



Physical activity for people with disabilities: Physical Activity Guidelines for the Brazilian Population

Atividade física para pessoas com deficiência: Guia de Atividade Física para a População Brasileira

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ABSTRACT

Aiming to guide the population of the physical activity benefits to health, national researchers, in partnership with the Health Ministry, have elaborated the Physical Activity Guide for the Brazilian population. The aim of this study was to present the process of elaborating Brazilian physical activity recommendations for people with disabilities (PWD). The process of elaborating specific recommendations for PWD has included the participation of nine researchers/professionals who held weekly meetings, systematic reviews, and focus groups with PWD, caregivers, healthcare managers, professionals, and researchers. In the systematic review, a total of 83 studies were included and reviewed. The focus groups were performed using an electronic form sent by e-mail to health professionals, managers, and researchers who worked with PWD and virtual focus groups, which were conducted in two moments: (a) with PWD, caregivers, and professionals; (b) with teachers and researchers on the theme. Based on the results of systematic reviews and focus groups, the physical activity recommendations for PWD were developed considering the minimum physical activity time according to age group, domains of physical activity, and recommendations for reducing sedentary behavior. Therefore, the present work presented recommendations for physical activity for PWD, which can be combined with public policies, environments, and opportunities for physical activity, becoming an essential strategy for the engagement of PWD in physical activities.

Keywords: Physical activity; People with disability; Health strategy; Sedentary behavior; barriers.

RESUMO

Visando orientar a população dos benefícios da prática de atividade física à saúde, pesquisadores nacionais, em parceria com o Ministério da Saúde, elaboraram o Guia de Atividade Física para a População Brasileira (Guia). O objetivo deste estudo foi apresentar o processo de elaboração das recomendações brasileiras de atividade física para pessoas com deficiência (PCD). O processo de elaboração das recomendações específicas para PCD foi liderado por um grupo de trabalho com nove pesquisadores/profissionais que realizaram reuniões semanais, e que conduziram revisões sistemáticas e escutas com PCD, familiares, gestores, profissionais da saúde, professores e pesquisadores. Na revisão sistemática, um total de 83 estudos foram revisados e incluídos. As escutas foram realizadas por meio de formulários eletrônicos enviados por e-mail para profissionais, gestores, professores e pesquisadores que trabalhavam com PCD e de escutas virtuais, as quais foram conduzidas em dois momentos: (a) com PCD, familiares e profissionais; (b) com professores, gestores; e pesquisadores da temática. Baseado nos resultados das revisões sistemáticas e das escutas, as recomendações de atividade física para PCD foram elaboradas considerando o tempo mínimo de atividade física de acordo com faixas etárias, domínios da atividade física e recomendações para redução do comportamento sedentário. Portanto, o presente trabalho apresentou as estratégias e as etapas utilizadas para a elaboração do Guia, com recomendações de atividade física para PCD, as quais podem ser aliadas a políticas públicas, ambientes e oportunidades de atividade física, tornando-se estratégia essencial para o engajamento de PCD em atividades físicas.

Palavras-chave: Atividade física; Pessoa com deficiência; Estratégia de saúde; Comportamento sedentário; Barreiras.

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Introduction

Regular practice of physical activity (PA) promotes health benefits: it reduces the risk of cardiovascular diseases, diabetes, obesity and cancer, among others, consequently reducing the mortality rate^{1,2}. According to the World Health Organization (WHO), approximately two million deaths/year are attributed to low adherence to PA³. In the last decades, national and international efforts were made in order to stimulate people to adopt a healthy and active lifestyle. Countries like Canada^{4,5}, United States^{6,7} and United Kingdom⁸ have developed recommendations to guide the population about the health benefits brought by PA practice. Recently, the WHO launched the “WHO Guidelines on Physical Activity and Sedentary Behaviour”⁹, providing updated PA recommendations for children, adolescents, adults and older adults, with information about the frequency, intensity and volume that are necessary to obtain health benefits.

Guidelines have been developed considering particularities of the population, including specific directions to people with disabilities (PWD)^{4,6,9}. In Brazil, the Physical Activity Guidelines for the Brazilian Population (Guidelines) has an exclusive chapter with recommendations for PWD in different life cycles. People with disabilities are those who have a long-term physical, mental, intellectual or sensory impediment which, in interaction with one or more barriers, can hinder their full and effective participation in society on equal terms with other people¹⁰. In Brazil's last Demographic Census, conducted in 2010, approximately 6% of the population had some kind of disability, representing 13 million people¹¹. Visual (3.4%), physical (2.3%), intellectual (1.4%), and hearing (1.1%) disabilities were the most frequent¹¹. Studies have shown that PWD spend more time in sedentary behavior (defined as any activity performed in waking hours with low energy expenditure; for example, remaining in a sitting, reclining or lying posture for a long time¹²) and less time in PA when compared to the general population¹³⁻¹⁵. These are worrisome data, as many PWD live with comorbidities associated with their disabilities, like obesity, cardiovascular diseases, osteoporosis, among others^{14,16}. Therefore, sedentary behavior and physical inactivity can increase the number of comorbidities and/or aggravate them significantly.

Reasons for the limited participation of PWD in physical activities are complex and multifactorial^{17,18}. For example, barriers have been pointed as factors for low

adherence to PA, such as lack of knowledge about the disability, fear, parents' behavior, negative attitudes towards the disability, inadequate premises, lack of transport, lack of programs and qualified professionals, among others^{18,19}. Therefore, PA guidelines for PWD should approach ways of overcoming barriers to PA practice.

Regular practice of PA improves metabolic, physical, cognitive, mental and social aspects, promoting a better quality of life^{20,21}. To achieve these benefits, the existing guidelines recommend that children with disabilities undertake at least 60 minutes/day of moderate to vigorous PA, and adults, at least 150 minutes/week of moderate PA or at least 75 minutes of vigorous PA^{4,6,9}. The WHO also suggests the need to reduce time in sedentary behavior⁹. To comply with these recommendations, considering the importance of creating efficient strategies to increase PA levels and reduce sedentary behavior in PWD, and respecting the sociocultural, regional and economic differences of Brazil, national researchers, in partnership with the Ministry of Health, have developed the Guidelines, with specific information to PWD. Therefore, the aim of this study was to present the development process of the Brazilian PA recommendations for PWD, considering the main barriers and facilitators.

Methods

The Guidelines were constructed by eight Workgroups (WG) containing 75 health researchers/professionals from all regions of Brazil, selected by means of a public notice. The WG that created the PA recommendations for PWD was composed of nine researchers/Physical Education professionals; one of them was a representative of the Brazilian Society of Physical Activity and Health and another was a technician with the Ministry of Health. The study did not require approval by the Ethics Committee for Research Involving Human Beings as it falls under items I, VI and VII of article 1 of Resolution 510, published by the National Health Council on April 7, 2016.

The working process encompassed weekly meetings to develop the evidence-based recommendations. Fifteen meetings lasting approximately two hours each were held in a virtual platform between July 2020 and January 2021, totaling approximately 30 hours. All the actions were recorded in minutes, generating a report of the WG's activities. Two strategies were planned and executed to create the recommendations regarding PA volume, frequency, type and intensity for PWD: 1) system-

atic reviews and 2) consultations with PWD, families, health managers, professionals, teachers and researchers.

First, a systematic review of reviews about the theme physical activity and people with disabilities (registration-PROSPERO CRD42020221123) was carried out, including publications up to July 2020. Further information about the review will be presented in the technical-scientific report of the Ministry of Health. Initially, the WG read all the published guidelines that presented PA/sedentary behavior recommendations for PWD. The objective of this strategy was to identify and determine the search terms that would be employed. Then, two searches for review articles were conducted in the databases MEDLINE, Scopus, SPORTDiscus, Embase, CINAHL and Web of Science. In the first search, we looked for articles relating the descriptors “Intellectual disability” AND “review” OR “systematic review” AND “physical activity” OR “sedentary” OR “physical inactivity” OR “exercise” OR “sport”. In the second search, we combined the descriptors “physical disability” AND “review” OR “systematic review” AND “physical activity” OR “sedentary” OR “physical inactivity” OR “exercise” OR “sport”.

Two researchers (RMT and ESB) looked for duplicates and read the titles and abstracts. Divergences were solved by a third evaluation (FVS). After the reading and synthesis of the evidence, a new search was performed, with more specific terms identified in the reviews. These terms will be presented in the technical-scientific report of the Ministry of Health. Finally, one last search was conducted, in which we looked for review studies on PA barriers and facilitators for PWD in the Brazilian population. In this stage, the BIREME and SciELO databases were consulted, as well as repositories of dissertations and the references listed in the articles that were included in the study as a result of this search. To guarantee the quality of the reviews, only those that presented a quality assessment of the included studies were selected.

For the consultations, we used an online form and a script for virtual conversation circles, both developed by the WG researchers. The objective of the consultations was to identify the desires, difficulties and needs of PWD related to PA practice. The participants were selected by convenience sampling through the snowball method, in which one researcher or professional that we contacted nominated other people to participate in the consultations. All the individuals involved had experience on the theme (PWD). The link to the

form, which was designed with the aid of Google Forms, was sent by e-mail to professionals, managers, teachers and researchers who worked with PWD. The form contained a confidentiality instrument about the consultation activities for the Guidelines, as well as questions about the importance of the Guidelines, commonly practiced activities, PA barriers and facilitators, amount of PA, strategies to reduce screen time and sedentary behavior, and suggestions of important elements for the Guidelines. Subsequently, the answers were compiled and submitted to content analysis.

The virtual consultations were performed and recorded in the Google Meet platform, with four WG researchers (DOS, FVS, JES and SWM) and the invited participants. The process lasted from one hour and a half to two hours and contained the following stages: welcome; general introduction and purpose of the consultations; request for completion of the confidentiality instrument; introduction of the participants (i.e., sociodemographic information, institutional affiliation, developed activities, type of disability the person has or works with, and practiced activities); description of the consultation dynamics (i.e., participants were called in alphabetical order to answer the questions and the time to answer each question was set to two minutes); debate about the triggering questions; closing remarks and acknowledgements. The virtual consultations were conducted on two occasions: (a) with PWD, families, health managers and professionals (Consultation 1); (b) with teachers and researchers of the theme (Consultation 2). In Consultation 1, we asked about the main information that the Guidelines should contain, such as stimulating the practice of PA, the main barriers they perceived, facilitators of practice, compliance with the WHO recommendations, self-report of weekly practice and daily screen time, arguments to reduce time in sedentary behavior, and other information they considered relevant. In Consultation 2, we asked about strategies to overcome barriers (for example, accessibility to transport, spaces and public highways, professional qualification, lack of information), safety for PA practice, attitudes of parents/guardians and professionals that limit or potentialize practice, information to be provided for parents/guardians and professionals, and other issues they considered relevant to be included in the Guidelines. The transcription of the discourses was used to synthesize the information.

The synthesis and analysis of the collected information were carried out in three stages by three WG

members (DOS, JES and SWM): 1) compilation of data extracted from the forms, highlighting the consensus points and relevant arguments; 2) synthetization of the data; and 3) triangulation of the data and of the consultations, considering the following classifications: how much should be done? (PA recommendations, screen time and sedentary behavior recommendations); benefits of PA: how should it be done? (barriers and facilitators); what should be done? (examples of PA, life contexts and domains of PA); and safety information.

The results of the reviews and consultations were discussed during the meetings, consolidated and synthesized. Then, the WG wrote the chapter of the Guidelines referring to PA recommendations for PWD. The Ministry of Health submitted the Guidelines to public consultation from August 14 to August 31, 2020. Suggestions and contributions were made in an electronic form containing 46 issues, of which five were specifically about PWD. To ensure broad participation, the form was disseminated by various means of communication and by institutions, like universities, professional councils and representative entities. Anyone interested had the opportunity to submit suggestions. After the consultation, the suggestions were systematized by the WG, which issued an opinion about the incorporation or not of the suggestions and generated the final version of the document.

Results

In short, the search in the databases resulted in 103 articles. After analyzing them based on the exclusion criteria, 83 were considered for the creation of the recommendations. Most of the reviews (40.9%) included studies and/or classified disabilities in a broader way (i.e. intellectual, motor, visual or general), while the others focused specifically on autism spectrum disorder (9.6%), Parkinson's disease (7.2%), spinal cord injury (12.1%), Down syndrome (12.1%), and cerebral palsy (18.1%). Approximately 25% of the studies presented some recommendation concerning type of activity, intensity, duration or frequency, but none presented recommendations that considered all these PA variables. In 29 studies, the proposed physical activities focused on the development of physical fitness, like development of muscle strength, aerobic endurance, mobility and balance, by means of resistance, aerobic, multimodal, and balance/locomotion training programs. The studies did not offer recommendations to reduce sedentary behavior; however, some studies suggest that PWD spend more time in sedentary behavior com-

pared to their non-disabled peers^{13,22}. The limitations observed in the studies were: heterogeneity in terms of methodology, sample and statistical analysis; cross-sectional studies; few randomized longitudinal studies. Searching the national databases for barriers and facilitators of PA practice in PWD, we found 14 studies: 11 articles, 2 Master's theses and 1 report. Of the total number of articles, only 44 assessed the quality of the studies and, therefore, were used to support the PA recommendations for PWD included in the Guidelines. Table 1 synthesizes the characteristics of the 44 studies. Further details about the review results can be consulted in the scientific report.

Figure 1 presents the characteristics of the respondents of the electronic form used for the consultations. Generally speaking, the professionals offered a variety of physical activities, and the main modalities were the adapted sports in general (not focusing on a specific modality: 7), adapted swimming (7), adapted athletics (5), and adapted PA (5). All reported that the Guidelines will help PWD to be physically active. Furthermore, they highlighted that the Guidelines will also be able to inform and guide PWD, families and professionals. The professionals pointed that the material should be accessible, written in a simple language, contain images and available in braille.

In relation to the barriers and facilitators of PA practice, we found that the situations faced by PWD are multifactorial (Figure 2). The main barriers mentioned by participants were lack of accessibility (for example: in public transport, public highways and sports spaces), lack of information, lack of adequate spaces, and low-qualified professionals (52.6%). The facilitators were good professional qualification, integrative environments (family, school and/or work), adapted space, and creation of specific public policies (57.4%).

Regarding the recommendation of the WHO, which suggests a minimum of 150 minutes/week of moderate PA or 75 minutes/week of vigorous PA to obtain health benefits, nine interviewees said they believe this recommendation is applicable to PWD. Seven participants suggested that the duration will depend on individual characteristics (for example, age and type of disability), and one reported that the recommendation is not viable for PWD, due to the limitations imposed by the disability itself. Some professionals reported that it is important to perform the maximum possible amount of PA, even if PWD do not reach the recommended levels. The professionals highlighted

Table 1 – Characteristics of the 83 studies included in the systematic review of the reviews.

Characteristics of the studies	Intellectual % (n)	Motor % (n)	Visual % (n)	General % (n)	Total % (n)
Year of publication					
Up to 2015	34.9 (22)	53.3 (8)	100 (2)	33.3 (1)	39.8 (33)
2015 - 2018	47.6 (30)	33.3 (5)	0(0)	33.3 (1)	43.4 (36)
2019 - Now	17.5 (11)	13.3 (2)	0(0)	33.3 (1)	16.8 (14)
Type of review					
Scoping	4.8 (3)	20.0 (3)	0(0)	33.3 (1)	8.4 (7)
Systematic	71.4 (45)	60.0 (9)	100 (2)	66.7 (2)	69.9 (58)
Systematic with meta-analysis	23.8 (15)	20.0 (3)	0(0)	0(0)	21.7 (18)
Criterion for diagnosis					
Yes	47.6 (30)	20.0 (3)	100 (2)	0 (0)	42.2 (35)
No	52.4 (33)	80.0 (12)	0 (0)	100 (3)	57.8 (48)
Age group*					
Children and/or Adolescents	52.4 (33)	20.0 (3)	100 (2)	33.3 (1)	47.0 (39)
Adults	22.2 (14)	46.7 (7)	0 (0)	33.3 (1)	26.5 (22)
Older adults	6.3 (4)	6.7 (1)	0 (0)	0 (0)	6.0 (5)
General	15.9 (10)	13.3 (2)	0 (0)	33.3 (1)	15.7 (13)
Physical activity recommendation					
Yes	28.6 (18)	13.3 (2)	0 (0)	0 (0)	24.1 (20)
No	71.4 (45)	86.7 (13)	100 (2)	100 (3)	75.9 (63)
Sedentary behavior recommendation					
Yes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
No	100 (63)	100 (15)	100 (2)	100 (3)	100 (83)
Quality assessment of the review					
Yes	57.1 (36)	46.7 (7)	0 (0)	33.3 (1)	53.0 (44)
No	42.9 (27)	53.3 (8)	100 (2)	66.7 (2)	47.0 (39)
Quality of the reviews (n = 44)					
Low	66.7 (24)	85.7 (6)	100 (1)	100 (1)	70.5 (31)
Moderate	27.8 (10)	0 (0)	0 (0)	0 (0)	22.7 (10)
High	5.6 (2)	14.3 (1)	0 (0)	0 (0)	6.8 (3)

The percentages do not reach 100% because four studies that included studies with samples from different age groups were not computed in any of the categories

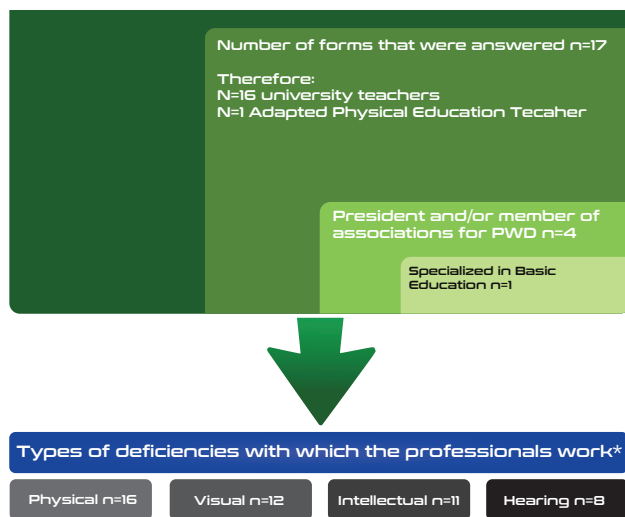


Figure 1 – Flowchart of the consultation via online forms. *14 professionals worked with 2 or more disabilities.

that, to stimulate PA practice and reduce sedentary behavior in PWD, the following aspects should be considered: guaranteeing access and accessibility to practices, making inclusive public policies, disseminating

and promoting the practice of activities in programs, and stimulating the reduction of sedentariness through family support and increased PA practice. These strategies can be seen in Figure 3.

As for the virtual consultations, the first had seven participants: 4 PWD (3 with physical disability and 1 with visual impairment), 2 members of entities for PWD, and 1 Physical Education teacher who worked with PWD. Of the 4 PWD, 2 were Physical Education teachers and 1 was a member of a sports association for PWD. Consultation 2 had six participants: 2 active university professors and 4 retired university professors.

Based on the answers of the forms and consultations, the following core points were identified and included in the Guidelines:

Aspects of the importance of the Guidelines for PWD: access to information about PWD; stimulation to PA practice; information for parents/guardians; development of public policies.

Barriers and difficulties to PA practice: multifactorial: intrinsic and extrinsic factors; accessibility - main barrier: lack of accessibility in public transport, sports

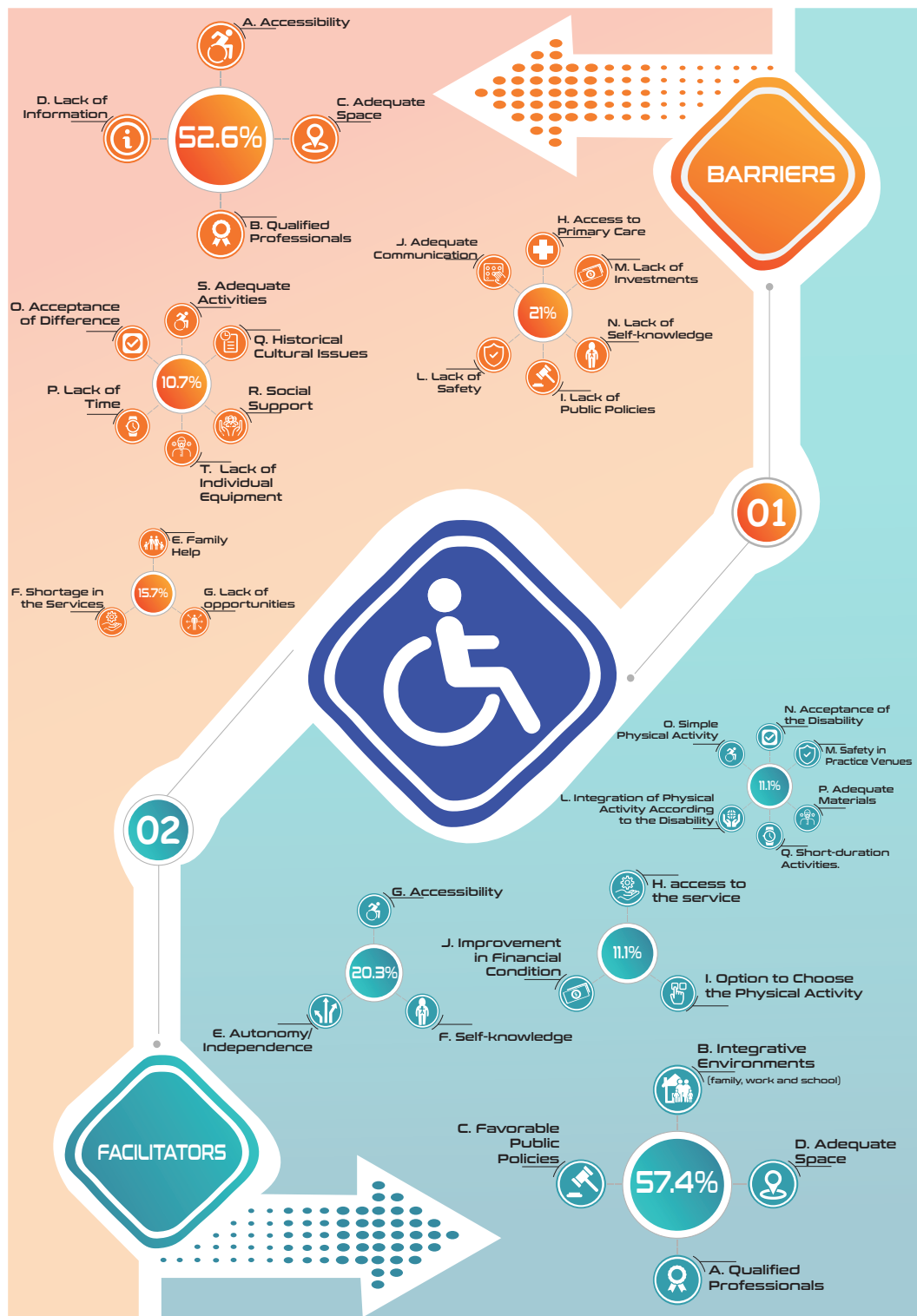


Figure 2 – Barriers and facilitators of physical activity practice by people with disabilities (relative values by the set most frequently mentioned by the interviewed specialists and people with disabilities). Barriers: A = accessibility; B = qualified professionals; C = adequate space; D = lack of information; E = family help; F = shortage in the services; G = lack of opportunities; H = access to Primary Care; I = lack of public policies; J = adequate communication; L = lack of safety; M = lack of investments; N = lack of self-knowledge; O = acceptance of difference; P = lack of time; Q = historical cultural issues; R = social support; S = adequate activities; T = lack of individual equipment. Facilitators: A = qualified professionals; B = integrative environments (family, work and school); C = favorable public policies; D = adequate space; E = autonomy/independence; F = self-knowledge; G = accessibility; H = access to the service; I = option to choose the physical activity; J = improvement in financial condition; L = integration of physical activity according to the disability; M = safety in practice venues; N = acceptance of the disability; O = simple physical activity; P = adequate materials; Q = short-duration activities.

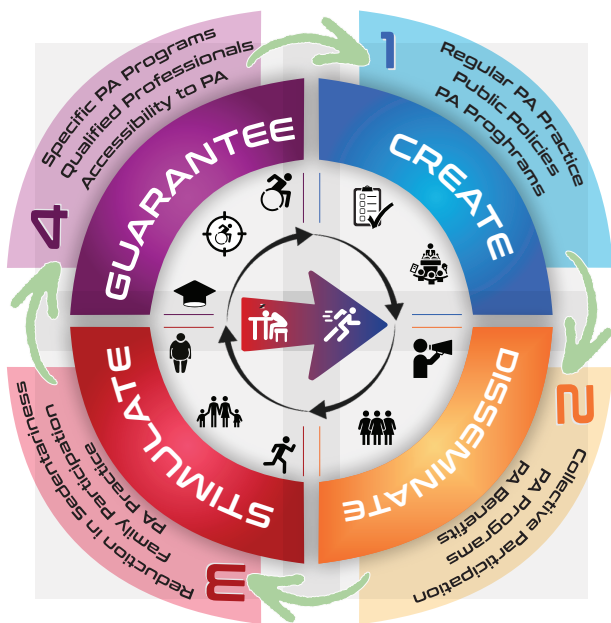


Figure 3 – Strategy CREATE, DISSEMINATE, STIMULATE and GUARANTEE the regular practice of physical activity (PA) for people with disabilities. The four dimensions focus on different stages of the reduction in sedentary behavior. CREATE: stimulating the creation of daily routines that include regular practice of physical activity/ public policies involving the participation of individuals interested in the process. DISSEMINATE: promoting physical activity programs; stimulating the participation of as many people as possible. STIMULATE: reducing sedentary behavior; stimulating the participation of the family as a whole; promote the regular practice of exercises. GUARANTEE: accessibility to places for physical activity practice; guidance by qualified professionals; physical activities focused on the type of disability.

spaces and public highways; lack of qualified professionals: knowledge about the disability, capacity of maintaining students motivated and development of PA programs adequate to the disability.

Facilitators and ways of stimulating PA: multifactorial: intrinsic and extrinsic factors; public policies: family and social environment, qualified professionals; information about disabilities and benefits of the regular practice of PA.

PA recommendation: accumulating 150 minutes/week of moderate to vigorous PA can be a reference parameter for PWD; it is necessary to consider specificities related to type of disability, presence of comorbidities, health status and physical condition; it is necessary to consider conditions for the practice of PA, including the presence of a professional in some cases.

Screen time: screen time should be replaced with PA; specific PA programs should be promoted to different types of disability; the benefits of PA and the harmful effects of sedentary behavior should be informed. How-

ever, according to the consultation, screen time, like the use of applications, can be an ally to PA, depending on the type of disability and on the promoted activity.

Box 1 presents the PA recommendations for PWD, based on the results of the systematic reviews and consultations. In the consultations, the questions were not specific to certain disabilities and age groups; however, after the analysis of the systematic reviews, differences were found between age groups and, therefore, synthesized in Chart 1.

Chart 1 – Summary of the physical activity (PA) recommendations for people with disabilities (PWD).

<p>Duration of PA: <u>Up to 1 year old:</u> at least 30 minutes/day lying on the belly. Children with any disability should be stimulated within their potentialities since the early stages of life; <u>From 1 to 2 years old:</u> at least 3 hours/day of PA in any intensity. The activities can be distributed throughout the day; <u>From 3 to 5 years old:</u> at least 3 hours/day of PA in any intensity, with at least 1 hour of moderate to vigorous intensity, which can be accumulated throughout the day; <u>From 6 to 17 years old:</u> 60 minutes or more/day of PA, preferably in a moderate intensity. On at least 3 days in the week, include in these minutes activities to strengthen muscles and bones, like jumping, pushing, pulling or practicing sports; <u>Adults:</u> at least 150 minutes of moderate PA during the week or at least 75 minutes of vigorous activity, or an equivalent combination. Muscle strengthening activities should be performed involving the main muscle groups on two or more days of the week; <u>Older adults:</u> the same recommendation provided for adults applies. Additionally, those with reduced mobility should practice PA to improve balance and gait on three or more days/week. PA can be performed in small blocks of time or the entire period at once.</p>
<p>Domains of PA: <u>In free time:</u> PWD should reserve some time to practice a PA they like (with friends, family or alone). Examples: dance, weight training, swimming or other adapted sports and walking in the park; <u>While getting to and from places:</u> if possible, PWD should go to places wheeling, walking or cycling. This can be done when going to and/or coming back from school, the workplace, the market and friends' homes, among others. Such activities should be performed safely and pleasantly; <u>In work or study:</u> if the place offers PA, like gymnastics or sports, PWD should participate or look for nearby places where they can practice PA. Being active at the workplace is also a form of PA; <u>In household chores:</u> PWD can become physically active while performing household chores, like gardening, collecting garbage, cooking, sweeping the floor and cleaning the house, washing the car, pushing the baby stroller, playing with the children, walking or bathing the pet.</p>
<p>Sedentary behavior: For additional health benefits, the PWD should, whenever possible: spend less time motionless or sitting in the same position; get to and from places in an active way (on foot, cycling, wheeling) instead of using passive transportation (car, bus, motorcycle); replace the time they spend watching television or using mobile phones, tablets or computers with activities that produce movements.</p>

Concerning the public consultation, 266 contributions were received concerning the chapter for PWD, from 15 Brazilian states and the Federal District. The participants in the consultation were basic and higher

education professionals, undergraduate and postgraduate students, managers of the public and private health areas, professionals and managers of the Extended Family Health and Primary Care Nucleus and of the Health Gym program, liberal professionals, nutritionists, physiotherapists, educators, physicians, environmental consultants, among others. All the contributions were reviewed and those that had not been included in the original version were incorporated into the final version.

Discussion

This article presented the development process of the PA recommendations for PWD contained in the Guidelines. The results were supported by reviews of systematic reviews, reviews of Brazilian studies, and consultations performed in the sphere of this project. We found that most of the studies related to PA, sedentary behavior, and health of PWD focus on physical exercise programs to improve physical fitness. We did not find studies that presented robust PA recommendations for PWD. In addition, the studies presented methodological limitations, preventing the identification of moderate or strong evidences about PA type, volume and intensity for benefits to this population's health.

The literature emphasizes the benefits of regular PA practice for PWD, like improvement in physiological measures (reduction of oxidative stress and body weight), physical fitness (increase in muscle strength, cardiorespiratory endurance and balance), cognition (improvement in global cognitive function, processing speed and attention), and neuropsychological factors (increase in self-esteem and reduction of stress and depression)^{20,21,23,24}. In view of this, it is necessary to provide guidance about PA recommendations for different life cycles. After the literature analysis and the consultation with interest groups, we recognize that different barriers are perceived by PWD^{18,19,25-27}; however, they can be minimized by guarantees of access and accessibility, professional qualification, adequate and inclusive family/school/work environments, public policies, adequate spaces and equipment, among others^{25,26,28}. Informing the population with disability about PA benefits, how to overcome barriers, and how to identify support networks and facilitators can contribute to increase PA practice and reduce sedentary behavior. Therefore, the aim of the Guidelines is to stimulate the population to practice PA regularly and mobilize public policies, managers and professionals towards social inclusion.

After the analysis of the consultations, it was pos-

sible to see that, when the barriers are overcome, they can become facilitators of PA practice. For example, although low-qualified professionals can hinder PA practice, skilled professionals can facilitate adherence to and permanence in regular practices, producing a direct impact on the health status and quality of life of PWD. Understanding the factors that limit or facilitate PA in PWD is relevant because it enables to create strategies for health promotion and reduction of sedentary behavior in light of the particularities inherent in PWD.

Examining the PA recommendations published in international guidelines, we noticed that there are almost no recommendations for PWD. Few countries, like Canada and the United States, have published specific recommendations for this public^{4,6,9}. Thus, it is necessary to intensify the development of PA recommendations specific to PWD, especially in view of the particularities of this group. Such attention and care is fundamental to create a targeted message with greater potential for assimilation, which can result in a more effective promotion of PA in the public health perspective. Moreover, the recommendations support professional practice, providing subsidies for the health are to perform targeted interventions. The Guidelines' recommendations for PWD can also have a positive influence on the decision-making of health managers, especially concerning the directioning of public policies. The existence of specific PA recommendations for this public enables the incorporation of new policies and initiatives in order to promote greater engagement and the offer of accessible public programs. Dissemination of the current recommendations should be mediated by managers and professionals of public health in its different levels. Thus, the qualification and recycling of these managers and professionals is of paramount importance. Raising the awareness of managers and professionals in relation to the specificities of each PWD is important so that they can effectively implement the current recommendations in the epidemiological perspective.

Another aspect considered in the recommendations was sedentary behavior. Evidence from the literature shows different negative associations between time in sedentary behavior and health outcomes, including general mortality, cardiometabolic diseases, psychosocial disorders and weakness^{2,29}. Previous studies have shown that PWD spend more time in sedentary behavior when compared to their peers^{13,22}. Therefore,

PWD should try to reduce time in sedentary behavior, making periodic breaks and replacing it with other possible PAs.

However, some individual characteristics of PWD must be considered in the development of strategies to reduce this behavior. The consultation participants unanimously informed that screen time is not always negative for PWD. Some participants explained that it can be an ally to PWD in different daily tasks. People with visual impairment use voiceover applications to have access to information³⁰. Similarly, people with hearing impairment can use the visual resources of applications to access information³⁰. Due to this, many participants mentioned that the utilization of braille and applications with audiovisual resources would facilitate the access of hearing and visually impaired people to the recommendations, possibly amplifying engagement in PA. To achieve this, strategies to disseminate and implement the Guidelines are under construction to meet different forms of communication with the population, like audiobook, braille and interactive mobile applications.

To conclude, this work presented the strategies and development stages of the Physical Activity Guidelines for the Brazilian population, with specific recommendations for PWD. We believe that the strategies used in the development of the Guidelines were an advance towards promoting and stimulating the regular practice of PA by PWD. Raising awareness and increasing knowledge about PA recommendations and benefits, allied to public policies, PA environments and opportunities are essential components of the engagement of PWD in physical activities. Furthermore, we suggest that it is necessary to monitor the implementation and effectiveness of this first version of the Guidelines, with the purpose of investigating its impact on promoting PWD health. Future research and physical activity guidelines must focus on recommendations, considering the specificities of each disability.

Conflicts of interest

The authors declare no conflict of interest.

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Authors' contribution

Orcioli-Silva D, Sasaki JE, Tassitano RM, Ribeiro CG, Christofaro DGD, Bezerra ES, Manta SW, Florindo AA, Hallal PRC and Siqueira FCV participated in the conception and writing of the manuscript, in data analysis and interpretation, and in the critical review of the content.

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