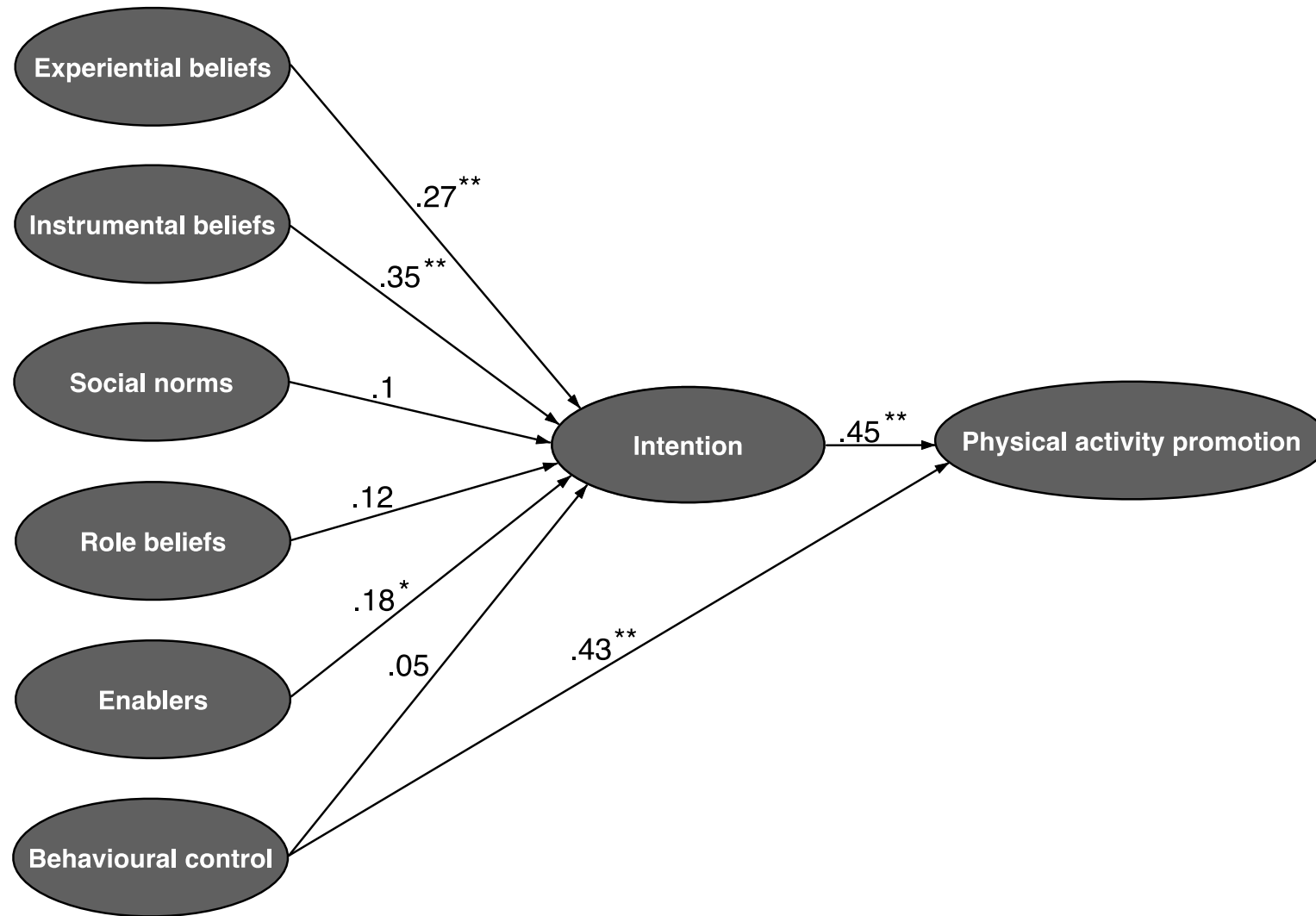


Figure 1: Results of Theory of Planned Behaviour Structural Equation Model showing standardised coefficients.

Legend: Circles represent factors identified by Exploratory Factor Analysis (EFA); lines represent standardised path coefficients

** $p < 0.001$, * $p < 0.05$

Model goodness of fit test results: χ^2/df 2.37, CD 1.0, TFI 0.9, CFI 0.89, RMSEA 0.06, SRMR 0.06

Supplement A: Survey tool figshare link <https://doi.org/10.6084/m9.figshare.12562202.v1>