



Validity and Clarity of the Concepts and Terms of the Physical Activity Guidelines for the Brazilian Population

Validade e clareza dos conceitos e terminologias do Guia de Atividade Física para a População Brasileira

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ABSTRACT

We evaluated the validity and clarity of the concepts and terminologies adopted to develop the Physical Activity Guidelines for the Brazilian Population (Guidelines). The Physical Activity Domains Working Group (Domains WG) assessed the validity and clarity of the following concepts: physical activity, sedentary behavior, PA domains (free time, commuting, work or study, and household chores) and intensities (light, moderate and vigorous). The concepts were evaluated in three stages: 1- Concept proposition; 2- Expert consultation (two steps); 3- Public consultation. The concepts proposed by the Domains WG were based on international guidelines, scientific articles, official documents from the Ministry of Health, and technical-scientific-academic knowledge of the Domains WG members, discussed in a series of meetings (stage 1). In the second stage (expert consultation), validity and clarity of the concepts were tested on two occasions. Seventy and forty researchers working in the other Guidelines WGs contributed to first and second steps, respectively. In both occasions, validity and clarity agreement were equal to or greater than 80% for all concepts. Suggestions provided in step 2 were adopted, and new versions of the concepts were made available for the third step, a public consultation carried out by the Ministry of Health. Fourteen suggestions related to the concepts were made and, when relevant, included in the Guidelines. According to the assessment and suggestions by experts and members of the public, the concepts and terminologies proposed by the Domains WG for the Guidelines are valid and clear.

Keywords: Motor activity; Terminology; Brazil; Health Promotion.

RESUMO

Nosso objetivo foi avaliar a validade e a clareza dos conceitos e terminologias adotados na elaboração do Guia de Atividade Física para a População Brasileira (Guia). O Grupo de Trabalho Domínios da Atividade Física (GT Domínios) conduziu a avaliação da validade e da clareza dos conceitos e terminologias relacionados a atividade física (AF), comportamento sedentário, domínios (tempo livre, deslocamento, trabalho ou estudo e tarefas domésticas) e intensidades da AF (leve, moderada e vigorosa), em três etapas: 1- Proposição dos conceitos; 2- Escuta com pesquisadores (dois momentos); 3- Consulta pública. Os conceitos propostos pelo GT Domínios foram baseados em guias internacionais, artigos científicos, relatórios nacionais e conhecimentos técnico-científicos-acadêmicos dos integrantes do GT Domínios, discutidos em reuniões (etapa 1). Na escuta com pesquisadores (etapa 2) foram testadas a validade e a clareza dos conceitos em dois momentos. Participaram 70 e 40 pesquisadores vinculados aos outros GT do Guia no primeiro e segundo momentos, respectivamente. Em ambas as escutas, todos os conceitos apresentaram índice de concordância para validade e clareza igual ou superior a 80%. As sugestões convergentes indicadas na etapa 2 foram incluídas e novas versões dos conceitos foram disponibilizadas para a terceira etapa (consulta pública), realizada pelo Ministério da Saúde. Foram realizadas 14 sugestões relacionadas aos conceitos que foram aceitas e incorporadas ao texto do Guia, quando pertinentes. Conclui-se que os conceitos e terminologias relacionados a AF propostos pelo GT Domínios para compor o Guia, após a avaliação de pesquisadores especialistas e da população consultada, são válidos e claros.

Palavras-chave: Atividade motora; Terminologia; Brasil; Promoção da Saúde.

Introduction

Regular practice of physical activity (PA) is a protective factor for controlling chronic noncommunicable diseases and contributes to general wellbeing and mental health¹. However, 44.8% of the Brazilian adults do not meet the recommendations of PA practice issued by the World Health Organization (WHO)². Furthermore, the monitoring of PA practice in Brazilian adults reveals differences between sex, age and level of schooling².

The inexistence of specific PA practice recommendations for the Brazilian population motivated the development of guidelines with recommendations to the population. Aiming to fill part of this gap, the Physical Activity Guidelines for the Brazilian Population (Guidelines) were developed in 2020 and launched in 2021.

The objective of the Guidelines is to provide directions for the adoption of PA practice in the daily routine of the population, and to encourage and facilitate the process. The recommendations aim to inform the decision-making of different actors and sectors involved in health promotion, providing support for public policies targeted at increasing the PA levels of the Brazilian population. To achieve this, it is of paramount importance that the concepts and terms present in the Guidelines can, at the same time, reflect the technical-scientific-academic knowledge for professionals and managers of the health and other sectors, and convey a valid and clear message to the general population.

Thus, the validation of the Guidelines' concepts and terms facilitates the understanding and delimitation of the phenomena, clarifying what the different forms in which they are used intend to express. At the same time, concepts and terms can have different definitions, as it has been observed in the area of PA and health.

Thus, it is fundamental to translate these terms and concepts into the daily living and professional context of the Brazilian population. Therefore, our aim was to evaluate the validity and clarity of the concepts and terms adopted in the development of the Guidelines.

Methods

To develop the Guidelines, a Scientific Committee (SC) was constituted, coordinated by the Federal University of Pelotas, which organized and planned the structure of the Guidelines containing eight Workgroups (WGs). The Delfim Mendes Silveira Foundation established criteria and published two selection notices to compose the Guidelines team: one to select eight coordinators for the WGs (Notice No. 5

of March 13, 2020) and another to select 54 researchers (Notice No. 6 of March 19, 2020). Each WG had one representative of the SC, one representative of the Ministry of Health, one coordinator and seven members. All the WG members were researchers holding a Ph.D. or a Master's degree. Of the WGs that were created, the first refers to the PA Domains WG, whose objective was to conduct the proposition and evaluation of the validity and clarity of the concepts and terms to be used in the Guidelines.

Planning and organization of the work of the Domains WG

The Domains WG was composed of ten researchers (six women and four men) from different regions of Brazil (South, Southeast, North and Northeast). All of them were Physical Education graduates holding teaching and/or B.Sc. degrees and working in the area of health-related PA. The group held online meetings once a week from May to August 2020. The Domains WG conducted the proposition of the following concepts and terms: PA, sedentary behavior (SB), PA domains (free time, getting to and from places, work or study and household chores), and intensities (light, moderate and vigorous). This process took into account validity and clarity procedures, focusing on adapting the terms and concepts to the population in a clear and accessible language. Thus, procedures were taken in three stages: 1) Proposition of concepts by the Domains WG; 2) Consultation with researchers from the other WGs of the Guidelines (expert consultation); 3) Public consultation.

Proposition of concepts by the Domains WG

The initial concepts of PA, SB, PA domains (free time, getting to and from places, work or study and household chores) and intensities (light, moderate and vigorous) proposed by the Domains WG were based on international guidelines^{1,2,4-8}, scientific articles^{1,9-12}, research reports from Brazil's Ministry of Health² and the United Nations Development Program (PNUD in Portuguese)¹³, and also on the technical-scientific knowledge of the WG researchers, and were discussed in periodic meetings.

Expert consultation

This stage was characterized by consultations with researchers from the other WGs to evaluate the validity and clarity of the concepts to be adopted by the Gui-

delines. The validation process proposed by Santos et al.¹⁵ was used. It was considered that, for an instrument to have validity and clarity, the agreement scores must reach at least 80%¹⁶.

The consultation was carried out in two distinct occasions, by means of analytic matrices organized in two Google® Forms (available from: <https://forms.gle/263GGE4Nv1qRa4jh6> and <https://forms.gle/m83rYKqNqCN5B6nX8>).

Analytic Matrix 1, administered from June 24 to July 7, 2020, contained 70 questions for the evaluation of the concepts of PA, PA domains (free time, getting to and from places, work or study and household chores) and intensities (light, moderate and vigorous). Analytic Matrix 2, administered from August 21 to August 25, 2020, contained 13 questions for the evaluation of the concept of SB. In both matrices, each concept was evaluated through the following information: a) 4-point Likert scale for validity (1 not valid and 4 valid) and clarity (1 unclear and 4 clear); b) Suggestions to improve the concepts and examples in terms of validity and clarity; c) Specific field for comments. Seventy researchers participated in the first occasion and forty participated in the second, all of them from the other seven WGs. The participants signed a Declaration of Confidentiality and Conflict of Interest provided by the Health Promotion Department of the Ministry of Health.

Data collection occurred similarly in the two occasions. All the members of the other WGs were invited to participate in the process. The coordinator of each WG received the link to the online form and sent the invitation to the other members of their WG.

Treatment of data from the expert consultation

The quantitative data were tabulated in the software Microsoft Office Excel® and analyzed by descriptive statistics (mean, standard deviation and percentage).

For the qualitative data, the answers related to each concept were organized and systematized in categories. Similar suggestions were grouped considering the proposed alterations, which involved inclusion, exclusion or replacement of terms or examples¹⁶. Then, the results were analyzed and discussed by the Domains WG. Reformulation of the concepts included the convergent points, based on the adopted theoretical framework and on the professional experience of the WG members. The concepts reformulated in stage 2 were sent for analysis by means of a public consultation (stage 3).

Public Consultation

In this stage, the chapter containing the concepts developed by the Domains WG was sent to the Ministry of Health and posted for public consultation, with the rest of the Guidelines, in the period from August 14 to August 31, 2020. Access to the public consultation was broadly disseminated and the contributions were made through a specific online form developed by the Health Promotion Department of the Ministry of Health.

Members of many sectors of society participated in the public consultation, like students and professionals from different areas of knowledge, managers of secretariats, basic and higher education teachers, primary care professionals and social organizations, among others. Overall, 265 suggestions were made to the Guidelines, of which 56 were suggestions related to the content of the chapter produced by the Domains WG, although some were repeated.

Ethical aspects

The consultation with the actors involved in the development of the Guidelines was used with the objective of incorporating different perspectives into the content of the document. The approach derived from existing models in which different actors (professionals, managers, users of health services, representatives of entities, etc.) are involved in the development process of public health documents. Therefore, during the development of the Guidelines, we did not consider these individuals as “research participants”, nor did we collect information with the purpose of investigating these individuals. On the contrary, we considered the consultation participants as collaborators in the conception of the Guidelines’ contents and form.

Thus, we followed provisions issued by international agencies like the National Patient Safety Agency (National Health System, United Kingdom) and INVOLVE (an NGO for public involvement in decision-making in the United Kingdom)¹⁷, as well as the Brazilian Ministry of Health, by means of the Resolution of the National Health Council No. 510 of April 7, 2016, article 1, sole paragraph, which states that “The following will be neither registered nor evaluated by the CEP/CONEP system: I - survey of public opinion with non-identified participants; VI - research conducted exclusively with scientific texts for a scientific literature review; and VII - research aimed at the theoretical analysis of situations that emerge spontaneously and contingently in professional practice, provided

they do not reveal data that can identify the subject”¹⁸.

Results

The results of the validity and clarity analysis and the agreement scores for the concepts and terms initially proposed by the Domains WG are presented on Table 1. The values varied from 3.4 to 3.8 for validity and from 3.3 to 3.7 for clarity. All the concepts and terms presented agreement scores equal to or higher than 80%.

Development of the concepts

The concepts and terms are presented on Boxes 1 to 3, considering the initial proposal developed by the Domains WG, the version altered after the expert consultation and sent to the Ministry of Health, and the final concepts and terms incorporating the suggestions from the public consultation.

In the public consultation, 14 suggestions were specifically related to the concepts and terms proposed by the Domains WG, but the majority did not lead to significant changes in the text’s content. The suggestions were related to inclusion or exclusion of examples (n = 6), changes to the wording (n = 4), rewriting of sentences without changing the content (n = 2), and criticisms of the “dosage” of intensity (n = 1). Only one

suggestion was related to changing the concept of SB, but it was not accepted because it fell out of the scope and of the initial proposal of the concept.

Table 1 – Mean, standard deviation and index of agreement of the validity and clarity of the concepts developed for the Physical Activity Guidelines for the Brazilian Population (4-point Likert Scale), 2020.

| Concept | Validity | Index of agreement | Clarity | Index of agreement |
|-------------------------------------|-----------|--------------------|-----------|--------------------|
| PA | 3.7 ± 0.6 | 92.5% | 3.6 ± 0.6 | 90.0% |
| Domains of PA | 3.6 ± 0.7 | 90.0% | 3.5 ± 0.7 | 87.5% |
| PA in work or study | 3.4 ± 0.8 | 85.0% | 3.4 ± 0.8 | 85.0% |
| PA while getting to and from places | 3.6 ± 0.6 | 90.0% | 3.7 ± 0.6 | 92.5% |
| PA in household chores | 3.8 ± 0.5 | 95.0% | 3.7 ± 0.5 | 92.5% |
| PA in free time | 3.4 ± 0.8 | 85.0% | 3.5 ± 0.7 | 87.5% |
| Intensity | 3.6 ± 0.8 | 90.0% | 3.2 ± 0.9 | 80.0% |
| Light PA | 3.7 ± 0.7 | 92.5% | 3.3 ± 0.8 | 82.5% |
| Moderate PA | 3.6 ± 0.7 | 90.0% | 3.3 ± 0.9 | 82.5% |
| Vigorous PA | 3.6 ± 0.7 | 90.0% | 3.3 ± 0.8 | 82.5% |
| Sedentary behavior | 3.8 ± 0.5 | 95.0% | 3.5 ± 0.8 | 87.5% |

PA = physical activity

Boxes 1, 2 and 3 present the proposition of the concepts and terms, as well as the examples in each of the evaluation stages for PA and SB, and PA domains and

Box 1 – Development process of the concepts and terms of Physical Activity and Sedentary Behavior for the Physical Activity Guidelines for the Brazilian Population, 2020.

| Terms | Initial proposition of the concept (Stage 1) | Proposition of the concept after expert consultation (Stage 2) | Final concept defined after public consultation (Stage 3) |
|--------------------|---|---|---|
| Physical activity | Physical activity is a behavior with different meanings, which involves voluntary bodily movements with energy expenditure above resting levels. It provides opportunities of social interactions and interactions with the environment and can occur during leisure time, while getting to and from places, during household chores, and during work/ educational activities. Examples of physical activities are: walking, running, climbing stairs, carrying, pushing, dancing, practicing fighting, cleaning the house, practicing yoga, cycling, practicing sports, playing, crawling, walking the dog, cultivating land, working out, gardening... | Physical activity is a behavior that involves voluntary bodily movements with energy expenditure above resting levels. It provides opportunities of social interactions and interactions with the environment and can occur during leisure time, while getting to and from places, during household chores, and during work/study. Examples of physical activity are: walking, running, cycling, playing, climbing stairs, carrying, dancing, practicing sports, practicing fighting, working out, practicing yoga, practicing qigong, practicing tai chi chuan, cleaning the house, crawling, walking the dog, cultivating land, gardening... | Physical activity is a behavior that involves voluntary bodily movements with energy expenditure above the resting level. It promotes social interactions and interactions with the environment and can occur during a person’s free time, while getting to and from places, during work or study, and during household chores. Examples of physical activity are: walking, running, cycling, playing, climbing stairs, carrying objects, dancing, cleaning the house, walking pets, cultivating land, tending the yard, practicing fighting, yoga, qigong, sports, working out, among others. |
| Sedentary behavior | Sedentary behavior is any activity performed during waking hours, in a sitting, reclining or lying posture, and expending little energy. That is, when you are sitting or lying to watch television, use your mobile phone, work on your computer, attend classes, drive your car or when you are on a bus. | Sedentary behavior is any activity performed while you are awake, in a sitting, reclining or lying posture, and expending little energy. For example, when you are sitting, reclining or lying to use electronic devices (television, videogames, computer, tablet and mobile phone), attend classes, do manual work, play cards or board games, or when you are in your car, on a bus or on the subway. | Sedentary behavior are activities performed when you are awake, sitting, reclining or lying, and expending little energy. For example, when you are in one of these postures to use the mobile phone, computer, tablet, videogame, to watch television or attend classes, to do manual work, play cards or board games, or when you are in your car, on the bus or on the subway. |

intensity, respectively.

Figure 1 presents a synthesis of the concepts and terms developed for the Guidelines.

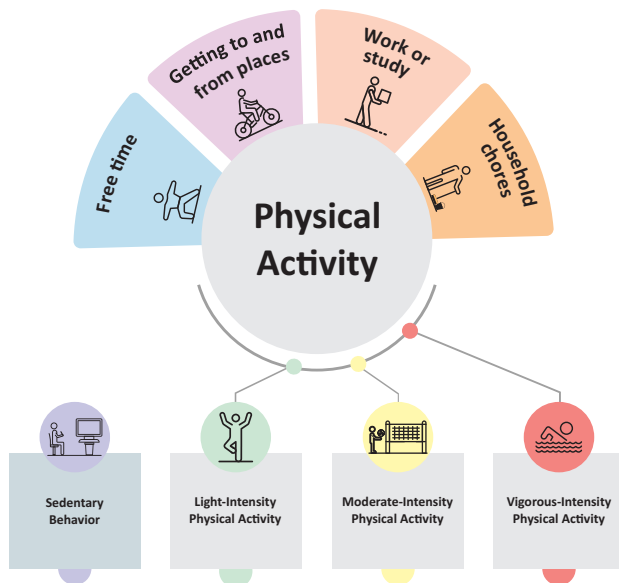


Figure 1 - Concepts and terms of the Physical Activity Guidelines for the Brazilian Population, 2020.

In relation to the PA domains (Box 2), considering the proposition of the concepts and terms in a clear and accessible language to the population, the results of the expert consultation showed that 87% of the researchers indicated “getting to and from places” and 13% indicated “transport” for the name of the domain. Regarding the domain of free time, 56.5% of the participants in the expert consultation suggested that the definition of the domain should involve activities performed in the person’s free time, while 43.5% suggested that the definition should include activities performed during leisure time.

Discussion

In this study, we presented the evaluation process of the validity and clarity of the concepts and terms adopted by the Guidelines, thus contributing to education and encouraging the adoption of PA practice by the Brazilian population.

Physical activity

The proposal of the concept of PA was based on other guidelines, especially those launched by the WHO³. In its most recent version, the WHO defined PA as “any bodily movement produced by skeletal muscles that requires energy expenditure” (p.vii)¹. Based on this concept, we made the necessary adjustments to the

Brazilian reality, using definitions presented in scientific articles^{9,12} and national reports^{2,13}. Thus, the concept of PA has been extended in its scope. As an example, a discussion about the definition of the term suggests that “physical activity involves people moving, acting and performing within culturally specific spaces and contexts, and influenced by a unique array of interests, emotions, ideas, instructions and relationships”⁹.

In the same direction, a letter in the journal *The Lancet* highlights that PA is a complex political, social, and emotional act, and discusses that recommendations of intensity or time might hinder people’s decision-making¹⁹. Corroborating these ideas, Silva et al.²⁰ view PA as part of the experience of daily living. In this perspective, it is necessary to consider that each individual and community have their own preferences, which are influenced by symbols, values and meanings. Furthermore, according to the PNUD report, we are currently at a transition stage in which PA viewed merely as “increased energy expenditure” is being replaced with a new model, in which it is understood as a multidimensional behavior or practice that involves the human body in motion and enables interaction with oneself, with the other and with the environment, within a sociocultural context¹³.

From the definitions of concepts, sometimes with a biological view^{1,12}, other times with a holistic view^{9,13,19}, the concept produced for the Guidelines advanced towards presenting possibilities of PA practice in a broader social context, encompassing diverse populations living in different social contexts, like in Brazil. In other guidelines, published in the United States⁵, Spain⁷ and Ireland⁸, the definition of PA is based on a concept that focuses on the body movement produced by the skeletal muscle contraction, which results in energy expenditure. Thus, the current Guidelines are different from those of other countries, which are centered on a biological view and its relation to health.

Sedentary behavior

The concept of SB was widely accepted in the consultations and few suggestions were offered. This can be due to the fact that the concept we proposed was based on the one suggested by the Sedentary Behavior Research Network (SBRN)¹⁴. Recently, SBRN carried out a terminology consensus project to standardize the concept of SB by means of a systematic construction process that included a literature review, definitions and review of key terms by a Steering Committee, development

Box 2 – Process of development of the concepts and terms of Physical Activity Domains for the Physical Activity Guidelines for the Brazilian Population, 2020.

| Terms | Initial proposition of the concept (Stage 1) | Proposition of the concept after expert consultation (Stage 2) | Final concept defined after public consultation (Stage 3) |
|--------------------------------------|---|---|--|
| Domains | They are moments and situations in which physical activities are accumulated during the day, which can occur during work, while getting to and from places, during household chores and in leisure time. | The domains represent the purpose of the physical activity, which can be performed during leisure time, while getting to and from places, during household chores, and during work/educational activities. | The concept “domains” was eliminated. |
| Domain of free time | <p>Activities performed during leisure time, based on preferences and opportunities.</p> <p>The following are physical activities performed during leisure time: swimming; working out; walking; practicing yoga, weight training, tai chi chuan, judo; hiking; dancing; surfing; playing “peteca” (similar to badminton but played with the hands, without rackets), soccer, “capoeira” (a fusion of martial arts and dance), “frescobol” (similar to beach tennis), volleyball.</p> <p>The initial proposal of the WG for the name of this domain was leisure time.</p> | <p>Activities performed during free time and leisure time, based on preferences and opportunities.</p> <p>The following are examples of physical activities performed during leisure time: walking, running, flying a kite, dancing, swimming, playing, hiking, cycling, surfing, jumping rope, working out, practicing weight training, water aerobics, martial arts, yoga, qigong, tai chi chuan, playing soccer, volleyball, basketball, bocce ball, tennis, “peteca” and “frescobol”, which can be practiced at home (house, apartment and condo), in public areas (squares, streets, parks, beaches, courts, sports and leisure centers, Health Gyms, Healthcare Units, bike lanes, community centers,...) and private areas (gyms, clubs, sports associations, courts,...).</p> <p>After the expert consultation, the proposal for the name of this domain remained leisure time.</p> | Physical activity during free time is performed in your available time or during leisure time, based on preferences and opportunities. You can walk, run, fly a kite, dance, swim, hike, cycle, surf, jump rope, play soccer, volleyball, basketball, bocce ball, tennis, “peteca”, street cricket or “frescobol”, work out, practice weight training, water aerobics, martial arts, “capoeira”, yoga, or participate in games like hide-and-seek, tag, “queimada/baleado/carimba/caçador” (similar to dodgeball), among others. |
| Domain of getting to and from places | <p>Activities performed as an active form of getting from one place to another.</p> <p>The following are physical activities performed while getting to and from places: walking, wheeling, paddling, riding a bicycle, skateboarding, rollerblading.</p> | <p>Activities performed as an active form of going from one place to another.</p> <p>The following are examples of physical activity performed while getting to and from places: walking, wheeling, cycling, paddling, rollerblading, skateboarding and riding a horse to go to work, to school, to bus stops, train/subway stations, supermarkets, bakeries, restaurants, banks, to college, commercial establishments, temples, to visit friends, relatives...</p> | Physical activity performed as an active form of going from one place to another. You can walk, wheel your wheelchair, cycle, paddle, rollerblade, skateboard, ride a horse or a non-motorized scooter, among others. |
| Domain of work or study | <p>Activities performed during paid or voluntary work.</p> <p>The following are physical activities performed during work: carrying loads, fishing, weeding, cooking.</p> | <p>Activities performed during work (paid or not) and in the educational context, when you perform the function of working or studying.</p> <p>The following are examples of physical activities performed during work: planting, weeding, harvesting, walking, running, cycling, cleaning, sweeping, washing, milking, carrying loads, which can be practiced at the office, factory, auto repair shop, in civil construction, agriculture, cattle raising, fish farming, in the classroom, in physical education classes, in professional sports.</p> | Physical activity during work or study is performed at work and in educational activities, when you perform your labor or study functions. You can plant, weed, harvest, walk, run, cycle, clean, sweep, wash, milk, carry objects, participate in physical education classes, play in the interval between classes and also before or after them, among others. |
| Domain of household chores | <p>Activities performed during household chores to care for the home and family.</p> <p>Physical activities performed during household chores are: rubbing the floor, shopping in street markets, washing clothes, sweeping the sidewalk, watering plants, cleaning the house, mowing the lawn.</p> | <p>Activities performed during household chores to care for the home and family.</p> <p>Examples of physical activity performed during household chores are: sweeping, rubbing, washing the floor, the wall, the windows; shopping; mowing the lawn, tending plants; bathing the child, the person who needs caregiving, the dog.</p> | Physical activity during household chores is performed to care for the home and family. You can tend plants, shop, bathe the pet, the child, the older adult or the person who needs caregiving, sweep, rub or wash, among others. |

Box 3 – Process of development of the concepts and terms of Physical Activity Intensities for the Physical Activity Guidelines for the Brazilian Population.

| Terms | Initial proposition of the concept (Stage 1) | Proposition of the concept after expert consultation (Stage 2) | Final concept defined after public consultation (Stage 3) |
|--------------------|--|--|--|
| Intensities | Intensity is the magnitude of the effort necessary to perform a physical activity, expressed by variation in heart rate, respiratory rate, and energy expenditure rate. | Intensity is the level of physical effort necessary to undertake a physical activity. Usually, as intensity increases, there is an increase in heart rate, respiratory rate, energy expenditure and perception of effort. | Intensity is the level of physical effort necessary to perform a physical activity. Usually, the higher the intensity, the higher the increase in heart rate, respiratory rate, energy expenditure and perception of effort. |
| Light intensity | Activities that cause a slight increase in respiratory and heart rates. Energy expenditure ranges from 1.6 to 2.9 metabolic equivalents. Individual perception of effort ranges from 1 to 4, on a 0-10 scale. In light physical activities, it is possible to breathe calmly and talk normally or sing while moving. | Activities that require minimum physical effort and cause a slight increase in respiratory and heart rates (below 60% of HRmax). Energy expenditure ranges from 1.6 to 2.9 metabolic equivalents. On a scale of 0-10, perception of effort is between 3 and 4. During the performance of the light physical activity, the person can breathe calmly, talk normally or even sing while they move. | Light: requires minimum physical effort and causes a slight increase in your respiratory and heart rates. On a scale of 0-10, perception of effort ranges from 1 to 4. You can breathe calmly and talk normally while you move or even sing. |
| Moderate intensity | Activities that require physical effort, make you breathe harder than usual and increase the heart rate. Energy expenditure ranges from 3.0 to 5.9 metabolic equivalents. Individual perception of effort is between 5 and 6, on a scale of 0-10. In moderate physical activities, it is possible to talk with difficulty while moving, but it is not possible to sing. | Activities that require physical effort, make you breathe harder than usual and moderately increase the heart rate (from 60% to 75% of HRmax). Energy expenditure ranges from 3.0 to 5.9 metabolic equivalents. On a scale of 0-10, perception of effort is between 5 and 6. In moderate physical activities, the person can talk with difficulty while they move, but cannot sing. | Moderate: requires a more intense physical effort, which makes you breathe faster than usual and moderately increases your heart rate. On a scale of 0-10, perception of effort is 5 and 6. You can talk with difficulty while you move and cannot sing. |
| Vigorous intensity | Activities that require a great physical effort, make you breathe much harder than usual and greatly increase the heart rate. Energy expenditure in metabolic equivalents is higher than 6.0 in adults and higher than 7.0 in children and youths. Individual perception of effort is between 7 and 8, on a scale of 0-10. In vigorous physical activities, it is not possible to talk to another person while moving. | Activities that require a great physical effort, make you breathe much harder than usual and greatly increase the heart rate (above 75% of HRmax). Energy expenditure is higher than 6.0 metabolic equivalents. On a scale of 0-10, perception of effort is between 7 and 8. In vigorous physical activities, the person cannot talk while they move. | Vigorous: requires a great physical effort, which makes you breathe much faster than usual and greatly increases your heart rate. On a scale of 0-10, perception of effort is 7 and 8. You cannot talk while you move. |

of a consensual model, and analyses and contributions by specialists²¹. In the outcome of this process, the term SB was conceptualized as “any waking behaviour characterized by an energy expenditure ≤ 1.5 metabolic equivalents (METs) while in a sitting, reclining or lying posture”²¹. Thinking of the proposal of this concept to the Guidelines, the Domains WG proposed the replacement of “waking” with “when you are awake” and of the information “energy expenditure ≤ 1.5 metabolic equivalents” with “expending little energy”. In addition, we decided to repeat, in the examples, the information “when you are sitting, reclining or lying”, to make it clear that SB occurs in all of these postures.

Domains of PA

Concerning the domains of PA, in addition to the concept, other questions like name of the domains, terms to be used in the conceptual definition and examples were widely discussed.

In the conceptual development process, we considered it important to define domains of PA for the Brazilian population, in light of the inexistence of a theoretical and operational definition in the national literature. According to the presented definition, the domains represent the purpose of the PA, which can be performed in the person's free time, while getting to or from places, during work or study, and during household chores. Although this definition was eliminated from the Guidelines' final version, the Domains WG considers this result important, because it will contribute to knowledge production, to professional education, and to development of public policies for PA promotion.

The four domains are not frequently presented and described in guidelines and recommendations, the majority of which focus on communication strategies in the leisure and transport domains. Indeed, public policies targeted at PA promotion invest more in these

domains, as they seem more interesting to promote behavior change. However, as it is a daily continuum, it is important to underline the different opportunities of having an active lifestyle²². The WHO recently created a worldwide campaign called Let's be active in which it considers that "every movement is important"²³ and that every and any opportunity of being active is important for health¹.

The proposition of the concepts of PA domains was grounded on the recently published WHO recommendations¹. It is worth mentioning that the names of the PA domains for the present Guidelines were widely discussed: leisure time or free time, transport or getting to and from places, household activities or chores, work and educational activities or formal study or school. Decision-making in every level of the concept proposal process aimed to translate the term established in the academic setting to the population in general, and the way in which the terms are understood outside the academic environment had a large influence on our decisions.

The name of the domain of free time raised disagreements in the Domains WG throughout the concept proposal process, especially in view of studies that call it leisure time²⁴. The main difference established between free time and leisure time is the possibility of spontaneously choosing an action whose purpose is entertainment, in comparison to the period of idleness²⁴. Free time is not necessarily leisure, but leisure is included in free time²⁵. Taking other PA guidelines into account, the domain of leisure time is more frequently present and its nomenclature can be conditioned to the age group of the population targeted by the recommendation (children, youths, adults or older adults). However, there are also variations connected with social aspects, which leads to a reflection on the contextual and social influence over the term 'leisure' and on the recognition of opportunity by the population in general. The meaning of leisure is not recognized by the vulnerable groups of society, mostly identified as blacks and immigrants²⁶.

Considering the data from the expert consultation, using the expression 'getting to and from places' as the name of the domain was identified as clearer and more accessible to the Brazilian population compared to the term 'transport', broadly used in the international literature. This domain plays an important role in the process of behavior change. In spite of the large influence of environmental factors, the possibility and opportunities of routine or sporadic healthy choices offer

a great potential for PA promotion by means of this domain²⁷. By valuing it, the WG aims to inform the population and motivate it to move from one place to another in an active way, and also to stimulate managers and professionals to enable such opportunities for practice to the public.

Regarding the domain of PA undertaken during work, we discussed the inclusion of educational activities, considering the concerns of the Domains WG and the suggestions coming from the expert consultation. After discussions with the SC of the Guidelines, the term 'study' was added to the domain of work. Therefore, besides the inclusion of the term 'study' in the name of the domain, educational activities were also encompassed in this concept. Faced with the challenge of encompassing the Brazilian population in all the vital cycles, it was recognized that each age group is committed to a space and an activity of educational, social and/or financial contribution. Thus, the concepts and examples that were used in the Guidelines can facilitate the population's process of identification with PA opportunities, and can contribute to important organizational initiatives.

The domain of household chores was considered only in the publication of the Canadian guidelines⁶ and, recently, in the PA recommendations of the WHO¹. In Brazil, this domain still has a representative character in two subgroups of the population: adult women and older adults. Aiming to convey the message that small changes are important for health indicators, we can consider that non-structured and unplanned PAs, like the ones performed in this domain, are extremely important for the replacement of long SB periods^{1,3}.

Intensities of physical activity

What is considered light, moderate or vigorous PA? Researching international guidelines³⁻⁵, we found the utilization of physiological parameters, like breathing, heart rate and energy expenditure. But how should we translate these terms to the population? We attempted to conceptualize intensity by advancing beyond the "dose" of physical effort, aiming to present a clearer form, both for professionals and for the population in general.

In addition to physiological parameters, we decided to add the perception of effort, which has also been used in other guidelines^{3,5}. The evaluation of perceived effort is a psychophysiological measure widely known and used in the areas of PA, Physical Education, rehabilitation, and in the scientific field²⁸. We highlight that, after

the considerations of the SC, the expression 'perception of effort' was defined and adopted in the Guidelines.

In addition, to simplify the understanding of perception of physical effort in light, moderate or vigorous intensity, we adopted the Talk Test in the concept, which has been used in other guidelines^{4,8}. The basic assumption of the Talk Test is that the individual cannot keep speaking comfortably at certain intensities and that this inability is associated with ventilation and other physiological responses²⁹. The Talk Test as a measure of perception of effort gained adherence and attention in the academic context in the last decade, with studies that aimed to collect evidence of its validity and application^{28,29}.

In addition, the Irish guidelines⁸, for example, include feeling warm and sweating in their concept of intensity. However, after discussions in the meetings of the Domains WG, we decided not to include this type of information as, generally speaking, Brazil has a tropical climate with high temperatures in summer, and feeling warm and sweating might not necessarily reflect physical efforts.

Examples

The examples suggested for the concepts of PA and domains of PA were discussed considering different age groups, cultural and regional aspects, and the most practiced PAs by the Brazilian population^{2,13}. The objective was to inform the population that the same PA, like walking, can be performed in different domains, and extend what is commonly exemplified as PA, taking Brazil's cultural diversity into account.

Specifically in the domain of household chores, other activities were explored beyond the traditional "sweeping and washing", like those directed at family care (bathing children or changing the clothes of older adults who need caregiving), which are important and must be considered. In addition, we extended the examples beyond the activities performed "inside the home" or "in the garden or yard" (commonly evaluated subjectively in this format) and included other activities like "shopping" when considering the PA performed inside a commercial establishment (supermarket, drugstore, shops, among others). Finally, we decided not to use examples in the terminology of the intensities, as the same PA can be developed in a continuum of intensities. For example, cleaning the floor, walking or running can be performed in light, moderate or vigorous intensities, depending on individual interoceptive and

exteroceptive factors, which also happens with exercise.

We believe the methods used in the evaluation process of these concepts provide subsidies for utilization by the population. The discussions refined the examples discussed by the researchers, in order to provide concepts with more popular terms and examples for society, clearer and easier to understand, instead of technical concepts.

It is important to explain that the Guidelines present, in their content, the concept of exercise, but its inclusion occurred after the evaluation of the validity and clarity of the other concepts had already been concluded (stage 2). However, as the existing concept of exercise is accepted in the literature^{1,12,13}, being related to the systematization of PA, it was proposed by the WG (stage 1) and submitted to stage 3 (public consultation). The WHO¹ and PNUD¹³ highlight that exercise and PA have elements in common, characterizing exercise as a subcategory of PA. Therefore, all exercise is a PA, but not every PA is an exercise. The concept of exercise is included in the international guidelines, aligned with the objective of improving health, physical fitness^{5,8} and maintaining one or more components of physical fitness⁷. Therefore, these concepts are similar to the one present in the Guidelines (improving or maintaining physical capacities), to which we also added the term "adequate weight" to refer to an element of physical fitness related to health.

The evaluation process of the validity and clarity of the Guidelines' concepts and terms presents strong points and limitations. The strong points are the composition of the WG, formed by researchers working in sub-areas of public health (epidemiology, public policies) and collective health (older adult health, mental health and child and adolescent health); the systematized process employed in the proposition of the Guidelines' concepts; the participation of specialist researchers (stage 2) and of the general population (stage 3), with representation from all regions of Brazil. As limitations, we did not research bibliographic sources not published in indexed scientific journals; we did not conduct face-to-face conversation circles, due to the sanitary measures to manage the COVID-19 pandemic; and we did not undertake stage 2 for the concept of exercise, because it was included in the Guidelines after the end of this stage.

The evaluation of the concepts adopted in the Guidelines considered the need to make the concepts and terms existing in the scientific literature clear and

adequate to the population, professionals and managers, contributing to decision-making in the adoption of an active lifestyle and in the making of health policies targeted at PA promotion. We conclude that the concepts and terms proposed by the Domains WG to compose the Guidelines, after undergoing the evaluation of specialist researchers and the population, are valid and clear.

Conflicts of interest

The authors declare no conflict of interest.

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Authors' contribution

Benedetti TRB participated in the conception of the concepts, writing of the manuscript, and data interpretation. Borges LJ participated in the conception of the concepts, development of the validity and clarity questionnaires, organization of data collection, analysis and interpretation, and in the writing of the manuscript. Streit IA participated in the conception of the concepts, development of the validity and clarity questionnaires, organization of data collection, analysis and interpretation, and in the writing of the manuscript. Garcia LMT participated in the discussion and approval of the concepts and in the writing, critical review and approval of the manuscript. Manta SW participated in the discussion and approval of the concepts and in the critical review of the intellectual content. Mendonça G participated in the discussion and approval of the concepts and in the writing and critical review of the intellectual content. Binotto MA participated in the discussion and approval of the concepts and in the writing, critical review and approval of the manuscript. Christofoletti M participated in the discussion and approval of the concepts and in the writing, critical review and approval of the manuscript. Silva-Júnior FL participated in the discussion and approval of the concepts and in the writing, critical review and approval of the manuscript. Hallal PC participated in the conception, writing and general review of the manuscript. Papini CB participated in the conception of the concepts, validation and correction of the validity and clarity questionnaires, data analysis and interpretation, and in the writing of the manuscript.

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