Translation of the "Brief Physical Activity Assessment Tool" into Brazilian Portuguese

Tradução da "Brief Physical Activity Assessment Tool" para o Português Brasileiro

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ABSTRACT

The Brief Physical Activity Assessment Tool (BPAAT) is a practical, valid, and easily applicable tool for assessing the level of physical activity in population studies or primary healthcare settings. The translation and semantic equivalence of this tool into Brazilian Portuguese are crucial for future studies and its integration into the daily routine of healthcare professionals. Therefore, the objective of this study was to propose the translation and establish semantic equivalence of the BPAAT tool in Brazilian Portuguese. The study was conducted using a digital platform, recruiting adult individuals (aged 18-60) from the five regions of Brazil. Five steps were carried out for the translation and semantic equivalence of the tool: translation of the instruments from the source language (English) to the target language (Brazilian Portuguese); synthesis of the translations; back translation; evaluation by an expert committee; and evaluation of the instruments by the target population. A total of 18 experts in the field and 130 individuals from the general population were consulted to evaluate the translation of the tool. On average, both groups of evaluators rated the clarity, adequacy, and understanding of the two questions in the BPAAT with a score of ≥ 4 out of 5. Additionally, both groups provided suggestions regarding the inclusion of examples of physical activities and suggested word replacements. The current version presented shows satisfactory scores for clarity, adequacy, and understanding among the general population, thus enabling its extensive utilization in primary healthcare and Brazilian scientific research.

Keywords: Physical activity; Exercise; Questionnaire; Sedentarism; Translation.

RESUMO

A Brief Physical Activity Assessment Tool (BPAAT) é uma ferramenta prática, válida e facilmente aplicável para avaliar o nível de atividade física em estudos populacionais ou ambientes de atenção primária à saúde. A tradução e equivalência semântica dessa ferramenta para o português brasileiro são fundamentais para futuros estudos e sua integração no cotidiano dos profissionais de saúde. Portanto, o objetivo deste estudo foi propor a tradução e estabelecer a equivalência semântica da ferramenta BPAAT para o português brasileiro. O estudo foi realizado por meio de plataforma digital, recrutando indivíduos adultos (de 18 a 60 anos) das cinco regiões do Brasil. Cinco etapas foram realizadas para a tradução e equivalência semântica do instrumento: tradução dos instrumentos do idioma de origem (inglês) para o idioma de destino (português brasileiro); síntese das traduções; back translation; avaliação por comitê de especialistas; e avaliação do instrumento pela população-alvo. Um total de 18 especialistas na área e 130 indivíduos da população em geral foram consultados para avaliar a tradução da ferramenta. Em média, ambos os grupos de avaliadores classificaram a clareza, adequação e compreensão das duas questões da BPAAT com uma pontuação ≥ 4 de 5. Além disso, ambos os grupos forneceram sugestões sobre a inclusão de exemplos de atividades físicas e sugeriram substituições de palavras. A versão atual da ferramenta apresenta escores satisfatórios de clareza, adequação e compreensão pela população em geral, possibilitando sua ampla utilização na atenção primária à saúde e na pesquisa científica brasileira.

Palavras-chave: Atividade física; Exercício físico; Questionário; Sedentarismo; Tradução.

Introduction

Non-communicable diseases (NCDs) represent a significant public health issue in Brazil and worldwide[1]. According to the World Health Organization, NCDs accounted for 73.6% of global deaths in 2019[2], and in Brazil, they were responsible for 54.7% of all deaths[3]. Modifiable risk factors such as smoking, excessive alcohol consumption, unhealthy diet, obesity, and physical inactivity have been identified as the primary causes of NCD-related deaths[2]. Regular physical activity has been shown to induce physiological adaptations that contribute to preventing and managing NCDs[4,5]. Despite the known benefits of physical activity, approximately 30% of the global population is considered inactive, according to the Global Observatory for Physical Activity (GoPA!), with this rate reaching around 50%

in Brazil[6]. Assessing the level of physical activity using precise and appropriate instruments allows for studying prevalence rates in different populations and evaluating the outcomes of interventions promoting physical activity[7].

The Brief Physical Activity Assessment Tool (BPAAT) is a quick and straightforward questionnaire consisting of two questions that measure the frequency and duration of moderate to vigorous physical activity during the week. Participants can be classified as sufficiently active or insufficiently active based on their responses[5,8]. This tool has been validated to classify individuals as inactive compared to subjective data from other questionnaires and objective data obtained through triaxial accelerometers, which are considered the gold standard for evaluating the physical activity level of free-living individuals[9,10]. Triaxial accelerometers are portable equipment affixed to the body that measure each physical activity performed, however, they are expensive and in most cases inaccessible due to their high cost[9].

Considering its practicality, validity, and ease of use, the BPAAT holds significant potential as a tool for assessing physical activity levels in population studies or primary healthcare settings. However, the tool has only been translated into Catalan and Spanish versions[9]. Given the tool's characteristics, it is crucial to establish translation and semantic equivalence in Brazilian Portuguese to facilitate its application in subsequent studies and integrate it into the day-to-day operations of the Brazilian Health System. Thus, this study proposes the translation and establishes the semantic equivalence of the BPAAT in Brazilian Portuguese.

Methods

The study was approved by the Research Ethics Committee of the Universidade Federal de Alagoas (approval number 5.899.421). All participants were informed about the procedures and signed an informed consent form.

This is a study with an observational design for translation and semantic equivalence.

The study was conducted using a digital platform (Google Forms®). Brazilian individuals of both genders, aged between 18 and 60 years, were included in the study. Individuals who did not fully complete the questionnaires were excluded.

The sample size was estimated based on the study conducted by Puig-Ribeira et al.[9], in which the au-thors translated and culturally adapted the BPAAT into Catalan and Spanish. Following the methodology of Puig-Ribeira et al.[9], approximately 55 participants were considered. Additionally, accounting for a potential sample loss of 15%, a minimum of 63 participants was required for the qualitative pilot study. Considering that Brazil is a country with continental proportions and its regions have cultural and sociodemographic particularities, a weighting was performed for each of the five regions of the country based on the estimated Brazilian population. Therefore, a minimum representation of 8.9% (n = 6) from the North region, 27.0% (n = 17) from the Northeast region, 7.9% (n = 5) from the Central-West region, 42.0% (n = 27) from the Southeast region, and 14.2% (n = 9) from the South region was expected.

For the recruitment of participants for the qualitative evaluation by the general population, the official Instagram® profile of the Laboratório de Nutrição e Metabolismo (LANUM) affiliated with the Faculade de Nutrição at the Universidade Federal de Alagoas (@ lanum.ufal) was used to disseminate information about the research, as well as the link to access the data collection form.

The procedures for translation and semantic equivalence of the instruments were based on guidelines proposed by Beaton et al.[11]. The process of translation and semantic, idiomatic, and conceptual equivalence consisted of five steps: 1. Translation of the instruments from the source language (English) to the target language (Brazilian Portuguese); 2. Synthesis of the translations; 3. Back translation; 4. Evaluation by an expert committee; and 5. Evaluation of the instruments by the target population.

Translation of the instruments from the source language to the target language

The original version of the BPAAT was independently translated from English to Brazilian Portuguese by two translators fluent in both the source language of the instrument and the target language. The translators chosen were native speakers of one of the languages in question and were proficient in the other, as well as having experience in oral presentations and academic participation (podcasts, reviews and writing articles for international journals, editorials, participation in meetings of international research groups, etc.) in the non-native language, thus being able to carry out this stage and the back translation.

Synthesis of the translations

After the initial independent translations, a consensus version was produced by two additional Brazilian researchers who are fluent in English and familiar with the evaluated theme.

Back translation

The back translation of the tool was performed by two translators, and in case any discrepancies were found compared to the original version of the tool, a third translator would be consulted to reach a consensus.

Evaluation by an expert committee

This stage was conducted in March 2023. A non-probabilistic sample of healthcare professionals (physical education professionals, nutritionists, and nurses) was invited to participate in the evaluation. The selection of these professionals was based on their Curriculum lattes (https://lattes.cnpq.br/), which demonstrated their expertise in physical activity. Expertise in physical activity was verified by publishing at least three articles or being part of a research group in a related area, or working on the topic of sports nutrition or as a physical education professional for at least three years. To ensure a comprehensive assessment of the BPAAT, we adopted a proportion of 3 experts (including physical education professionals, nutritionists, physicians, and other healthcare professionals) for every 10 participants from the general population. Thus, a minimum sample size of approximately 18 healthcare professionals was targeted. For the recruitment of experts in physical activity, the quality of the translation was assessed in terms of clarity, translation accuracy, and regional adaptations. The evaluation involved comparing: (1) the original version of the tool and (2) the synthesized translation. Several questions were asked during this evaluation, including: "Is the item well adapted? (yes/no)"; "Are the expressions used clear and understandable for adults aged 18 to 60 from different regions of the country? (rated on a scale of 1-5)"; "Does the item need modification? (yes/no)"; finally, there was an open space for suggestions.

Evaluation of the instruments by the target population (qualitative pilot study)

The qualitative evaluation was conducted in May 2023. A questionnaire briefly tested by the research team was employed to collect data from the participants. The collected data encompassed the participants' age (in years), region of the country (North, Northeast, Midwest, Southeast, and South), education level, gender (female/male), race/color (black [Afro-descendant], brown [mixed race/skin color], indigenous, white [Caucasian], and yellow [Asian]), alcohol consumption habits (yes/no), smoking habits (yes/no/ex-smoker), and physical exercise practice (yes/no). Furthermore, the participants' economic class was estimated using the Brazil Economic Classification Criteria questionnaire, which classifies individuals into five economic classes: "A," "B1," "B2," "C1," "C2," and "D-E," based on their purchasing power[12]. Self-reported weight and height data were also collected, later used to calculate the body mass index according to the World Health Organization's guidelines[13].

Following the collection of demographic and health-related data, the BPAAT, incorporating the suggestions made by the expert committee, was administered to the participants. Subsequently, the participants were requested to rate the clarity of the language, appropriateness for their age group, and their understanding of the questions on a scale of 1 to 5. They were also asked whether any modifications were necessary for the items (yes/no). Additionally, the participants were provided with an opportunity to offer additional suggestions for modifying the questions of the tool.

Application of the Brief Physical Activity Assessment Tool

The revised version of the questionnaire, incorporating the suggestions made by the experts, was administered to the participants. Each question was assigned a score, and based on their score, participants were classified as either: a) sufficiently active: individuals who reported engaging in ≥ 3 sessions per week of at least 20 minutes of vigorous-intensity activity, or ≥ 5 sessions per week of at least 30 minutes of moderate-intensity activity, or ≥ 5 sessions of any combination of moderate or vigorous intensity physical activity; b) insufficiently active: Individuals who did not meet the criteria for being classified as sufficiently active based on the scoring system. By utilizing the questionnaire, participants' levels of physical activity were assessed and classified[8].

The collected data were tabulated in electronic spreadsheets. Continuous variables were presented as mean and standard deviation, and categorical variables were presented as frequencies. All analyses were performed using the JAMOVI software (The Jamovi Project, v 4.2, Sidney, Australia).

Results

Synthesis of translations and back translation

The initial translations were performed, and subsequently, a synthesis of the two questions of the tool and their respective possible answers was conducted, as shown in Chart 1. The characteristics of the experts can be observed in Table 1. All evaluators indicated that both translations of the two questions of the tool were well adapted and scored an average of 4.67 ± 0.59 and 4.89 ± 0.32 for the clarity and understanding of questions 1 and 2 of the BPAAT, respectively. The following suggestions were considered: the inclusion of synonyms for the examples of physical activities and the exclusion of the translation of the term "digging" in question 1, as it is not a common practice for most of the Brazilian population. Subsequently, after this evaluation by the experts, the back translation was performed, in which no substantial differences were identified with the original tool. In the back translation stage, no relevant discrepancies were found between the translators, just different ways of describing the same activity. There-fore, it was checked with the other authors what would be the best way to synthesize the translation.

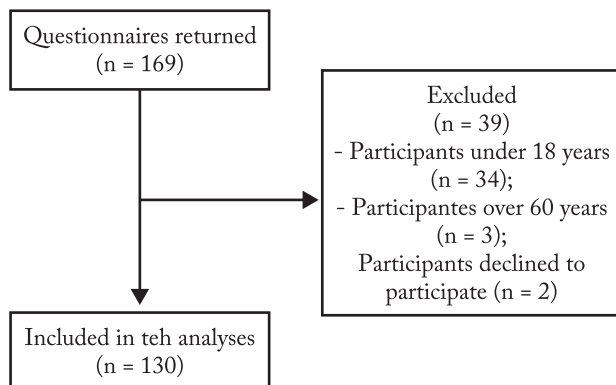## Qualitative evaluation by the population

A total of 169 responses were obtained through the online form. However, only 130 participants were included in our analysis, as shown in the flowchart in Figure 1. Of these, 73.1% (n = 95) were female and had a mean age of 29 ± 10 years. The other characteristics of the population that evaluated the translation of the tool can be observed in Table 2 Participants scored an average of 4.27 ± 1.08 and 4.42 ± 0.90 for the clarity of the first and second questions, respectively. Regarding the understanding, participants scored 4.63 ± 0.86 and 4.71 ± 0.71 for questions 1 and 2 of the BPAAT, respectively. Some suggestions regarding the inclusion of examples of anaerobic physical activities (resistance training, cross-training, and pilates) were included in the first question of the tool. After evaluating suggestions for modalities such as pilates, cross-training and resistance training, a physical education professional

Chart 1 – Initial translation from English to Brazilian Portuguese

Original English version	Translator 1	Translator 2	Synthesis of translations after back translation
Question 1.			
How many times a week, do you usually do 20 minutes of vigorous physical activity that makes you sweat or puff and pant? (for example, jogging, heavy lifting, digging, aerobics, or fast bicycling)	Quantas vezes por semana você costuma fazer 20 minutos de atividade física vigorosa que faz você suar ou respirar muito rápido/ficar ofegante? (por exemplo, correr, levantar pesos, escavar, atividade aeróbica, ou andar de bicicleta em ritmo rápido)	Quantas vezes na semana, você costuma fazer 20 minutos de atividade física rigorosa que faz você suar e/ou ofegar? (Por exemplo, caminhadas, levantamento de peso, cavar, exercício aeróbico ou correr de bicicleta)	Quantas vezes por semana você costuma fazer 20 MINUTOS de atividade física VIGOROSA, que faz você suar ou respirar muito rápido/ficar ofegante? (Por exemplo, corridas, levantamento de peso, cavar/escavar, exercício aeróbico, correr de bicicleta ou caminhar em um ritmo que o impeça de falar normalmente).
Answer options for question 1			
≥ 3 times/week 1-2 times/week None	≥ 3 vezes por semana 1-2 vezes por semana Nenhuma	≥ 3 vezes/semana 1-2 vezes/semana Nenhuma	≥ 3 vezes/semana 1-2 vezes/semana Nenhuma
Question 2.			
How many times a week, do you usually do 30 minutes of moderate physical activity or walking that increases your heart rate or makes you breath harder than normal? (for example, mowing the lawn, carrying light loads, bicycling at a regular pace, or playing doubles tennis)	Quantas vezes por semana, você costuma fazer 30 minutos de atividade física moderada ou de caminhada que aumenta seu ritmo cardíaco ou faz você respirar com mais força do que o normal? (por exemplo, cortar a grama, carregar pesos leves, andar de bicicleta em ritmo regular, ou jogar tênis)	Quantas vezes por semana, você costuma fazer 30 minutos de atividade física moderada ou caminhadas que aceleram seu coração ou fazem você respirar mais que o normal? (Por exemplo, cortar a grama, carregar cargas leves, pedalar em um ritmo estável, ou jogar em dupla)	Quantas vezes por semana você costuma fazer 30 MINUTOS de atividade física MODERADA ou caminhadas que aumentam seu ritmo cardíaco ou fazem você respirar com mais força que o normal? (Por exemplo, tarefas domésticas, cortar a grama, carregar cargas leves, pedalar em um ritmo regular, ou jogar tênis em dupla)
Answer options for question 2			
≥ 5 times/week 3-4 times/week 1-2 times/week None	≥ 5 vezes por semana 3-4 vezes por semana 1-2 vezes por semana Nenhuma	≥ 5 vezes/semana 3-4 vezes/semana 1-2 vezes/semana Nenhuma	≥ 5 vezes/semana 3-4 vezes/semana 1-2 vezes/semana Nenhuma

Table 1 – Characteristics of the consulted experts (n = 18)

Caracteristics	n	%
Gender		
Male	11	61.1
Female	7	38.9
Region		
North	3	16.7
Northeast	5	27.8
Midwest	3	16.7
Southeast	4	22.2
South	3	16.7
Academic degree		
Graduated	5	27.8
Specialist	3	16.7
Master	4	22.2
Doctor	6	33.3
Occupation área		
Nutrition	5	27.8
Nursing	1	5.6
Physical education	12	66.7

Table 2 – Sample characteristics in the qualitative study (n = 130)

Sample characteristics	n	%
Gender		
Male	33	25.4
Female	95	73.1
Not reported	2	1.5
Region		
North	33	25.4
Northeast	38	29.2
Midwest	15	11.5
Southeast	28	21.5
South	16	12.3
Scholarity		
High school	15	11.5
University education	115	88.5
Race/skin color		
White (Caucasian)	62	47.7
Black (Afro-descendant)	16	12.3
Brown	47	36.2
Yellow (Asian)	3	2.3
Indigenous	1	0.8
Not reported	1	0.8
Economic class		
A	1	0.8
B1	9	6.9
B2	27	20.8
C1	51	39.2
C2	25	19.2
D-E	17	13.1
Body mass index		
Underweight	2	1.5
Normal weight	68	52.3
Overweight	33	25.4
Obesity	27	20.8
BPAAT classification		
Sufficiently active	71	54.6
Insufficiently active	59	45.4

BPAAT = brief physical activity assessment tool.

Figure 1 – Flowchart of the participants

from the group was consulted to see if it was possible to fit these modalities into the recommended physical activity categorization. After consensus among the authors that such modalities are popularly known in Brazil, they were included. In addition, reductions in verb repetitions were made in both questions (Chart 2).

Furthermore, after the application of the translated BPAAT in our sample, it was observed that participants scored an average of 4.05 ± 2.67 points, and of the total, 45.4% (n = 59) were classified as insufficiently active, while 54.6% were classified as sufficiently active.

Discussion

The current study involved the translation and establishment of semantic equivalence of the BPAAT in Portuguese, which was evaluated by experts and the general population from the five macro-regions of Brazil. Both evaluations yielded satisfactory scores for clarity, adequacy, and understanding of the tool. Furthermore, according to the tool, 45.4% of the population evaluated were classified as insufficiently active.

Considering the language barriers that can hinder the practical application of this tool, the translation into Portuguese is crucial, particularly for its utilization

Chart 2 – Final version of the translation into Brazilian Portuguese after qualitative evaluation of the population

Translation synthesis after evaluation by experts (version sent for qualitative assessment of the population)	Suggestions after qualitative evaluation of the population	Final version of the translation
Question 1.		
Quantas vezes por semana você costuma fazer 20 MINUTOS de atividade física VIGOROSA, que faz você suar ou respirar muito rápido/ficar ofegante? (Por exemplo, corridas, levantar pesos, realizar exercícios aeróbicos, andar rápido de bicicleta ou caminhar em um ritmo que o impeça de falar normalmente)	Include examples of aerobic activities such as resistance training, cross-training and pilates. Decrease repetitions of the verb "do (in portuguese: fazer)".	Quantas vezes por semana você costuma praticar 20 MINUTOS de atividade física VIGOROSA, que faz você suar ou respirar muito rápido/ficar ofegante? (Por exemplo, corridas, levantar pesos, realizar exercícios aeróbicos [ex.: musculação, cross-training, pilates], andar rápido de bicicleta ou caminhar em um ritmo que o impeça de falar normalmente)
Answer options for question 1		
≥ 3 vezes/semana 1-2 vezes/semana Nenhuma	None.	≥ 3 vezes/semana 1-2 vezes/semana Nenhuma
Question 2.		
Quantas vezes por semana você costuma fazer 30 MINUTOS de atividade física MODERADA ou caminhadas que fazem seu coração bater mais rápido ou fazem você respirar com mais força que o normal? (Por exemplo, tarefas domésticas ou atividades no jardim, como cortar grama, carregar cargas leves, pedalar em um ritmo regular, ou jogar tênis em dupla)	Decrease repetitions of the verb "do (in portuguese: fazer)".	Quantas vezes por semana você costuma praticar 30 MINUTOS de atividade física MODERADA ou caminhadas que fazem seu coração bater mais rápido ou respirar com mais força que o normal? (Por exemplo, tarefas domésticas ou atividades no jardim, como cortar grama, carregar cargas leves, pedalar em um ritmo regular, ou jogar tênis em dupla)
Answer options for question 2		
≥ 5 vezes/semana 3-4 vezes/semana 1-2 vezes/semana Nenhuma	None.	≥ 5 vezes/semana 3-4 vezes/semana 1-2 vezes/semana Nenhuma

in Primary Health Care within the Brazilian Unified Health System. Access to simple, reliable, and cost-effective tools aids in identifying physical inactivity in the population, especially among individuals in vulnerable social situations. It contributes to implementing strategies to address associated health conditions[8,14-16]. Another critical aspect to consider is that this tool can be easily employed by healthcare professionals who may not be experts in the field but can still provide valuable recommendations for lifestyle changes. The high positive scores observed in this study regarding the clarity, adequacy, and understanding of the translation of both questions create an optimistic outlook for incorporating the BPAAT in identifying insufficiently active individuals in Brazilian population-based studies.

The construction of the translation of the BPAAT into Portuguese, in addition to advocating a cultural adaptation, also appears to be an update of the same tool, as it had been published in 2005 in English with individuals residing in Australia[8]. The first version created by the translators did not differ substantially, however the participation in the evaluation of experts in the area made it possible for the tool to be more cohesive with what was proposed. With the qualitative assessment of the population, it was possible to verify which physical activities were expected to be questioned as examples, allowing their language to serve a general audience. The inclusion of modalities such as cross-training and resistance training is important to reach adults in the age range recommended and evaluated in the present study. According to the study by Wendt et al.[17], activities such as walking and resistance training are among the three main exercises performed throughout Brazil, in which resistance training has a frequency between 15% and 30% in 11 states. Furthermore, the creation of cross-training boxes in Brazil has shown significant growth, as well as its practice by individuals who seek not only to improve the quality of their physical conditioning, but also the motivational aspects of overcoming their own limits[18]. Therefore, the BPAAT translated in this study seems to fit well with what is practiced throughout Brazil in the proposed broad age range (18-60 years) for both gender[17] and also in the Physical Activity Guide for the Brazilian Population[19]. Furthermore, although we cannot be sure whether the tool was applied to individuals with phys-

ical disabilities, the tool can also be applied to these individuals, since the adapted physical exercise approach also includes the sensations explored in the questions (sweating or breathing a lot fast/breathing, heart beating faster or breathing harder than normal).

The present study has some limitations that should be taken into account. Most of our sample had a higher education level, which hinders extrapolation of understanding and clarity to samples of individuals with lower education levels. However, we included individuals from all macro-regions of Brazil and encompassed various economic classes, which satisfactorily allows for the general use of the tool. Furthermore, our sample presents participant selection bias, since only individuals with internet access could respond to the online form. However, using this method it was possible to carry out collections throughout Brazil in a standardized way.

In conclusion, the translation and establishment of semantic equivalence of the BPAAT in Brazilian Portuguese provide quick screening of individuals as sufficiently or insufficiently active in primary care and scientific research without requiring expensive equipment or lengthy questionnaires. Moreover, the presented version exhibits satisfactory scores for clarity, adequacy, and understanding among the general population.

Conflict of interest

The authors declare no conflict of interest.

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Author's contributions

Macena ML: Conceptualization; Methodology; Validation; Formal analysis; Investigation; Resources; Data curation; Project administration; Visualization; Writing – original draft; Approval of the final version. Ferro DC: Investigation; Writing – original draft; Approval of the final version. Silva MECM: Conceptualization; Investigation; Data curation; Writing – original draft; Approval of the final version. Rocha MVC: Investigation; Writing – original draft; Approval of the final version. Paula DTC: Methodology; Investigation; Data curation; Writing – original draft; Approval of the final version. Silva Júnior AE: Conceptualization; Methodology; Formal analysis; Investigation; Resources; Data curation; Visualization; Writing – review & editing; Approval of the final version. Praxedes DRS: Investigation; Writing – original draft; Approval of the final version. Bueno NB: Conceptualization; Methodology; Validation; Formal analysis; Data curation; Supervision; Project administration; Visualization; Writing – review & editing; Approval of the final version.

Declaration regarding the use of artificial intelligence tools in the article writing process

The manuscript did not use artificial intelligence tools for its preparation.

Availability of research data and other materials

The data of this study is available on demand from referees.

References

1. Malta DC, Duncan BB, Schmidt MI, Teixeira R, Ribeiro ALP, Felisbino-Mendes MS, et al. Trends in mortality due to non-communicable diseases in the Brazilian adult population: national and subnational estimates and projections for 2030. Popul Health Metr. 2020;18(Suppl 1):16. doi: https://doi.org/10.1186/s12963-020-00216-1.

2. World Health Organization. World Health Statistics 2021: A visual summary. Genebra: World Health Organization; 2021. Available from: https://www.who.int/data/stories/world-health-statistics-2021-a-visual-summary. [2023 Julho].

3. Brasil. Ministério da Saúde. Panorama da mortalidade por doenças crônicas não transmissíveis no Brasil. Coordenação-Geral de Vigilância de Agravos e Doenças Não Transmissíveis do Departamento de Análise em Saúde e Vigilância das Doenças Não Transmissíveis: Ministério da Saúde. 2023. Available from: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/edicoes/2021/boletim_epidemiologico_svs_23.pdf/view. [2023 Julho].

4. Crooke R, Haseler C, Haseler T, Collins J, Crockett A. Physical activity and moving more for health. J R Coll Physicians Edinb. 2020;50(2):173-80. doi: https://doi.org/10.4997/JRCPE.2020.223.

5. World Health Organization. WHO guidelines on physical activity and sedentary behaviour. Genebra: World Health Organization; 2020. Available from: https://www.who.int/publications/i/item/9789240015128. [2023 Julho].

6. Varela AR, Pratt M, Kohn ER, Hallal PC. O Observatório Global de Atividade Física: um panorama sobre duas pandemias. Rev Bras Ativ Fís Saúde. 2021;26:1-3. doi: https://doi.org/10.12820/rbafs.26e0205.

7. Dollman J, Okely AD, Hardy L, Timperio A, Salmon J, Hills AP. A hitchhiker's guide to assessing young people's physical activity: Deciding what method to use. J Sci Med Sport. 2009;12(5):518-25. doi: https://doi.org/10.1016/j.jsams.2008.09.007.

8. Marshall AL, Smith BJ, Bauman AE, Kaur S. Reliability and validity of a brief physical activity assessment for use by family doctors. Br J Sports Med. 2005;39(5):294-7. doi: https://doi.org/10.1136/bjsm.2004.013771.

9. Puig-Ribera A, Chimenis OP, Bosch MR, Bellido ED, Tebar AH, Gonfaus MS, et al. Cómo identificar la inactividad física en atención primaria: validación de las versiones catalana y española de 2 cuestionarios breves. Aten Primaria. 2012;44(8):485-93. doi: https://doi.org/10.1016/j.aprim.2012.01.005.

10. Puig-Ribera A, Martín-Cantera C, Puigdomenech E, Real J, Romaguera M, Magdalena-Belio JF, et al. Screening Physical Activity in Family Practice: Validity of the Spanish Version of a Brief Physical Activity Questionnaire. PLoS One. 2015;10(9):e0136870. doi: https://doi.org/10.1371/journal.pone.0136870.

11. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. Spine. 2000;25(24):3186-91. doi: https://doi.org/10.1097/00007632-200012150-00014.

12. Associação Brasileira de Empresas de Pesquisas - ABEP. Critérios de classificação econômica Brasil. São Paulo: ABEP; 2021. Available from: https://www.abep.org/criterio-brasil. [2023 Fevereiro].

13. World Health Organization. Physical Status: the Use and Interpretation of Anthropometry. Genebra: World Health Organization; 1995.

14. Silva MPD, Fontana F, Campos JG, Mazzardo O, Lima DF, Paludo AC, et al. Time trends of physical inactivity in Brazilian adults from 2009 to 2017. Rev Assoc Med Bras (1992). 2021;67(5):681-9. doi: https://doi.org/10.1590/1806-9282.20201077.

15. Strath SJ, Kaminsky LA, Ainsworth BE, Ekelund U, Freedson PS, Gary RA, et al. Guide to the assessment of physical activity: Clinical and research applications: a scientific statement from the American Heart Association. Circulation. 2013;128(20):2259-79. doi: https://doi.org/10.1161/01.cir.0000435708.67487.da.

16. Sallis R. Developing healthcare systems to support exercise: exercise as the fifth vital sign. Br J Sports Med. 2011;45(6):473-4. doi: https://doi.org/10.1136/bjsm.2010.083469.

17. Wendt A, Carvalho WRG, Silva ICM, Mielke GI. Preferências de atividade física em adultos brasileiros: resultados da Pesquisa Nacional de Saúde . Rev Bras Ativ Fís Saúde. 2019;24:1–9. doi: https://doi.org/10.12820/rbafs.24e0079.

18. Wood ER, Silva AC, Baptista GG, Lüdorf SMA. Tornando-se um praticante de CrossFit: gerenciamentos do corpo dentro e fora dos boxes. Movimento.2022;28:e28038. doi: https://doi.org/10.22456/1982-8918.116972.

19. Brasil. Ministério da Saúde. Guia de Atividade Física para a População Brasileira [recurso eletrônico]. Ministério da Saúde, Secretaria de Atenção Primária à Saúde, Departamento de Promoção da Saúde. Brasília: Ministério da Saúde. 2021.

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