

Knowledge of physical education and other health professionals about the 2020 World Health Organization guidelines on sedentary behavior and physical activity

Conhecimento de profissionais de educação física e outros profissionais de saúde sobre as diretrizes de 2020 da Organização Mundial da Saúde sobre comportamento sedentário e atividade física

Douglas de Souza^{1,2}

<https://orcid.org/0000-0002-2023-3448>

José Claudio Jambassi-Filho³

<https://orcid.org/0000-0001-8060-1399>

Timóteo Salvador Lucas Daca⁴

<https://orcid.org/0000-0002-7914-4984>

Fernando Mateus Santos¹

<https://orcid.org/0009-0008-3444-0828>

André Luis Lacerda Bachi¹

<https://orcid.org/0000-0001-8266-1416>

Saulo Gil¹

<https://orcid.org/0000-0001-9050-0073>

Lucas Melo Neves⁵

<https://orcid.org/0000-0003-2426-9736>

Abstract – Physical activity is beneficial to health, leading to improvements in outcomes such as blood pressure, cholesterol levels, and adiposity measurements. However, no research has examined the extent to which health professionals are familiar with the physical activity guidelines. This study aimed to: examine the knowledge of Physical Education or other health professionals (Biomedicine, Biological Sciences, Dentistry, Nursing, Physiotherapy, Medicine, Nutrition, Psychology), regarding the guidelines for physical activity and sedentary behavior. A convenience sample of health professionals with higher education training, including physicians, physical education professionals, nutritionists, physiotherapists, nurses, and others, was invited to participate in this study. Individuals holding dual higher education degrees in Physical Education and another health-related field were excluded. The questionnaire consisted of 30 specific questions, based on World Health Organization Guidelines for physical activity and sedentary behavior. No significant differences ($p > 0.05$) were observed in the overall knowledge scores of the physical activity guidelines between the Physical Education professionals' group (19.0 ± 5.9 points) and the health professionals' group (18.0 ± 5.8 points). Significant differences were found between groups in scores for questions about children, adults, the elderly, pregnant women, and postpartum women ($p = 0.0140$), with Physical Education professionals scoring 4.4 ± 2.2 points and other health professionals scoring 3.6 ± 1.5 points. This research highlights Brazilian health professionals' awareness of the WHO physical activity recommendations, while also pointing to the importance of strengthening education and training to ensure that health professionals are adequately prepared to advocate for physical activity.

Key words: Exercise; Guideline; Health; Sedentary behavior.

Resumo – A atividade física traz benefícios à saúde, levando a melhorias em desfechos como a pressão arterial, os níveis de colesterol e as medidas de adiposidade. No entanto, nenhuma pesquisa examinou o grau de familiaridade dos profissionais de saúde com as diretrizes de atividade física. Este estudo teve como objetivo: examinar o conhecimento de profissionais de Educação Física ou de outros profissionais de saúde (Biomedicina, Ciências Biológicas, Odontologia, Enfermagem, Fisioterapia, Medicina, Nutrição, Psicologia) sobre as diretrizes para a atividade física e o comportamento sedentário. Uma amostra de conveniência de profissionais de saúde com formação superior, incluindo médicos, profissionais de educação física, nutricionistas, fisioterapeutas, enfermeiros e outros, foi convidada a participar deste estudo. Indivíduos com dupla formação superior em Educação Física e em outra área relacionada à saúde foram excluídos. O questionário foi formatado com 30 perguntas específicas, baseadas nas Diretrizes da Organização Mundial da Saúde para atividade física e comportamento sedentário. Não foram observadas diferenças significativas entre os grupos nos escores relacionados a questões sobre crianças, adultos, idosos, gestantes e puérperas ($p = 0,0140$), com os profissionais de Educação Física pontuando $4,4 \pm 2,2$ pontos e os demais profissionais de saúde pontuando $3,6 \pm 1,5$ pontos. Esta pesquisa destaca a conscientização dos profissionais de saúde brasileiros sobre as recomendações de atividade física da OMS, ao mesmo tempo em que aponta a importância do fortalecimento da educação e do treinamento para garantir que os profissionais estejam adequadamente preparados para defender a prática de atividade física.

Palavras-chave: Exercício; Diretrizes; Saúde; Comportamento sedentário.

1 Santo Amaro University. Post-graduate Program in Health Sciences. São Paulo, SP, Brazil.

2 Physical Activity, Sport and Mental Health Laboratory – LAFESAM. Department of Physical Education. Institute of Biosciences. São Paulo State University – UNESP. Rio Claro, SP, Brazil.

3 Department of Physical Education. Faculty of Education. Federal University of Bahia – UFBA. Salvador, BA, Brazil.

4 Faculty of Physical Education and Sport. Pedagogical University of Maputo. Maputo, Mozambique.

5 Bipolar Disorder Program – PROMAN. Department of Psychiatry. University of São Paulo – USP. São Paulo, SP, Brazil.

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Corresponding author

Lucas Melo Neves.
Department of Physical Education,
Institute of Biosciences, São Paulo State
University – UNESP Av. 24 A, 1515,
13506-900, Centro, Rio Claro (SP), Brazil.
E-mail: lucasmeloneves@uol.com.br

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INTRODUCTION

Physical activity is defined as any movement of the skeletal muscles that elevates energy expenditure above resting levels¹. Piercy et al.² state that engaging in physical activity can enhance or optimize health indicators across all age groups. Despite its well-documented health benefits, physical inactivity has been increasing worldwide for over a decade³. Currently, approximately 30% of adults and 80% of adolescents fail to meet the recommended daily levels of physical activity⁴⁻⁶. In this sense, physical inactivity is estimated to contribute to 3.9 million deaths per year⁷. Therefore, it is imperative to increase emphasis and funding programs that promote physical activity.

In 2018, the World Health Assembly approved a new Global Action Plan on Physical Activity (GAPPA) 2018-2030⁸. Following this resolution, Member States requested that the World Health Organization (WHO) update the Global Recommendations on Physical Activity for Health, originally published in 2010. This request led to the publication of updated guidelines on physical activity and sedentary behavior in 2020¹. The WHO recommends using these guidelines to inform national health policies in alignment with the WHO Global Action Plan for Physical Activity 2018-2030 and to strengthen surveillance systems that monitor progress toward national and global targets¹.

Hence, all countries should implement policies and programs that enable people of all ages and abilities to engage in physical activity and maintain optimal health¹. In addition to implementing governmental policies, health practitioners can help their patients understand and adhere to physical activity guidelines. The WHO acknowledges that various healthcare professionals, such as doctors, nurses, dentists, pharmacists, and nutritionists, can collaborate to implement diverse therapeutic approaches, including providing guidance on physical exercise⁹. Strong et al.¹⁰ demonstrate that health experts' recommendations on physical activity can improve outcomes such as blood pressure, cholesterol levels, and adiposity measurements. Consequently, healthcare practitioners are expected to be prepared to implement such recommendations. Nevertheless, studies frequently highlight the necessity for enhanced education of healthcare practitioners regarding the fundamental principles of physical activity¹¹. Indeed, a study of Brazilian individuals found that rheumatologists exhibit a strong inclination to encourage physical activity among their patients. However, it was observed that they have certain deficiencies in their understanding, indicating a necessity to integrate physical activity principles into their training¹².

To the best of our knowledge, no research conducted in Brazil to examine the extent to which health professionals are familiar with the physical activity guidelines set by the WHO. This study aims to examine the understanding of health professionals, such as Physical Education professionals or other healthcare practitioners, regarding the fundamental principles of the guidelines for physical activity and sedentary behavior recently updated in 2020.

METHODS

Study design

This study employed an observational cross-sectional design and used an online questionnaire consisting of thirty items pertaining to key principles of the WHO recommendations on physical activity and sedentary behavior.

The current investigation was conducted in compliance with the 2008 revised Declaration of Helsinki and received approval from the Santo Amaro University ethical committee (protocol number 5,812,180).

Participants

Between July 2022 and July 2023, health professionals with higher education training in the following areas were invited to participate in this study: Biomedicine, Biological Sciences, Dentistry, Nursing, Physiotherapy, Medicine, Nutrition, Psychology, and Physical Education. The professionals selected to participate were a convenience sample, meaning they were invited from the researchers' contact network rather than selected from a specific institution. Participants with dual higher education degrees, specifically in Physical Education and another health-related field, were excluded from the study.

Assessments

Data collection instruments

The development of the data collection instrument was based on the primary statements outlined in the WHO guidelines on physical activity and sedentary behavior. Notably, this publication ranks among the top 5% of research studies according to Altmetric scores (verified in August 2023). This indicates that it has had significant academic impact, with over 3200 citations in scientific publications. Additionally, it has been referenced by 163 news agencies in 356 news stories, cited in 13 policy documents, and mentioned on various platforms, including 20 blogs, 1432 Tweeter accounts, 20 Facebook pages, and 1 Wikipedia page. Despite this success, the WHO is committed to providing the population with even more educational materials.

In this context, we identified the publication "WHO guidelines on physical activity and sedentary behavior: at a glance". This guide, available on the WHO website¹³.

Therefore, the questionnaire to assess health professionals' knowledge of the World Health Organization Guidelines on physical activity and sedentary behavior was initially developed by our research team and then slightly modified following feedback from experienced physical education professionals (n = 3) and other experienced health professionals (Physician = 1; Nutritionist = 1, Physiotherapist = 1).

The questionnaire (Supplementary File 1) consisted of 30 specific questions. In addition, we included 10 questions about the professional's attributes. To enhance the educational presentation, we have separated it into three distinct groups of questions:

- 1) Sample characteristics (Sex; Age; What was the year you completed your degree? What is your background? Do you recommend physical activity to your patients? What patient population do you work with? Have you received training in prescribing physical activity? Do you assess your patients' level of physical activity and sedentary behavior? If so, how do you assess physical activity? What role does physical activity play in the treatment of patients? What is the main reason for not prescribing physical activity?

2) Questions regarding the frequency, intensity, and duration of PA recommendations for specific populations (children, adults, elderly people, or pregnant/ postpartum women); finally, questions regarding the health benefits provided by physical activity.

Consulting Supplementary File 1 can achieve a full understanding of the questionnaire.

Statistical analysis

The Shapiro-Wilk test was used to assess the normality of the data. Sample characteristics, including age and year of graduation, are presented as mean $\pm$ standard deviation (SD). The remaining variables are presented as the number of participants and percentages. A chi-square test was used to compare proportions between groups.

The data on the number of correct responses are presented as the mean and standard deviation. We compare two groups, Physical Education Professionals (n=63) and Other health professionals (n=63), using a Student's T test. The comparison is made with respect to the sets of questions. 1) Questions 1 to 8 assess the physical activity domain for various groups, including children, adults, elderly people, pregnant women, and postpartum women, with a scoring range of 0 to 8 points. 2) Questions 9 to 30 evaluate the Statement table, with a scoring range of 0 to 22 points. 3) All questions, from 1 to 30, contribute to the overall score, with a scoring range of 0 to 30 points.

In addition, sub-analyses were conducted considering the variables of sex (male and female), age in years (≤ 36 years or > 36 years), time since graduation in years (≤ 9 years or > 9 years), and whether participants received training to prescribe physical activity during their education. The statistical analysis was conducted using IBM SPSS Statistics 23, with a significance level set at $p < 0.05$.

RESULTS

A total of 126 people (sixty-three Physical Education professionals and sixty-three other health professionals) responded to our study and were included in the analysis. Other health professionals included in the sample represented eight areas of expertise: Biomedicine, Biological Sciences, Dentistry, Nursing, Physiotherapy, Medicine, Nutrition, and Psychology.) made up the sample of other health professionals. The sample was approximately 35 years old, having graduated approximately 10 years ago. In general, in percentage terms, the group of Physical Education Professionals showed significant differences ($p < 0.05$) when compared to the other health professionals in the variables: women (20 versus 41 subjects), considering that they received training in their training to prescribe PA (59 versus 15 subjects), and evaluated the PA level of their patients. In Table 1, we detail the sample characteristics.

Figure 1 presents the scores of the Physical Education professional groups and other health professionals as follows: Panel A: Questions 1 to 8; Panel B: Questions 9 to 30; and Panel C: All questions. A significant difference ($p=0.0140$) was verified in questions 1 to 8 (Panel A - Physical Education = 4.4 ± 2.2 points and Other health professionals = 3.6 ± 1.5 points). The data presented in Panel B (Physical Education = 15.0 ± 4.9 and Other health professionals = 15.0 ± 5.3) and Panel C (Physical Education = 19.0 ± 5.9 and Other health professionals = 18.0 ± 5.8) did not show significant differences ($p > 0.05$).

Table 1. Sample characteristics.

Variable		Physical Education Professionals (n=63)	Other health professionals (n=63)	Chi-square	p
Women (n - %)		20 (32%)	41 (65%)	14.0141	<0.001
Age (years)		354 ± 8,5	36.1 ± 9,5	--	0.661
Graduation time (years)		9.7 ± 7.6	12.0 ± 8.8	--	0.175
Formation (n)		Physical Education (63)	Biomedicine (8) Biological Sciences (2) Dentistry (3) Nursing (12) Physiotherapy (11) Medicine (13) Nutrition (11) Psychology (3)	--	--
Working population (n)	All	37 (59%)	34 (54%)	6.064	0.109
	Children and teenagers	6 (10%)	5 (8%)		
	Adults	8 (13%)	18 (29%)		
	Elderly	12 (19%)	6 (10%)		
I consider that I received training to prescribe physical activity in my training – n (%)		59 (94%)	15 (24%)	63.392	<0.001
Do you assess your patients' PA level? – n (%)	Ever	43 (68%)	19 30%)	20.1972	<0.001
	Mostly	14 (22%)	23 (37%)		
	Rarely	3 (5%)	7 (11%)		
	Never	3 (6%)	14 (22%)		
What strategy do you use to assess PA level? – n (%)	Interview	23 (39%)	34 (69%)	12.9137	0.004
	AF Questionnaire	26 (44%)	7 (14%)		
	Objective methods (Ex: accelerometer)	4 (7%)	2 (4%)		
	Other	6 (10%)	6 (12%)		
What is the role of physical activity in the treatment of patients? – n (%)	I believe it can contribute to the treatment	29 (46%)	23 (37%)	1.1788	0.277
	I believe it is part of the treatment	34 (54%)	40 (63%)		
What is the main reason for not prescribing PA to your patient? – n (%)	Lack of training	--	26 (41%)	--	--
	Do not consider this part of your job	--	18 (29%)	--	--
	Not considered clinically relevant	--	1 (2%)	--	--
	Lack of time	--	4 (22%)	--	--
	They did not answer	--	14 (6%)	--	--

Note. Variables with values in mean and standard deviation = t-test for independent samples. Other variables = Chi-square test. N = number of subjects; % = percentage; PA = Physical activity.

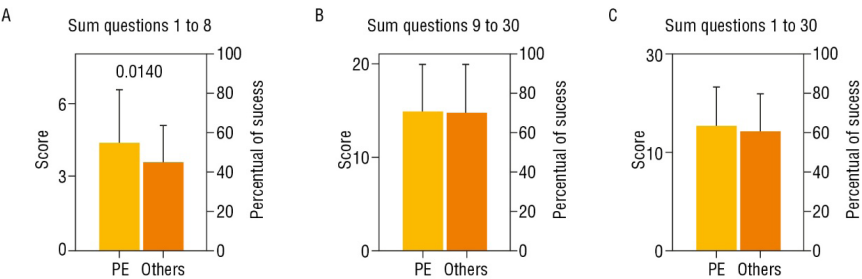


Figure 1. Score of professional groups of Physical Education and other health professionals.

Figure 2 presents the scores for each of the 30 questions from the professional groups of Physical Education and other health professionals.

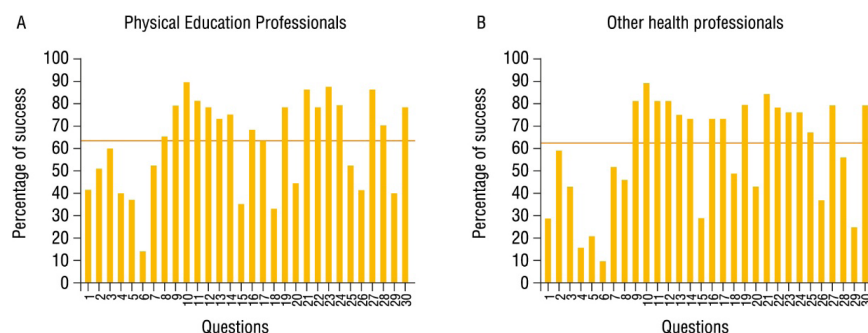


Figure 2. Individual responses. The line represents the mean value.

In Table 2, we present a sub-analysis considering the characteristics of the group of Physical Education professionals and other health professionals. For Physical Education Professionals to consider that received training to prescribe physical activity results in a higher score (19.7 ± 5.9 vs 14.7 ± 2.5 ; $p = 0.017$). For Other health professionals, men had a higher score than women (19.5 ± 4.6 vs 16.4 ± 7.1 ; $p = 0.042$).

Table 2. Sub-analysis considering the characteristics of the group of Physical Education professionals and other health professionals.

Variable		N	Physical Education Professionals	p	N	Other health professional	p
Sex	Men	21	19.4 ± 5.8	0.940	41	19.5 ± 4.6	0.042
	Women	42	19.3 ± 6.2		22	$16.4 \pm 7.1^*$ (CI = 0.1; 6.0)	
Age (years)	≤ 36	33	19.6 ± 6.1	0.736	32	18.8 ± 5.1	0.551
	> 36	30	19.1 ± 5.7		31	18.0 ± 6.4	
Graduation time (years)	< 9	37	19.0 ± 6.5	0.590	32	18.0 ± 5.5	0.539
	> 9	26	19.8 ± 5.0		31	18.9 ± 6.0	
I consider that in my training I received training to prescribe physical activity	Yes	59	19.7 ± 5.9	0.017 (CI = 1.3; 8.6)	15	19.0 ± 6.8	0.655
	No	4	14.7 ± 2.5		48	18.2 ± 5.5	

Note. Median was the cutoff point considered for the variables age (36 years) and time since graduation (9 years). Independent T-test. N = Number of subjects; CI = Confidence interval. * $p < 0.05$.

DISCUSSION

This research proposes to evaluate the knowledge of Physical Education professionals and Health professionals regarding the 2020 guidelines for physical activity and sedentary behavior¹. Our primary findings indicate no difference in overall scores for knowledge of physical activity guidelines between the Physical Education professionals group and the Health professionals group, based on 30 questions. Significant differences in scores were identified across groups, including children, adults, the elderly, pregnant women, and postpartum women, in the physical activity domain (Questions one to eight). We found that the sub-analysis, which considers the characteristics of the Physical Education Professionals group, shows that those trained to prescribe physical exercise achieved higher scores. Analysis indicated that other health professionals reported that males scored higher than women.

The absence of score differences among groups may indicate an increasing use of physical activity and sedentary behavior guidelines¹, which are referenced by numerous organizations, and included in Guidelines of Italian Society of Nephrology¹⁴, German Obesity Society¹⁵, Spanish Society of Hypertension¹⁵, Italian Society for Pediatric Endocrinology and Diabetology¹⁶, and Brazilian Federation of Gynecology and Obstetrics Associations/Brazilian Climacteric Association¹⁷. This citation may enhance the dissemination of information on the most compelling evidence for physical activity and sedentary behavior, hence fostering comparable knowledge among Physical Education and Health experts. In contrast, the comparatively lower scores among other health professionals highlight the need to more comprehensively integrate physical activity concepts into their training curriculum. Various studies indicate that the limited duration allocated to the principles of physical activity within the undergraduate program is insufficient^{10,18,19}. The relationship between biological sex and the timing of physical exercise is well demonstrated²⁰. As previously stated, nations with a higher Human Development Index show a smaller gender disparity in physical activity participation between men and women²¹. These observed differences may influence their engagement in physical activity throughout life. Future research may investigate these gender discrepancies to provide customized educational approaches.

The study's cross-sectional design and use of convenience sampling limit the generalizability of the findings. Participants voluntarily choose to take part in the research, which may result in individuals who are more motivated or knowledgeable. Furthermore, reliance on self-reported data and knowledge assessments may not fully capture actual therapeutic practices.

To address the reported knowledge deficit, it is essential to integrate thorough training on WHO standards into the curriculum of diverse healthcare and fitness professionals. Continuing education programs must prioritize evidence-based guidelines on physical activity and sedentary behavior, customized for various demographic groups. Furthermore, further research should assess the conversion of knowledge into practice and patient outcomes, enabling the formulation of targeted treatments for healthcare practitioners.

CONCLUSIONS

This research underscores Brazilian health professionals' awareness of WHO physical activity recommendations, despite worldwide initiatives and revised standards. Improving education and training in this field is essential to enable professionals to advocate proficiently.

COMPLIANCE WITH ETHICAL STANDARDS

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Ethical approval

The current investigation was conducted in compliance with the 2008 revised Declaration of Helsinki and received approval from the ethical committee of Santo Amaro University (protocol number 5,812,180).

Conflict of interest statement

The authors have no conflict of interest to declare.

Author Contributions

Conception, planning, data collection, analysis, interpretation, and writing of the work: DS; Conception, interpretation, writing of the work, and supervision: LMN; Analysis and interpretation of the work's data; and critical review of its intellectual content: JCJF, TSLD, FMS, ALLB, SG. All authors approved the final version submitted.

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SUPPLEMENTARY MATERIAL

Supplementary material accompanies this paper.

Supplementary File 1: Free access in <https://osf.io/nd7gb/overview>

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