



Original article

Physiotherapists lack knowledge of the WHO physical activity guidelines. A local or a global problem?

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A B S T R A C T

Background: Physical inactivity is a significant cause of premature deaths globally, yet many physiotherapists (PTs) have little knowledge of the World Health Organization's physical activity guidelines (PA).

Objectives: To assess the knowledge of Israeli PTs regarding the World Health Organization's (WHO) recommendations for PA for adults and adolescents. Secondary aims were to determine how many Israeli PTs, are recommending PA for their patients and to evaluate the knowledge level of Israeli PTs in relation to PTs in other countries.

Design: Cross-sectional online survey.

Participants: Of the 1413 Israeli PTs offered the survey, 1062 (75%) completed it, which represents 16.4% of the 6450 licensed PTs in Israel.

Results: A mere 6.8% physiotherapists were aware of the WHO-recommended level of adult PA, and only 4% were knowledgeable of the recommendations for adolescents. Novice PTs (5 > years of experience) knew significantly more about adult PA recommendations ($P < 0.05$) than did the more senior physiotherapists. Nine out of every ten (90%) PTs routinely initiate conversations about PA, 83.5% signpost to PA support elsewhere, and 70.5% deliver brief intervention themselves for PA. The main barriers to promoting PA were (1) the belief that promotion would not change patient behavior, (2) lack of time, and (3) perceived lack of skills at counseling for behavior change.

Conclusions: Israeli PTs have poor knowledge of the WHO's adults and adolescent guidelines for PA. Lack of knowledge among PTs regarding the WHO's PA guidelines is a recurrent global problem that requires immediate attention.

1. Introduction

Physical inactivity is presumed to account for one in every ten instances (9%) of premature deaths globally (Lee et al., 2012). It is estimated that 31% of adults and 80% of adolescents around the world are physically inactive (Hallal et al., 2012). The worldwide cost of physical inactivity to the healthcare systems is conservatively estimated at 53.8 billion international dollars, and it accounts for 13.4 million disability-adjusted life years (Ding et al., 2016). As of 2017, non-communicable diseases (NCD's), defined as non-infectious and non-transmissible diseases (Kim and Oh, 2013), are estimated to account for 86% of all premature deaths in Israel (Riley et al., 2017). Research has shown that the four most common NCD's: cardiovascular disease, chronic respiratory disease, some types of cancer, and diabetes can all be delayed or maybe even prevented through lifestyle changes that include being more physically active (PA). Better diet, not smoking, a body mass index (BMI) under 30, and PA have been shown to reduce the burden of

these four NCDs by 78% (Ford et al., 2009).

In their attempt to fight the global burden of disease that arises from physical inactivity "The World Health Organization (WHO)" published their recommended levels of PA for adults (ages 18–64) and children and young people (ages 5–17) (The World Health Organization, 2010). The current recommendations of PA for children and young people (5–17 years) is at least 60 min of moderate to vigorous intensity of PA daily and resistance training three times per week. The guidelines for adults (18–64 years) recommend at least 150 min of moderate-intensity aerobic PA during the course of a week, or 75 min of vigorous intensity aerobic PA or a combination of both. Resistance training for adults is recommended to include major muscle groups at least twice per week (The World Health Organization, 2010).

Physiotherapists (PTs) are in a unique position to promote and encourage their patients to adhere to the PT guidelines from the WHO (Dean et al., 2014), and most of them do at least promote some form of PA in various ways (Abaraogu et al., 2016; Lowe et al., 2017). However,

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many studies have reported that most PT's around the world lack complete knowledge of the WHO recommendations. Previous surveys attempting to identify PT's knowledge of the WHO's guidelines for PA, yielded mostly unsatisfactory results: Only 10-16% of PT's in Britain and Australia knew the current guidelines, and only 16% of Irish PT tutors admitted to being satisfied of their students' knowledge of the guidelines (Barrett et al., 2013; Freene et al., 2017; Lowe et al., 2017; O'Donoghue et al., 2012).

This paper reports on a comprehensive survey of PT's undertaken by the Israeli Physiotherapy Society (IPTS). The IPTS is a non-profit organization and is the most prominent professional physiotherapy organization in Israel. In light of the previous unsatisfactory results of surveys about the knowledge of the WHO guidelines, the IPTS sought to understand the degree by which Israeli PT's were knowledgeable of the WHO guidelines for PA. The aims of the current study were two-fold. First, we assessed the Israeli PT's current knowledge about the WHO guidelines of PA for adults and children and young people. Second, we determined, how many Israeli PT's are promoting PA for their patients, explored potential reasons for not doing so, and quantified the level of PT's PA.

2. Methods

2.1. Research tool

A cross-sectional online, anonymous survey targeting Israeli PT's was posted on the Surveygizmo website (www.surveygizmo.com) from August until October 2018. It was published in Hebrew, and broadly advertised using social media, at physiotherapy workplaces, and by the IPTS mailing list. The questionnaire comprised 30 questions (Supplement 1) on seven pages with two to seven questions per page and conformed to the established conventions of cross-cultural rules (Beaten et al., 2000). Questions about PA guidelines (Lowe et al., 2017), PA promotion (Lowe et al., 2017), and barriers (Abaraogun et al., 2016; Aweto et al., 2013; Freene et al., 2017; Shirley et al., 2010) providing PA advice were adapted from published research with minor changes for this study. Also incorporated into the questionnaire were self-reported PA questions that were previously used in a national health survey by the Israeli Ministry of Health. This was done to build on existing question paradigms for research consistency. All questions were closed, using a Likert scale, except for those asking about daily and weekly WHO recommendations, and one other question, about physiotherapists' own PA habits.

2.2. Research procedure

The study was approved by the Ariel University ethics review board (number: AU-NBA-20180815). A pilot study was undertaken with five physiotherapists fluent both in English and Hebrew before sending the survey. On the first page of the survey, the participants read a description about the content and length of the survey, were given the leading researcher's contact information, and requested their informed consent before starting the survey. The survey required approximately 5 min to complete, and no incentives were offered for participation and no personal information was linked to survey results in any way. We used a technique based on computer IP addresses to prevent multiple entries from the same individual and to define unique visitors' rates of participation.

2.3. Variable descriptions

- **Control variables:** Demographic variables were age, gender, years of experience working as a physiotherapist, main working place, smoking, height, weight, and BMI.
- **Knowledge of PA guidelines:** The participants were asked if they knew about the WHO's PA guidelines for adults and children and young

people, and referred, if the answer was in the affirmative, to a subsequent open question about how many minutes of moderate activity, how many minutes of vigorous activity, and how many days per week of resistance training is recommended. These open questions were skipped if the answer to the initial question was negative.

- **Health Promotion and barriers:** The participants were asked to indicate how often they promoted PA and how often particular barriers prevented them from promoting it, on a Likert scale ranging from 1 ("Never") to 5 ("Always").
- **Personal physical activity:** The participants were asked whether they engaged in moderate PA longer than 10 min this week. If the answer to this was yes, they were asked how many times this week they did so, and for how long. The same set of questions was asked for vigorous activity. The numbers were then added up to calculate the amount of PA per week.

2.4. Data analysis

Data analysis was performed using SPSS V.23 software package and included only completed surveys. The findings were reported according to the CHERRIES protocol ("Checklist for Reporting Results of Internet E-Surveys") (Eysenbach, 2004).

3. Results

Of the approximate 6450 licensed PT's in Israel, 1413 entered the survey and 1062 (1062/1413, 75%) completed the survey, thus representing 16.4% of the registered PT's in Israel. Of the 1062 PT's who completed the survey (age range 24–81) (Table 1), the median number of years of experience as a PT was 11 years (range 1–57 years). 97 (9.1%) of the PT's reported that they smoked regularly. In a question asking about the PT's work environment, most of the participants who reported "Other" reported working in home visits, or in pelvic-floor rehabilitation, or in the army (Table 1).

3.1. Knowledge of physical activity guidelines

A majority of the participants (929, 87%) were aware of the adult PA guidelines, while only a half (52%) knew about recommendations for children and young people (Fig. 1).

When participants were asked to specify those recommendations, only 72 (6.8%) and 43 (4%) correctly stated the recommendations for

Table 1
Working environment and experience of the survey respondents.

Participant Information	n (%)
Age (Years)	41.2 ± 11
Gender (%)	
Male	318 (29.9)
Female	744 (70.1)
Experience Group (%)	
Novice 0-5	310 (29.2)
Medium experience 6-10	219 (20.6)
Intermediate experience 11-15	144 (13.6)
Seniors 16-20	91 (8.6)
Veterans 20+	298 (28.1)
Working Environment (%)	
Outpatient Clinic	471 (44.4)
Geriatrics	93 (8.8)
Hospital	143 (13.5)
Child Development	161 (15.2)
Sports	57 (5.4)
Other	137 (12.9)

Age appear as mean ± SD.

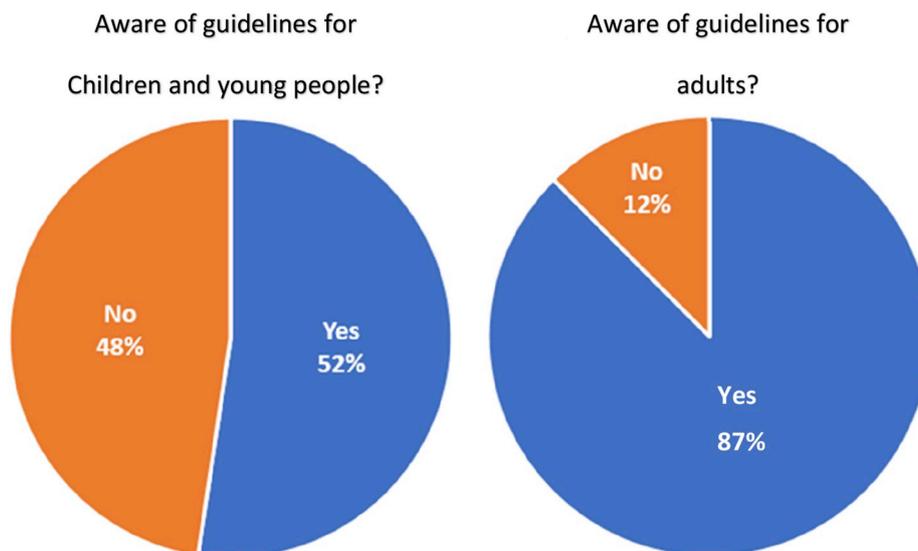


Fig. 1. Israeli Physiotherapists awareness of the WHO recommendations for PA.

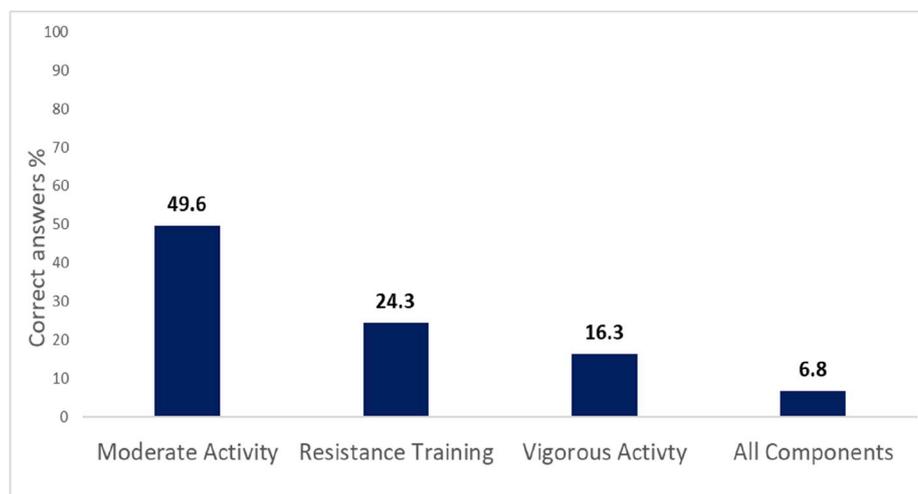


Fig. 2. Knowledge of physical activity for adults by components.

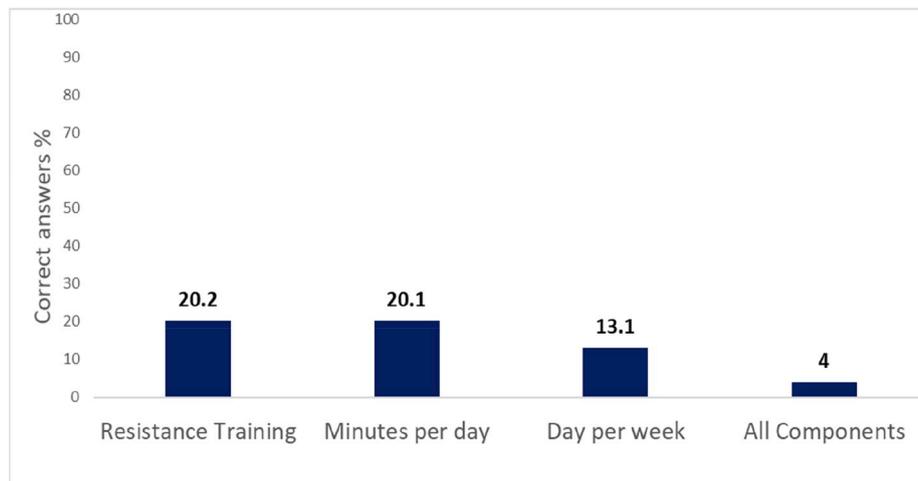


Fig. 3. Knowledge of physical activity for children and young people by components.

adults (Fig. 2) and children and young people (Fig. 3), respectively.

Forty participants (12.9%) from the novice (0-5 years of experience) group knew the full adult PA recommendations, compared to 8

participants (3.7%) in the medium experience group (6–10 years of experience), 5 participants (3.5%) in the intermediate experience group (11–15 years of experience), 6 participants (6.6%) in the senior group

Table 2
Physical activity promotion and barriers of the survey respondents.

	Never n(%)	Rarely n(%)	Sometimes n(%)	Most times n(%)	Always n(%)
Physical activity promotion					
Do you initiate conversations about PA?	0	16 (1.5)	87 (8.2)	493 (46.4)	466 (43.9)
Do you deliver brief interventions for PA?	11 (1)	49 (4.6)	254 (23.9)	471 (44.4)	277 (26.1)
Do you signpost to another PA support?	7 (0.7)	21 (2)	147 (13.8)	491 (46.2)	396 (37.3)
Barriers to physical activity promotion					
Insufficient consultation time	249 (23.4)	295 (27.8)	332 (31.3)	171 (16.1)	15 (1.4)
Lack of counselling skills	167 (15.7)	275 (25.9)	426 (40.1)	186 (17.5)	8 (0.8)
Lack of remuneration for promoting PA	685 (64.5)	170 (16)	124 (11.7)	59 (5.6)	24 (2.3)
Lack of interest in promoting PA	744 (70.1)	164 (15.4)	123 (11.6)	29 (2.7)	2 (0.2)
Feeling it would not change the patient's behavior	97 (9.1)	193 (18.2)	558 (52.5)	206 (19.4)	8 (0.8)
Feeling it would not be beneficial for the patient	552 (52)	337 (31.7)	145 (13.7)	26 (2.4)	2 (0.2)

Most times and always was grouped together for the results chapter.

(16–20 years of experience), and 13 participants (4.4%) in the veteran group (20 + years of experience).

For the children and young people guidelines, 14 participants (4.5%) from the novice group knew the full recommendations, compared to 9 (4.1%) in the medium experience group, 5 participants (3.5%) in the intermediate experience group, 8 (8.8%) in the senior group, and 7 (2.3%) in the veteran group.

Analysis of the data did not reveal any trends between different working environments and knowledge regarding both guidelines.

The survey revealed that the proportions of male PTs knowledge of the adult guidelines was higher (29, 9.1%) than females (43, 5.8%), while an opposite trend was found on the knowledge of the children and young people guidelines (Males- 17, 39.5%, Females- 26, 60.5%).

There was no connection between the knowledge of PA guidelines for adults or children and young people and any type of physical activity promotion.

3.2. Physical activity promotion and barriers

The majority of participants (90.3%) reported that they routinely discuss the importance of PA with their patients (Table 2). More than two-thirds (70.5%) reported they deliver brief interventions to address the issue, and 83.5% of PTs in this study referred patients to other PA support, such as a gym or private or public lessons. The main barriers to promoting PA for PTs were the feeling that promotion would not change the patient's behavior (20.2%), followed by a sense of lacking sufficient counselling skills (18.3%), and a lack of time during consultation (17.5%) (Table 2).

Eighty seven participants (28.1%) of the novice group did not promote PA because they felt it would not change the patient's behavior, Seventy-two participants (23.2%) felt that lack of time was a barrier to promoting PA and seventy participants (22.6%) felt they lack the counselling skills to promote PA (Table 3).

No difference was indicated between genders with regards to PA promotion activity or barriers.

Table 3
Routine health promotion activities and barriers to physical activity promotion by experience groups.

	Novice n (%)	Medium n (%)	Intermediate n (%)	Senior n (%)	Veteran n (%)
Physical activity promotion					
Routinely initiate conversation	267 (86.1%)	190 (86.8%)	136 (94.4%)	86 (94.5%)	279 (93.6%)
Routinely signposting	246 (79.4%)	183 (83.6%)	122 (84.7%)	81 (89%)	255 (85.6%)
Routinely doing brief intervention	207 (66.8%)	151 (68.9%)	101 (70.1%)	70 (76.9%)	219 (73.5%)
Barriers to physical activity promotion					
Insufficient consultation time	72 (23.2%)	44 (20.1%)	22 (15.3%)	10 (11%)	38 (12.8%)
Lack of counselling skills	70 (22.6%)	44 (20.1%)	23 (16%)	19 (20.9%)	38 (12.8%)
Lack of remuneration	33 (10.6%)	23 (10.5%)	9 (6.3%)	2 (2.2%)	16 (15.4%)
Lack of interest in promoting PA	8(2.6%)	9 (4.1%)	8 (5.6%)	1 (1.1%)	5 (1.7%)
Feeling it would not change the patient's behavior	87 (28.1%)	41 (18.7%)	33 (22.9%)	11 (12.1%)	42 (14.1%)
Feeling it would not be beneficial for the patient	7 (2.3%)	6 (2.7%)	5 (.5%)	3 (3.3%)	7 (2.3%)

3.3. Personal physical activity

Every four out of ten (415, 39%) participants reported doing the recommended 150 min of moderate activity per week, and 460 (43%) reported doing enough vigorous activity per week. When combining the activity responses, it was indicated that 733 (69%) of the surveyed Israeli PTs reported doing the recommended amount of PA per week themselves, with no difference between genders. An evident trend from the data suggests that PTs that reported doing the recommended amount of PA also discussed the importance of PA with their patients, delivered brief interventions and referred patients to other PA support more often than PTs who reported not engaging in the recommended amount of PA.

4. Discussion

This study reveals an unsatisfactory view of Israeli PTs knowledge of the WHO's guidelines for PA. Although we found that the majority of the Israeli PTs report that they are actively promoting PA, their knowledge of the WHO's PA guidelines for adults and children and young people remains scant. As we could not find a connection between knowledge of the guidelines and promotion of PA, the question that naturally arises is: whether knowledge of the PA guidelines among PTs is important, if they do in fact actively promote PA? While some have argued that doing less than the recommended dose of PA is beneficial (Arem et al., 2015; Wen et al., 2011) and that for a sedentary population less strict recommendations are needed for better adherence (Gorter, 2017), others have argued that PA should be treated as a vital sign (Bowen et al., 2019; Wald and Garber, 2018), thus requiring knowledge of the proper number for optimal benefits of an active lifestyle. An interesting and noteworthy finding was that novice PTs knowledge of adult PA guidelines appears to be better than more "experienced" PTs, while the knowledge of the guidelines for children and young people was equally poor across all experience levels, working environments, and genders. Novice PTs reported that they encounter

more barriers to promoting PA than senior and veteran PT's, and physically active PT's are found to promote more PA than the ones who are not very active.

The poor results of this study are not exceptional when considered in a global perspective. It appears that knowledge of the WHO's PA guidelines is poor worldwide. [Lowe et al. \(2017\)](#) have shown that only 16% of British PT's know the full recommendations of the adult PA guidelines. [Freene et al. \(2017\)](#) reported similar poor results in Australia. In a study on PA knowledge of tutors of physiotherapy undergraduate education in Ireland, two-thirds (66%) admitted to dissatisfaction with their knowledge, and only 16% said that their students were properly knowledgeable of PA prescriptions for healthy adults and adolescents ([O'Donoghue et al., 2012](#)). This global and ongoing trend, in our opinion, reflects possible outdated curricula in physiotherapy education programs around the world, and lack of assimilation and application of PA guidelines. Another possible reason for this disappointing trend might be that the importance of the information about PA is not stressed enough by educators or not perceived as important by the students and therefore it is not retained. This point is supported by the data in the current study as there is a clear trend indicating greater knowledge of the guidelines among novice PT's compared to more experienced PT's. Naturally, novice PT's who only recently graduated, should have this knowledge fresh in their minds. On the other hand, the trend of senior PT's lack of knowledge of the guidelines is worrying and shouldn't be ignored. This trend calls for a careful consideration in the design and emphasis of future continuing education curricula on the subject.

Another challenge that emerges and may also be related to current existing PT curricula is the perceived lack of counselling skills and the belief their actions would not change the patients behavior, reported by PT's both here and in previous studies. In the current study, almost one in every five PT's perceived the lack of counselling to be the main barrier to promoting PA to their patients. These numbers are much higher than what previous studies reported. Two percent of Nigerian PT's ([Aweto et al., 2013](#)) and 6% of Australian PT's ([Freene et al., 2017](#)) perceived lack of communication skills as a barrier to promoting PA. In another study from Australia ([Shirley et al., 2010](#)), 8% of the PT's specified counseling skills as their important need and 20% believed their actions would not ultimately change their patients behavior. In addition to the mentioned practitioner perceptions, it's noteworthy to mention that a previous survey found that although PT's do have a favorable attitude to evidence based practice, they don't use guidelines frequently as they don't perceive guidelines be adequately specific for their patient's context ([Bernhardsson et al., 2014](#)). It could very well be that PT's feel they are better able to make PA recommendations for their patients on an individual level than what the guidelines can offer. Those perceptions, however, should not stand in the way of actively promoting awareness of the existing guidelines.

Although global physical inactivity levels have not changed significantly between 2001 and 2016, they have increased by 5% in high-income western countries like Israel ([Guthold et al., 2018](#)). PT's see many patients on a weekly basis, sometimes in a primary care setting. Seizing the opportunity to promote proper PA is crucial because it was demonstrated that people who follow the PA guidelines have a 31% lower mortality risk compared to inactive people and 20% lower risk than people who are doing less activity than recommended ([Arem et al., 2015](#)). This is supported by the well-established benefits and positive influences of PA on disability-adjusted life years, reducing non-communicable diseases related premature deaths, and lower economic costs. Surprisingly, some have noticed that these revelations are not reflected in contemporary clinical practice and dubbed it "the ultimate knowledge translation gap" ([Dean et al., 2011](#)). In 2018, the WHO issued "The Global Action Plan on Physical Activity 2018–2030" ([World Health Organization, 2018](#)), calling PT's one of the most important partner groups to improve PA around the world. Yet, the current and previous findings of surveys assessing PT's knowledge of the guidelines,

suggests that this potential is currently not being realized. We therefore urge other PT organizations and PT societies around the world to undertake similar surveys to assess their local PT's knowledge of the recommended PA levels.

4.1. Limitations and future studies

It is important to recognize that the current study may reflect self-selection bias because the survey reflected only the attitudes of those inclined to take it. In addition, social desirability bias might have occurred, thus prompting participants to answer the questions in ways they perceived to be appropriate. It is also possible that PT's who did not feel knowledgeable enough about health promotion and exercise, did not engage in our study. Finally, self-reported responses with regards to self-PA may only be moderately reliable ([Helmerhorst et al., 2012](#)). For these reasons, future studies should explore possible interventions to help decrease this knowledge gap in order to advance PT's status as PA and health promoters. We specifically recommend future research to try and focus on the different experience levels of PT's, as we noted a clear trend for lack of knowledge among senior PT's. Future studies or intervention programs should aim to devise specific interventions to target those senior populations. Finally, we recommend that future studies should consider investigating knowledge of the WHO's recommendations for older adults, how the knowledge of PT's compares to other health care professionals (e.g. physicians, osteopaths, chiropractors and athletic trainers), and explore what interventions would be the best to improve these knowledge gaps to ultimately promote greater PA.

5. Conclusion

It is suggested that PA should be treated as a vital sign, and that requires accurate knowledge of the current PA guidelines. Therefore, our study aimed to assess the knowledge of Israeli PT's of the WHO's PA recommendations for adults, children and young people. Although most Israeli PT's do promote PA in their routine work, their knowledge of the PA guidelines is limited. The main barriers to promoting PA are perceived to be the feeling that promotion would not change the patient's behavior, followed by a sense of lacking sufficient counseling skills and a lack of time during consultation. We stress an urgent need to address these knowledge gaps in order to enhance the way PT's improve patients' quality of life, prevent non-communicable diseases and to establish the physiotherapy profession in the frontline of healthcare.

Conflicts of interest

None declared.

Ethical approval

This study received approval (number AU-NBA-20180815) from the ethics committee of Ariel University, Israel.

Funding

None declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.msksp.2019.07.007>.

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