ACSM Expert Consensus Statement: Considerations and Recommendations for Prescribing Exercise and Designing Physical Activity Programs for People with Disabilities

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ABSTRACT

PTOMEY, L., K. A. MORGAN, C. A. BLAUWET, B. D. BOUDREAUX, B. FERNHALL, J. HAUCK, D. LEGG, S. TOW, and K. A. MARTIN GINIS. ACSM Expert Consensus Statement: Considerations and Recommendations for Prescribing Exercise and Designing Physical Activity Programs for People with Disabilities. *Med. Sci. Sports Exerc.*, Vol. 57, No. 11, pp. 2588–2598, 2025. Participating in physical activity and meeting physical activity guidelines are far more challenging for persons with disabilities than for the general population. This American College of Sports Medicine expert consensus statement provides an evidence-based summary of (i) the impact of physiological factors, physical activity guidelines, and barriers on physical activity participation and prescription for individuals with disabilities; (ii) three consensus statements derived from research evidence; and (iii) five practical recommendations for prescribing and designing physical activity programs tailored to adults with disabilities, based on an integration of research evidence with expert consensus.

SYNOPSIS

Physical activity and disability was identified by the American College of Sports Medicine (ACSM) as an important topic to be addressed through an ACSM Expert Consensus Statement. The purpose of Expert Consensus Statements is to provide a brief synopsis and expert interpretation of the relevant scientific literature, and provide key future directions or references. This statement provides an evidence-based overview of (i) the impact of physiological factors, physical activity guidelines, and personal, environmental, and policy barriers on physical activity participation and prescription for individuals with disabilities, and (ii) three consensus statements derived from research evidence, alongside (iii) five practical recommendations for prescribing and designing physical activity programs tailored to adults with disabilities, based on an integration of research evidence with expert consensus (Table 1). This statement highlights the need for exercise prescriptions and physical activity programs for persons with disabilities to be individualized, accounting for how a

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TABLE 1. Consensus statements and recommendations.

Evidence-based consensus statements

1. Certain conditions and impairments can alter physiological responses to exercise. There is considerable evidence that people with disabilities can derive significant fitness and health benefits from exercise doses well below 150 min·wk^{-1} of moderate-to-vigorous physical activity (MVPA) (1). For many people with disabilities, a suitable dose of physical activity may be less than 150 min·wk^{-1} of MVPA.
2. There is heterogeneity among people with disabilities in their physiological responses to exercise and in their values, needs, and preferences for physical activity. People with disabilities are not a homogenous group. A tailored approach is needed for recommending and prescribing physical activity for people with disabilities.
3. People with disabilities experience tremendous personal, environmental, and policy barriers to physical activity. Targeted, systemic efforts are needed to remove these barriers. Physical activity prescriptions and programs must account for and mitigate these barriers to promote meaningful, quality participation of people with disabilities.

Practical recommendations rooted in expert opinion

1. Focus on moving more rather than reaching a specific frequency and duration of physical activity.
2. Take an individualized approach to exercise prescription.
3. Account for variability in physiological responses to exercise.
4. Identify and remove barriers to physical activity for people with disabilities.
5. Recognize and eliminate ableism from physical activity contexts.

person's impairment/condition influences their physiological response to exercise and the specific barriers that they experience.

The writing group included scientists, exercise specialists, and health care professionals who were recruited, vetted, and approved by the ASCM Pronouncement Committee and the ACSM Administration Council and Board of Trustees. These experts have vast research and clinical experience in physical activity and disability. The group includes persons that identify as having a disability and parents of children with a disability. The writing group developed the paper over 18 months, meeting virtually and communicating through email. The group developed, and agreed on, the paper's scope and topics. Individual members drafted sections of the paper based on reviews of relevant scientific literature. All members provided feedback on each section. Using the reviewed evidence, the writing group developed and agreed on consensus statements and recommendations. The final version of the paper was reviewed and approved by all members of the writing group.

Introduction

The Centers for Disease Control and Prevention (CDC) define a disability as any condition (or impairment) of the body or mind that makes it difficult for the person with the condition to do certain activities and interact with the world around them (2). There are many types of disabilities, such as those that affect a person's movement, thinking, learning, vision, hearing, or communication. Individuals can be born with a disability or can acquire disabilities throughout their lifespan. Approximately 28% of adults in the United States and 16% of the global population live with a disability (3,4). This number is expected to rise in the United States (4,5) and worldwide due to an increase in noncommunicable diseases, medical advances, and people living longer (4).

Because of systemic inequities and inequalities, people with disabilities (Box 1) have a greater likelihood of developing serious health problems than persons without disabilities. For instance, people with disabilities are at greater risk for developing obesity- and cardiometabolic-related health conditions (e.g., cardiovascular disease, type 2 diabetes mellitus) (7). Insufficient physical activity is an important modifiable risk factor for preventing or delaying many of these health problems.

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure and can be performed at a variety of intensities, as part of work, domestic chores, transportation, or during leisure time or when participating in structured exercise or sports activities. At the low end of the intensity range, sedentary behavior is any waking behavior characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining, or lying posture (8,9). At the high end of the intensity range is MVPA, which is any movement that is 3 METs or greater (i.e higher energy expenditure) (10).

We are not aware of any published epidemiological studies of physical activity and chronic disease risk among people with disabilities (11), and the literature examining physical activity and mortality is limited to one epidemiological study of leisure time physical activity and mortality among adults with intellectual disabilities (12), and one epidemiological study of fitness and mortality. For example, in a Dutch study of 900 older adults with intellectual disabilities, baseline measures of physical fitness predicted 5-yr survival rates (13). Although epidemiological data are lacking, many controlled experiments have demonstrated that physical activity improves cardiorespiratory fitness, muscular strength, functional skills, psychosocial well-being, and indicators of cardiometabolic health in people with different types of disabilities (1,14,15). However, participating in physical activity and meeting physical activity guidelines present greater challenges for people with disabilities than for the general population (1,16).

The National Health and Nutrition Examination Survey (16) reported that only 21% of American adults with mobility-related disabilities (17) and 21% of adults with cognition-related disabilities (13) achieve the recommended 150 min·wk^{-1} of MVPA (18). In comparison, 54% of American adults without disabilities

Box 1. Disability Language Considerations.

There is debate about the best linguistic practice to describe people with disabilities. One common practice is to use person-first language, where individuals are described by placing the person before the disability or condition they have. This approach emphasizes the personhood of individuals rather than defining individuals by their disabilities or conditions. For example, instead of saying "disabled person," person-first language would be "person with a disability." The purpose of person-first language is to promote respect, dignity, and equality for individuals with disabilities or conditions by emphasizing their humanity first, rather than reducing them to their disabilities or conditions. It recognizes that a person is more than any attribute or condition they may have. However, some individuals within the disability community prefer identity-first language, as they view their disability as an integral part of their identity. Identity-first language places the disability or condition before the person. For example, "autistic person" instead of "person with autism."

Another common practice is to follow the Social Model of Disability, which describes people as being disabled by barriers in society, not by impairments or conditions. The Social Model of Disability posits that individuals possess impairments but do not inherently possess disabilities (6). Within this framework, the terminology "people with disabilities" is deemed problematic as it conflates impairment with disability and erroneously suggests that disability arises from an individual's own actions rather than societal constructs. Disability, under this model, emerges from society's failure to accommodate the needs of individuals with impairments. Consequently, the term "disabled person" is employed to characterize individuals with impairments who face disability due to societal barriers. Recognizing that there is no universally accepted linguistic practice to describe disabilities, this article consistently employs the Americans with Disabilities Act convention of person-first language.

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achieve the recommended level of MVPA (14,19). Similarly, international data suggest that adults with disabilities are up to 62% less likely to achieve the recommended 150 min·wk^{-1} of MVPA compared with adults without disabilities (1). In this paper, we review and summarize research on three key considerations that can impact physical activity participation and prescription among adults with disabilities: physiological factors, physical activity guidelines, and personal, environmental and policy barriers. We then use these considerations to make consensus statements and recommendations for prescribing and designing physical activity programs for inactive/low active adults with disabilities who want to become more active.

The evidence base for this consensus paper is derived predominantly from research involving adults with conditions or impairments that affect their movement or their physical or neurological development. This focus reflects the state of the disability literature. Over 75% of disability-related exercise intervention studies have been conducted in just a few groups: people with multiple sclerosis, stroke, spinal cord injury, and intellectual/developmental disabilities, particularly Down syndrome (20). Although the considerations and recommendations discussed in this paper are broadly applicable to people of all ages living with various types of disabilities, adults with physical or developmental disabilities are the primary focus because these are the groups in which most of the research has taken place.

Consideration: Physiological responses to exercise are different for people with disabilities. A growing body of research shows that, among people with disabilities, certain conditions and impairments can impact physiological responses to exercise. For instance, the physiological response to exercise is highly variable among people with neurological impairments (e.g., due to stroke, spinal cord injury, spina bifida, cerebral palsy, multiple sclerosis) because of potential disruptions in both somatic and autonomic nervous system (ANS) function (21–29). Similar disruptions have been found among people with developmental disabilities, particularly Down syndrome (30–32) and autism spectrum disorders (33).

During exercise, ANS dysfunction can reduce maximal heart rate, cardiac output, blood pressure response, and the ability to appropriately control blood flow (34). As a result, even when physical activity levels are controlled for, it is common for people with physical or developmental disabilities to exhibit 15%–50% lower cardiorespiratory fitness than their peers without disabilities (24,26,35,36). Downstream, impaired ANS function may downregulate immunological and metabolic responses to exercise (34,37), undermining some of the health promoting/disease-preventing benefits of physical activity that are well established in populations without disabilities.

Somatic nervous system dysfunction during physical activity often leads to difficulties in controlling limb movements. Consequently, individuals with neurological impairments, limb impairments (e.g., amputations, restricted growth), or developmental conditions that affect movement experience increased energy costs due to movement inefficiency (24,38,39). This inefficiency raises the metabolic demand at any given absolute intensity of physical activity compared with individuals without such impairments or conditions (27–29,40–46).

In persons with disabilities, the energy cost of walking is directly associated with fatigue and can be 20%–100% higher than in people without disabilities, with greater differences at higher walking speeds (42–44,47–49). Most individuals with disabilities also exhibit reduced muscle strength, making physical activity more challenging and accelerating fatigue. Muscle strength may be associated with cardiorespiratory fitness in individuals with disabilities (50); thus, muscle weakness could potentially hinder improvements in cardiorespiratory fitness.

Due to lower cardiorespiratory fitness and a higher energy cost of ambulation, persons with some types of disabilities, including those with Down syndrome, multiple sclerosis, and

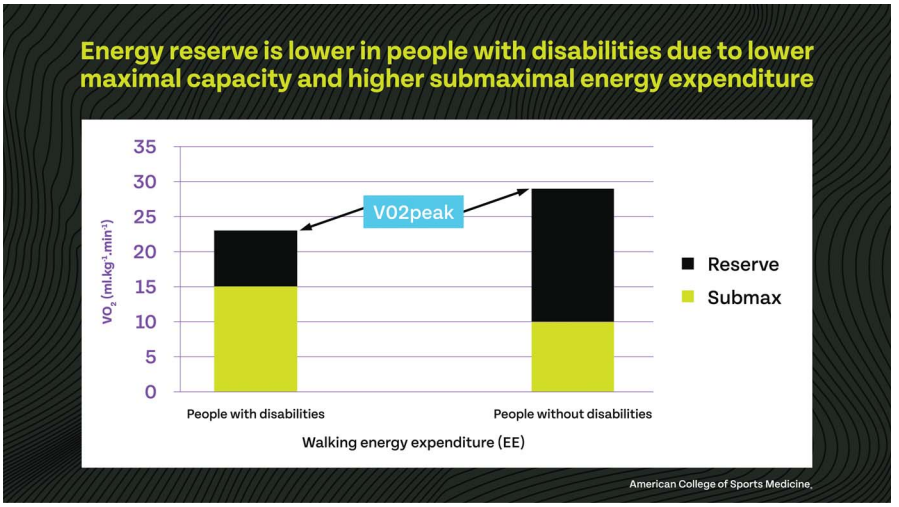


FIGURE 1—Metabolic and cardiorespiratory reserve in people with disabilities. This is a conceptual figure based on data from several studies (25–29,35,40,42,45,46,51–55). In general, people with disabilities have lower maximal capacity than people without disabilities. It is also well established that most people with developmental and physical disabilities spend more energy walking or running (if they can) or moving in general (for the same movement as people without disabilities) than people without disabilities. Thus, submaximal $\dot{V}O_2$ is higher in people with disabilities than in people without disabilities.

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spinal cord injury, have a reduced metabolic and cardiorespiratory reserve (see Fig. 1). The reduction in the reserve is caused by higher energy expenditure of movement at submaximal levels (higher submaximal $\dot{V}O_2$) coupled with lower maximal capacity (lower $\dot{V}O_{2peak}$). Consequently, the difference between maximal capacity and submaximal energy cost (the difference = reserve) is lower. Thus, finding a comfortable exercise intensity can be difficult, and exercising for sustained periods at a moderate to vigorous intensity is often arduous. These challenges are further complicated by weaker muscle strength, earlier onset of fatigue, and lower maximal heart rates. Given these physiological differences, coupled with evidence that people with disabilities can derive significant fitness and health benefits from exercise doses well below 150 min·wk^{-1} (1), a suitable dose of physical activity may be less than 150 min·wk^{-1} of MVPA for many people with disabilities.

Consideration: Physical activity guidelines may not be suitable for everyone. The 2018 Physical Activity Guidelines for Americans by the CDC (18) provide the same physical activity recommendations for all adults, including those with disabilities (see Table 2). There is a provision for people with disabilities: a suggestion to engage in activity according to one's abilities and to avoid inactivity. In 2020, the World Health Organization (WHO) released a separate set of guidelines on physical activity and sedentary behavior for adults with disabilities. However, the WHO's disability guidelines are identical to the WHO's guidelines for the general adult population (60). Likewise, the WHO's guidelines for children and adolescents with disabilities are identical to the WHO's guidelines for the general population of children and adolescents (14).

Both the 2018 Physical Activity Guidelines for Americans (18) and the WHO 2020 guidelines on physical activity and sedentary behavior for people *with* disabilities (60) are based almost entirely on scientific evidence from studies of people *without* disabilities. Both guideline development groups documented the lack of disability-specific research assessing the associations between physical activity and critical health outcomes, particularly the prevention of chronic diseases (61–63). As a result, physical activity guidelines for people with disabilities were developed by combining the limited disability research evidence base with evidence extrapolated from the general population.

Combining the evidence bases is problematic for several reasons that need to be considered before applying the guidelines to people with physical or developmental disabilities. First, as discussed in the previous section, there is growing evidence that, for people with certain conditions and impairments (e.g., Down syndrome, autism spectrum disorders, spinal cord injury, multiple sclerosis), the physiological response to exercise is different from that for the general population (e.g., (35,64–67)). Second, the WHO working group concluded that "the associations between physical activity and sedentary behavior on selected key outcomes could be expected to result in the same health benefits for people with disability as the general population" (14). However, this conclusion reflects a lack of data from people with disabilities rather than strong evidence that 150–300 min·wk^{-1} of MVPA has the same health benefits for people with disabilities.

Third, the evidence underpinning the CDC and WHO guidelines is based almost solely on participation in activities that involve the lower limbs (e.g., walking, running, most sports) (14,15). There is very little evidence to support these guidelines or assess their long-term safety when the stimulus is upper body exercise training. The issues highlighted in the previous section regarding differences in energy costs of ambulation may be further exacerbated for people who use their arms, wheelchairs, canes, or crutches during physical activity (68).

Fourth, the most recent guidance on guideline development from the AGREE consortium (69) has bolstered its emphasis on systematically evaluating and incorporating the values, needs, and preferences of the people who will use the guidelines. The perspectives of people with disabilities were not adequately sought and incorporated into the CDC and WHO guidelines. Fifth, due to a lack of evidence, not all disability types and health outcomes were considered when developing the guidelines. For instance, the WHO working group noted an absence of studies on physical activity and comorbidity in people with multiple sclerosis, and insufficient evidence to inform a judgment on the association of physical activity with comorbidity

TABLE 2. Summary of exercise guidelines[a] developed for adults with disabilities.

Population	Summary of the Guideline	Benefits
Adults with multiple sclerosis (2013) (56)	At least 30 min MVPA 2 times a week and strength training 2 times a week	Improvements in aerobic capacity and muscle strength; may also reduce fatigue and increase mobility and health-related quality of life
Adults with spinal cord injury (2018) (57)	At least 20 min MVPA 2 times a week and strength training 2 times a week. At least 30 min MVPA 3 times a week	Cardiorespiratory and muscle strength benefits Cardiometabolic health benefits
All American adults including those with disabilities (CDC, 2018) (58)	At least 150–300 min a week of moderate-intensity physical activity, 75–150 min a week of vigorous-intensity physical activity or an equivalent combination of MVPA and muscle strengthening activities on 2 or more days per week	General health benefits
Adults with disabilities (WHO, 2020) (14)	At least 150–300 min of moderate-intensity, or 75–150 min of vigorous-intensity, physical activity, or some equivalent combination of MVPA per week, and muscle-strengthening activity 2 times a week and reduced sedentary behaviors	General health benefits and some condition-specific benefits
Adults with a major lower limb amputation (2024) (59)	At least 60 min MVPA per week, combined with strengthening exercises (2 times a week) or balance exercises (3 times a week)	Increases in cardiorespiratory fitness, mobility and balance

[a] Guidelines developed using internationally accepted standards/best practices.

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and quality of life in people with intellectual disability (not to mention the virtual absence of data on physical activity and any health outcomes in people with vision or hearing disabilities).

This fifth point is particularly problematic because "people with disabilities" are not a single, homogeneous group but rather diverse populations of individuals with different impairments/conditions and widely varying levels of functioning. Within these populations, there is heterogeneity in the physiological responses to exercise and differences in values, needs, and preferences for physical activity (17,70,71). When it comes to physical activity recommendations and prescription for people with disabilities, one size does not fit all. Therefore, a more tailored approach is needed (72).

An example of a more tailored approach is to use disability-specific guidelines that have been rigorously developed using disability-specific evidence and internationally recognized best practices for guideline development (69,73). Such guidelines have been developed for those with spinal cord injury (57), multiple sclerosis (56), lower limb amputations (59), and children with disabilities (74). Recommendations (as opposed to guidelines) have also been developed for children, youth, and adults with cerebral palsy (75).

A strength of disability-specific guidelines is that they recommend a minimum level of physical activity that is less than what is recommended by the WHO or CDC and, therefore, may be more feasible for a person with a disability to achieve. People are more motivated and likely to do physical activity when they believe they can achieve set targets and goals (75). A limitation of disability-specific guidelines is that, because of the limited evidence base, the guidelines are linked to improvements in only a few outcomes (primarily improvements in cardiovascular fitness and strength) in comparison to the many clinical health outcomes covered by the WHO and CDC guidelines (e.g., reduced risk for developing heart disease, type 2 diabetes, site-specific cancers). Adequately powered epidemiological studies (e.g., (12)) and controlled trials are needed to determine the amount and intensity of physical activity needed to achieve a wider range of clinically meaningful health outcomes in people with disabilities. Another limitation is that there may be challenges with implementing disability-specific guidelines in settings that provide physical activity programming to groups with different (dis)abilities (77,78). Even in programs tailored to a specific population, there can be wide variability in the physiological and functional abilities of individuals with the same conditions or impairments.

Consideration: People with disabilities experience tremendous personal, environmental, and policy barriers to physical activity. A meta-synthesis (1) of 22 review articles yielded a list of 229 factors that can influence physical activity participation in children, youth, and adults with different types of disabilities. These factors were grouped according to common themes and then situated within a social–ecological model depicting five levels of influence on physical activity: intrapersonal, interpersonal, institutional, community, and policy. Some of these factors facilitate physical activity, but many (if not most) are barriers. Figure 2 provides an overview.

At the *intrapersonal level*, various psychological factors are positively related to physical activity among people with disabilities such as self-efficacy, attitudes, affect, and self-regulation. In contrast, aspects of a person's bodily structures and functioning can create intermittent or enduring barriers to physical activity. For instance, because people with disabilities are at increased risk for acute and chronic secondary health problems (e.g., infections, pain, fatigue), some participants may need to take extended breaks from physical activity. Others may have inherent limitations to their fitness, mobility, or mental functioning, which create barriers to certain types of physical activities.

At the *interpersonal level,* social support from friends, family members, and health and exercise professionals is an important facilitator, along with peer mentorship and role-modeling of activities by other people with disabilities. Conversely,

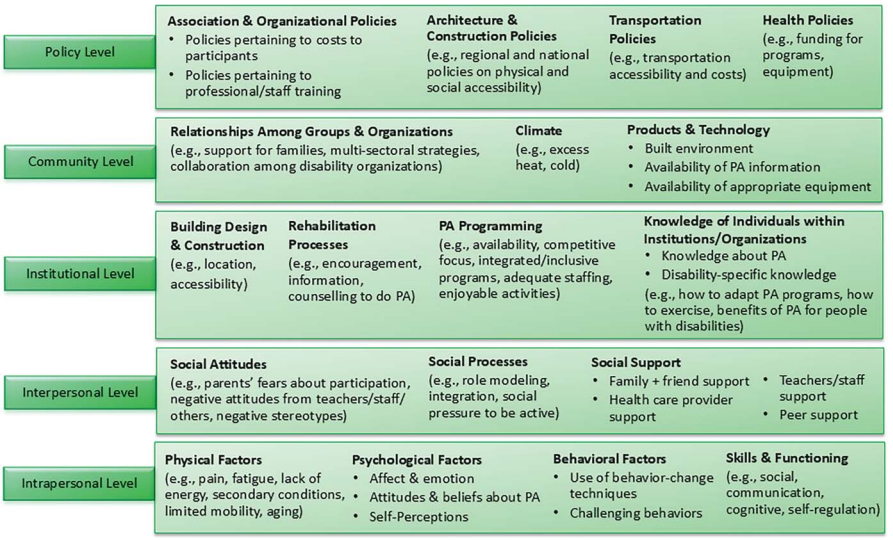


FIGURE 2—Factors that influence the physical activity participation of people with disabilities. Note. Information in this table was collated from data presented in Supplementary File 7 of Martin Ginis KA et al. (1). Bolded text indicate themes of factors related to physical activity, and bullet points/unbolded text indicate subthemes. For themes that did not have subthemes, frequently cited examples of factors are presented in parentheses.

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other people's negative attitudes, insensitive comments, and unsupportive behaviors are frequently experienced barriers and are examples of psycho-emotional disablism—a form of social oppression caused by negative interactions with other people. Psycho-emotional disablism is incredibly harmful because it damages the individual's sense of self and limits self-beliefs of what one can do and achieve (79).

At the *institutional level*, health care providers and exercise professionals can provide physical activity information, counseling, and encouragement. Unfortunately, many people in these roles have limited or no knowledge about physical activity for people with disabilities. Another common barrier is inaccessible design, which keeps people with disabilities out of fitness, sport, and recreation facilities (80). Even facilities advertised as "accessible" are often inaccessible in areas such as locker rooms, bathrooms, and swimming pools and lack accessible activity programs, policies, or staff training to support inclusion of people with disabilities (81).

At the *community level*, a lack of physical activity information (e.g., about facilities, opportunities, how to get started) and of equipment are frequently cited barriers to participation. Adapted equipment such as bicycles and sport wheelchairs can be difficult to find and expensive. Community design and maintenance are just as important for improving activity levels in persons with disability as for the general population (82). For example, people who use mobility devices (e.g., canes, wheelchairs, walkers) rely on safe, smooth, unobstructed sidewalks for active transportation, and people with visual impairments may be more active in communities with auditory traffic signals and tactile pavement.

Policy-level factors are perhaps the most difficult to change but are arguably the most influential. Studies consistently show an urgent need for policies to fund physical activity programs and accessible transportation services and systems to get people with disabilities to those programs. Because people with disabilities are less likely to be employed and therefore more likely to live in poverty and be unable to afford private accessible transportation (7), the lack of accessible public transit is a huge barrier. Another barrier is the lack of enforcement of existing policies, such as the Americans with Disabilities Act (80), which sets minimum requirements for constructing new public and commercial facilities (including sports, recreation, and fitness facilities) to be accessible and usable by people with disabilities. Similarly, international policies declare the rights of people with disabilities to participate in physical activity (e.g., the Global Action Plan on Physical Activity, United Nations Convention on the Rights of Persons with Disabilities) but are not adequately resourced, implemented, monitored, or enforced.

Consensus statements and practical recommendations for prescribing exercise and designing physical activity programs for adults with physical or developmental disabilities. Considering the research on physiological differences, the limitations of applying general public health physical activity guidelines to individuals with disabilities, and the significant barriers to physical activity that people with disabilities face, we present three consensus statements to guide the prescription and design of exercise programs for adults with physical or developmental disabilities:

1. Certain conditions and impairments can alter physiological responses to exercise. There is considerable evidence that people with disabilities can derive significant fitness and health benefits from exercise doses well below 150 min·wk^{-1} of MVPA (1). For many people with disabilities, a suitable dose of physical activity may be less than 150 min·wk^{-1} of MVPA.
2. There is heterogeneity among people with disabilities in their physiological responses to exercise and in their values, needs, and preferences for physical activity. People with disabilities are not a homogenous group. A tailored approach is needed for recommending and prescribing physical activity for people with disabilities.
3. People with disabilities experience tremendous personal, environmental, and policy barriers to physical activity. Targeted, systemic efforts are needed to remove these barriers. Physical activity prescriptions and programs must



FIGURE 3—Practical recommendations for prescribing exercise and designing physical activity programs for adults with physical or developmental disabilities.

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account for and mitigate these barriers to promote meaningful, quality participation of people with disabilities.

Building on these evidence-based consensus statements, we propose five practical recommendations for prescribing and designing physical activity programs for adults with physical or developmental disabilities. These recommendations, derived from a blend of research evidence and expert opinion, are summarized in Figure 3.

1. **Focus on moving more.** Put the primary focus on encouraging and supporting people to move more. Given concerns about the suitability of public-health physical activity guidelines, for many individuals, a "move more" recommendation will be more appropriate than a specific prescription of exercise frequency, duration, and intensity. The health benefits of physical activity are graded, and people who are completely inactive have the most to gain from small increases in their activity levels. Because so many adults with disabilities are completely inactive, transitioning people from being inactive to doing even low levels of activity could have major health benefits (14,60,83).

Behavior-change interventions and techniques can be effective for increasing physical activity in adults with disabilities. A systematic review (1) of eight meta-analyses showed that targeted behavioral interventions increased physical activity behavior in adults with physical or intellectual disabilities. Average effect sizes ranged from 0.29 to 1.00. Specific behavior-change techniques that were effective included the following: self-monitoring, problem solving, action planning, giving feedback on outcomes related to physical activity, providing social support, teaching participants to reframe their thoughts, identifying barriers, giving instruction on how to do the physical activity, and giving information about health consequences of activity and inactivity (1).

2. **Take an individualized approach.** One size does not fit all when it comes to physical activity interventions for people with disabilities. Persons with disabilities have diverse impairments and functioning, and each person has their own values, needs, preferences, and barriers regarding physical activity. The importance of an individualized approach is supported by a meta-synthesis of 10 qualitative studies involving adults with physical disabilities who participated in a physical activity–enhancing intervention (84). A key finding was the value participants placed on flexible physical activity programs that adapted to their individual needs and provided personally meaningful and preferred forms of activity.

Exercise professionals must fully and actively engage participants to discuss and understand the person's activity goals, preferences, and barriers and, ultimately, to develop a physical activity program that suits the participant's needs. It is also important for iexercise professionals to practice the principles of autonomy, empowerment, and respect for individual rights and to foster quality participation environments and experiences (85). Persons with disabilities must make their own choices, set their own physical activity goals, and have input in their exercise routines. Table 3 provides general guidance and tips for supporting positive conversational interactions with people with disabilities.

3. **Account for physiological variability.** Exercise professionals must account for the effects of underlying impairments or conditions on the person's exercise capacity, the energy required to do certain physical activities, and fatigability. The exercise prescription must be tailored accordingly. Because many people with disabilities find it arduous or even impossible to exercise for long and sustained periods at a moderate to vigorous intensity, shorter bouts of activity may be a better recommendation than longer bouts. Significant health benefits can be achieved through 20–30 min of exercise 2–3 times per week. This recommendation is supported by systematic reviews underpinning physical activity guidelines and recommendations for people living with multiple sclerosis, spinal cord injury, lower limb amputations (56,57,59,86–89), stroke as well as individual studies of adults with Down Syndrome (90–93), autism spectrum disorders and intellectual disabilities.

4. **Identify and remove barriers.** Exercise professionals must be aware of, and work to address, barriers that influence physical activity participation. Some barriers, such as low self-perceptions of capability or a lack of knowledge about how to exercise, could be addressed through physical activity counseling. Other barriers, such as lack of accessible equipment or facilities, may require creative problem-solving to adapt available equipment and activities to the individual's abilities. However, change rather than adaptation should be the goal. Exercise professionals are in positions to advocate for adequate

TABLE 3. Guidance for positive conversational interactions with persons with disabilities.

Do	Don't
✓ Ask if the individual's preference of person-first or identity-first language	X Presume a person's preference for using person-first or identity-first language
✓ Ask the individual about their preferred physical activities and exercises	X Assume the individual has experience with specific exercises or physical activities such as walking on a treadmill or riding a bike
✓ Educate yourself on the person's disability by seeking out information	X Rely on the person with the disability or their caregiver to educate you on the disability
✓ Discuss with the individual and their parent/caregiver (if appropriate) to better understand the individual's needs and wants	X Presume that all people with disabilities have the same physical activity needs, wants, challenges, and preferences
✓ Create a safe space that may allow the individual to share important information that will help them succeed	X Expect that each session will be successful
✓ Develop patience and remain supportive toward the individual's progression	X Be condescending toward the individual
✓ Expect that every individual has different ways of managing/living with their disability	X Feel uncomfortable around the individual
✓ Develop a routine for the individual	X Alter the individual's schedule without asking
✓ Adopt different methods of communication for people with different communication needs	X Rely on a one-size-fits-all approach to communicating

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resourcing and implementation of policies that support the fundamental rights of people with disabilities to participate in physical activity and that address physical activity inequities.

5. **Recognize and eliminate ableism.** Ableism is a form of discrimination and prejudice whereby people without disabilities are viewed as "the norm" or "normal" and, therefore, superior to people with disabilities. Ableism frames policies, practices, messages, and discourses as if all people are nondisabled and results in the marginalization and exclusion of people with disabilities (94). In physical activity contexts, ableism manifests in many ways. For example, gyms that only employ instructors and trainers with "perfect" gym bodies alienate people whose bodies do not fit this image. Messages such as "move more, sit less" or "break up with your chair" assume that the ability to stand is universal and convey the impression that people with disabilities are not worth including in physical activity promotion (95). Some strategies to counter ableism in physical activity contexts are as follows: train and employ people with disabilities as program instructors or leaders to counter stereotypes of who "belongs" and to break down stereotypes of what people with disabilities can and cannot do, provide professional and public education that full and effective physical activity participation is as much a right and necessary part of life for people with disabilities as for everybody else, and develop physical activity messages and programs inclusive for people of all abilities (95,96).

Disablism refers to the social oppression that people with disabilities face, through encounters with structural barriers (e.g., inaccessible exercise facilities or equipment) or negative interactions with others (e.g., being excluded from an exercise activity because the leader assumes the person with a disability cannot do it) (79). Disablism does not just stop people with disabilities from participating in physical activity; it impacts psychological health by causing feelings of exclusion, intimidation, and low self-worth. Disablism can be countered through knowledge. Awareness, education, and training are vital for professionals tasked with prescribing exercise and developing physical activity programs for people with disabilities. Such knowledge should include awareness of implicit and explicit biases and assumptions about people with disabilities, what (not) to say, how to modify exercises and equipment, and information about different impairments and their impact on functioning.

Resources for adapting physical activity programing

There are resources to help with adapting physical activity programing for persons with disabilities. The American College of Sports Medicine offers two specialty certificate courses: The Inclusive Fitness Specialist Certificate course and The Autism Exercise Specialist Certificate course. The Inclusive Fitness Specialist Certificate course was created with the National Center for Health, Physical Activity, and Disabilities, and this course covers a range of topics specific to working with persons with disabilities, including basic review of anatomy and bioenergetics, disability advocacy, initial client consultations, exercise adaptations, adaptive training protocols, and other disability specifics that are relevant to understanding proper inclusive exercise prescription and implementation. The Autism Exercise Specialist course covers the foundational framework of understanding autism, evidence-based teaching practices, and exercise program design to prepare practitioners to work with those on the autism spectrum (97). In addition, although the focus of this paper is on adults with disabilities, we have provided some basic considerations for working with children and adolescents with disabilities in Box 2.

Box 2 Considerations for Working with Children and Adolescents with Disabilities.

When considering physical activity for children and adolescents with disabilities, it is important to be thoughtful of factors specific to different pediatric age groups. Unique to the pediatric population are physical activity considerations related to critical periods of development. For example, physical activity may impact, or be influenced by, anatomy and physiology (e.g., presence of growth plates; impact of movement and weight bearing on development of bones, joints, soft tissue, and the nervous system; risks during periods of rapid growth), motor skills (e.g., development of gross and fine motor skills), and psychosocial identity and skills (e.g., identity formation, social integration, learning to work as a team, developing resilience), all of which may have downstream effects into adulthood.In addition, children and adolescents with disabilities have unique environmental barriers that may impact their ability to engage in physical activity, including frequent medical services that limit availability for engaging in exercise, the family's prioritization of maintaining an active lifestyle, and school and regional policies (98,99). For example, although the US Department of Education mandates that extracurricular sports and physical education must be included within broader requirements focused on inclusive and integrated education for students with disabilities, these requirements lack accountability mechanisms and are often underemphasized and unfulfilled (100). Therefore, youth adaptive sports programs available outside of school settings in the community also play an important role in providing opportunities for physical activity and sports participation, especially when schools do not provide for a robust adaptive physical activity curriculum or opportunities to participate in sports and recreation.When discussing physical activity participation with children and adolescents with disabilities, the "6 'F' words" adapted from the International Classification of Function (101) may be considered to guide recommendations related to physical activity:

- **Function:** Referring to the ability of a child to play and how the individual's body physiologically functions; an assessment should be performed of the person's motor skills to determine their capacity and performance of accomplishing different motor tasks in their own way. This evaluation helps guide any recommended adaptations/modifications that may be needed for a child or adolescent to perform different physical activity tasks that they are interested in doing. Health care resources may be considered to optimize or supplement an individual's performance of fundamental motor skills, such as therapy or other medical treatments. Physical literacy of the child or adolescent and their family also should be assessed, including their understanding of physical activity, skills, feelings, and drive.
- **Family:** Family represents the child's/adolescent's core environment. Facilitators, barriers, and attitudes toward physical activity and the family's input and perspectives should be considered when discussing physical activity opportunities for the child or adolescent.
- **Fitness:** It is important to evaluate factors that influence or discourage physical activity participation in children and adolescents with disabilities. Connecting the child and family with resources customized to their goals and needs may be helpful.
- **Fun:** What a child/adolescent enjoys and what they find meaningful are critical considerations when making recommendations for physical activity participation. Consider providing children/adolescents with disabilities with the perspective that physical activity may promote their self-confidence, sense of accomplishment, competence, and capacity, and help them find a sense of purpose in life.
- **Friends:** Physical activity may foster social skills and the quality of social relationships, providing children/adolescents with disabilities opportunities to build meaningful relationships.
- **Future:** Influencing a child's/adolescent's present experiences related to physical activity will influence their development and philosophy toward physical activity in the future (98).

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CONCLUSIONS

People with disabilities experience profound inequities and inequalities in physical activity opportunities, participation, and research. As a result, there is limited evidence regarding the effects of physical activity on the health and well-being of adults with disabilities. In addition, most of this evidence comes from studies involving people with physical or developmental disabilities, especially those with multiple sclerosis and Down syndrome. Thus, intervention studies and large-scale epidemiological studies are needed to better understand optimal physical activity prescriptions and the long-term effects of physical activity and sedentary behaviors on morbidity and mortality in these and other less studied disability populations.

There are, however, sufficient data to conclude that many people with physical or developmental disabilities have physiological responses to exercise that are different from those of the general population. Thus, for many adults with disabilities, significant health benefits may be achieved with less than 150 min·wk^{-1} of MVPA. Given that most adults with disabilities are inactive or low active, the most appropriate starting point may be to focus on moving more. There are also extensive data on the many barriers to physical activity experienced by people with disabilities. As such, exercise prescriptions and physical activity programs for persons with disabilities should be individualized, accounting for not only how that person's impairment/condition influences their physiological response to exercise, but also the individual, environmental, and policy levels barriers that they face. Health care professionals and exercise professionals must collaborate with patients/participants to design programs that account for individual values, preferences, and needs.

Finally, physical activity contexts are rife with barriers and practices that reinforce ableism and disablism. Together, these factors contribute to systemic inequities and inequalities that prevent most people with disabilities from participating in physical activity and deriving its health benefits. Exercise scientists, health care professionals, and exercise professionals need to understand and raise awareness of these systemic issues and take an active role to eliminate them.

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