



## Promoting Inclusive Physical Activity Communities for People with Disabilities

### Abstract

People with disabilities face substantial health risks associated with a physically inactive lifestyle. Unfortunately, even when individuals with disabilities want to increase their physical activity levels, they are often confronted with many more barriers than the general population. This limits or restricts their opportunities to improve their own health. With the impending growth of older individuals entering their 60s and 70s, many of whom will enter the ranks of disability as a result of acquiring one or more physical, cognitive or sensory impairments, health and fitness professionals must redirect part of their efforts at providing accessible facilities, programs and services to members in their community who have a disability. The participation of younger and older individuals with disabilities in physical activity must become one of the highest priorities for public and private organizations responsible for improving the health of *every* citizen in this nation.

### Physical Activity and Disability

#### Introduction

It is estimated that there are 40 to 50 million people in the United States who have a disability. This number is expected to increase over the next several decades as the “baby boom” generation reaches retirement age. An aging population brings with it a host of physical, cognitive and sensory impairments that will increase the number of adults who are disabled in this nation and throughout the world.<sup>1</sup> In addition to the growing number of people with disabilities over age 65, millions of children and younger people also have a disability.<sup>2</sup> Thus, increased effective strategies are needed to improve and maintain function and quality of life among individuals with disabilities, older and younger alike (see Table 1 for additional facts on disability).

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**TABLE 1  
IMPORTANT FACTS ABOUT DISABILITY  
RELATED TO HEALTH/FITNESS**

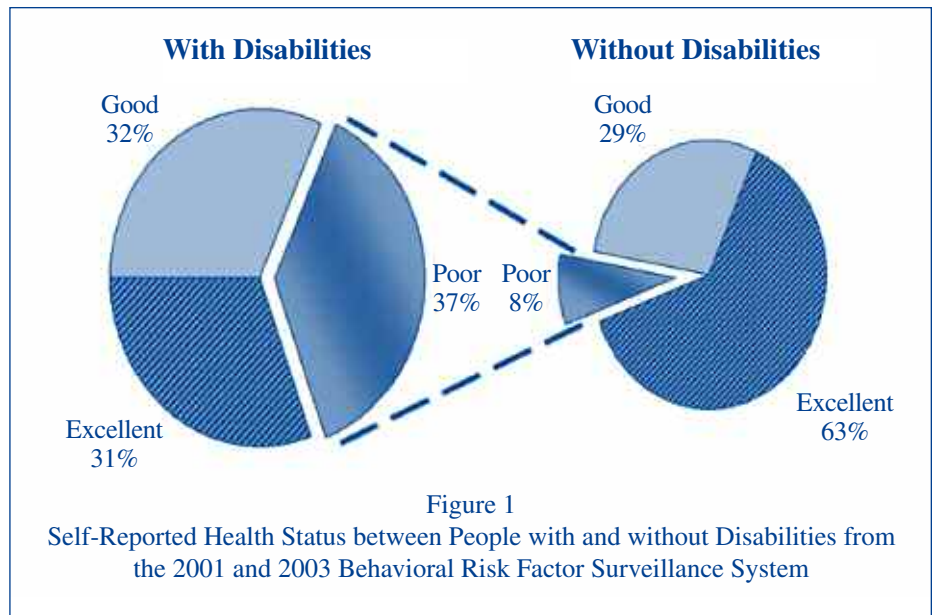
- The overall population of people with disabilities appears to be increasing. There are multiple reasons for these increases including better identification, increasing levels of obesity, improved technology that saves or sustains lives, and the aging demographics.
- The greatest disparities and therefore the greatest needs for physical activity interventions are among people with moderate and severe disabilities.
- Young adults with moderate or severe disability often have great difficulty transitioning from adolescence to adulthood when programs such as recreation and physical education (i.e., after 21 years of age) are no longer part of the individual's life.
- Many people with intellectual/developmental disabilities are living much longer and are experiencing the long-term effects of a disability combined with the effects of aging.
- There is a substantial gap between inpatient/outpatient rehabilitation and opportunities to continue to recover in community-based physical activity settings.

Increasing physical activity participation among people with disabilities is an important goal for the health and fitness profession.<sup>3,4</sup> Despite the enormous health benefits that can be attained from regular physical activity,<sup>5</sup> most people with disabilities are not achieving the U.S. recommended goal of 30 minutes a day five or more days of the week.<sup>6</sup> This low level of physical activity participation could be an even greater issue for people with disabilities compared to a relatively sedentary population without existing comorbidity because people with disabilities are often having to deal with other health issues related to their disability such as *secondary* (e.g., pain, fatigue, deconditioning, depression, weight gain) and *associated* conditions (e.g., spasticity, autonomic dysfunction, incontinence, seizures, balance and thermoregulatory alterations).<sup>7-10</sup> When these conditions overlay chronic conditions (e.g., cancer, type 2 diabetes, asthma and heart disease), health becomes a *front-and-center* issue for millions of people with disabilities because it threatens their ability to work effectively, shop, participate in leisure and social activities, and live independently.<sup>11</sup>

Many health disparities observed in people with disabilities aren't necessarily a direct result of having a disability<sup>12,13</sup> and may occur directly or indirectly from a lack of good health promotion practices.<sup>14,15</sup> While regular physical activity has the potential to offset some of the decline in health and function observed in people with disabilities,<sup>7,16-18</sup> barriers to promoting increased physical activity must first be addressed. Health and fitness professionals have a unique opportunity to impact a large and substantial segment of the population (i.e., people with disabilities) who are underutilizing fitness and recreation facilities in their community. This paper provides an overview of some of the major issues that health and fitness professionals should be aware of regarding the health status and physical activity levels of people with disabilities; barriers they commonly encounter when trying to become physically active; a framework for establishing effective strategies for increasing their physical activity levels; and a brief discussion of the National Center on Physical Activity and Disability, a one-stop resource center that will assist professionals in finding relevant and timely information on physical activity and disability.

## Health Status and Physical Activity Levels of People with Disabilities

People with disabilities report substantially poorer health profiles compared to the general population.<sup>10,19</sup> Disabled individuals tend to have more physical and cognitive impairments, greater functional limitations, more chronic health conditions, less access to community activities, and poorer health behaviors.<sup>20</sup> As illustrated in Figure 1, people



with disabilities have a substantially higher rating of poor health compared to people without disabilities and report less frequently that they are in excellent health.<sup>21</sup>

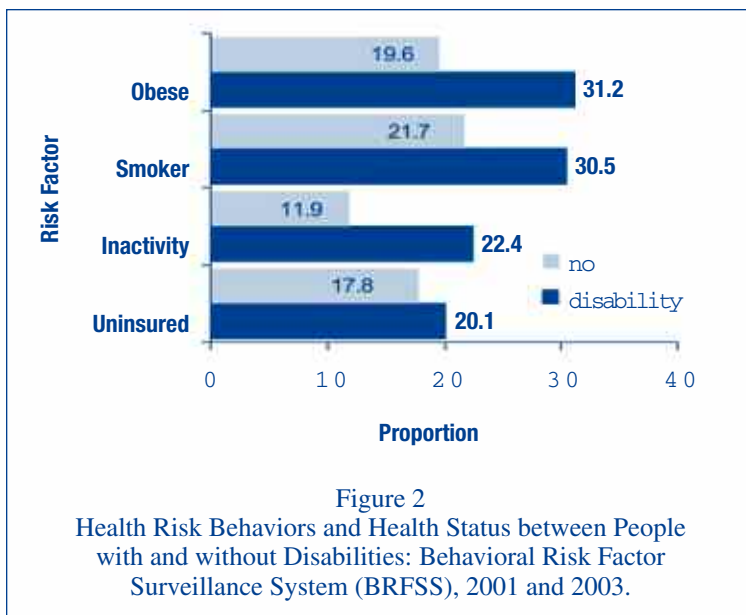
People with disabilities also report a higher incidence of obesity, smoking and physical inactivity (Figure 2).<sup>20,22</sup> The median proportion of adults who smoke is 30.5% among those with disabilities compared to 21.7% among those without disabilities. Disabled individuals are more likely to be obese (median: 31.2% vs. 19.6%) and physically inactive (median: 22.4% vs. 11.9%) compared to people without disabilities (median: 11.9%).

The higher incidence of obesity<sup>23-26</sup> observed in people with disabilities is particularly troublesome as activities of daily living (ADL) and instrumental activities of daily living (IADL) are more difficult to perform, and the excess weight may reduce or limit opportunities for various types of community participation including employment and leisure activities.<sup>26,27</sup>

### **Lower Physical Activity Participation Reported in People with Disabilities**

National data indicate that approximately twice as many adults with a disability (25.6%) were physically inactive during the preceding week than adults without a disability (12.8%).<sup>6</sup> Adults with a disability were more likely than those without a disability to be physically inactive in all states and territories. These results are consistent with those of previous reports finding significant differences in physical activity levels between persons with and without a disability.<sup>28,29</sup>

Patterns of low physical activity reported among people with disabilities raise serious concerns regarding their health and well-being, particularly as they enter their later years when the effects of the natural aging process are compounded by years of sedentary living.<sup>3</sup> The interaction between the natural aging process and secondary conditions associated



with various types of disabilities (i.e., weight gain, deconditioning, fatigue, pain) creates greater physical demands in getting around the home or community.<sup>30</sup> Tasks that could be accomplished in younger adulthood often become significantly more difficult in middle and later life. Climbing stairs, walking with a cane or walker, carrying packages, transferring from a wheelchair to a bed, commode, chair or car, pushing a wheelchair up a ramp or over a curb, standing for long periods, each require adequate levels of physical fitness (i.e., cardiorespiratory endurance, strength, flexibility, balance). Low physical fitness, in combination with functional impairments (i.e., spasticity) and secondary conditions associated with the disability (e.g., obesity, peripheral artery disease), may limit physical independence among individuals with disability and may preclude participation in activities that require moderate to high levels of energy expenditure (i.e., community ambulation, pushing a wheelchair up a ramp or curb, etc.).<sup>3</sup>

### Physical Activity Is Also Lower Among Youth with Disabilities

Children and adolescents with disabilities also have significantly lower levels of physical activity compared to their nondisabled peers.<sup>31-34</sup> Data from a national study conducted in Canada comparing health risk behaviors of 319 adolescents with physical disabilities to 7,020 nondisabled adolescents found that physical inactivity was 4.5 times higher among disabled compared to nondisabled youth.<sup>35</sup> Adolescents with physical disabilities were also twice as likely as nondisabled youth to report watching television for more than four hours a day.

Data from the 2005 Youth Risk Behavior Survey (YRBS) also indicated that the proportion of students who engaged in sedentary activities (i.e., playing video/computer games) 3+ hours/school day) was significantly higher in those with physical disabilities (26.6%) compared to those without disabilities (20.4%).<sup>36</sup> In contrast, the percentage of students who were members of a sports team was significantly lower

for youth with physical disabilities compared to youth without disabilities. Researchers have suggested that barriers to participation in recreational sports programs by youth with disabilities may result in further avoidance of other physically demanding activities (i.e., soccer, basketball) and greater time spent in sedentary behaviors after school and on the weekends.<sup>37</sup>

The low levels of physical activity participation reported among youth with disabilities is of great concern because this adverse behavior generally tracks into adulthood.<sup>38</sup> In theory, higher levels of physical inactivity during childhood and adolescence are likely to contribute to an increased risk of obesity and other adverse health conditions in adulthood.<sup>38-43</sup>

### Barriers to Physical Activity Participation

People with disabilities experience many different types of barriers to regular physical activity that can be similar (e.g., time, lack of interest) or different from the general population. Barriers that have been reported in people with disabilities include cost of memberships, lack of transportation to fitness centers, lack of information on available and accessible facilities and programs, lack of accessible exercise equipment that can be purchased for home use, and the perception that fitness facilities are unfriendly environments for those with a disability.<sup>4, 44, 45</sup> Such barriers can result in insufficient physical activity participation and a decline in physical function, each of which may increase the risk of developing secondary health conditions.<sup>46, 47</sup>

Many disabilities are accompanied by various impairments including loss of balance, vision, hearing, pain, fatigue, decreased cognition, paralysis, and others. Environmental hazards such as narrow paths of travel, low lighting, loud noise, and minimal space between exercise machines can limit the person's ability to exercise.<sup>48</sup> Group exercise classes or sports competition often isolate individuals with disabilities because the equipment used in the class is not accessible, the pace of the class is too fast, or possible adaptations to accommodate the person (e.g., slower tempo, adaptive equipment) are not available. Collectively, these barriers can make it extremely difficult for people with disabilities to engage in regular, sustainable exercise.

To a large extent, the primary barrier, *lack of time*, that prevents many people *without* disabilities from engaging in regular physical activity (i.e., lack of time) may not be as big an issue as other barriers, since the employment rate among people with disabilities is significantly lower than in the general population, leaving them with more time for leisure activity.<sup>49</sup> However, other more substantial barriers can make it extremely difficult to exercise among individuals with disabilities.<sup>49, 50</sup> These barriers must be identified and strategies to overcome these barriers must be developed to facilitate greater participation in physical activity by youth, adults and seniors with disabilities living in communities across America.

## A Framework for Promoting Physical Activity Participation Among People with Disabilities

Health/fitness professionals must recognize that many physical activity programs, facilities and services offered in their communities have an element of inaccessibility.<sup>51</sup> From sports and recreation programs for youth to fitness equipment and swim classes for adults and seniors, accessibility is an inherent problem for many people with disabilities. When concentrating efforts on removing these environmental barriers to participation, a critical feature is to understand the type and nature of the barrier(s) that may prevent individuals with disabilities from engaging in physical activity.

Rimmer and Schiller<sup>52</sup> developed a framework for systematically addressing barriers in the built environment experienced by people with disabilities. The model uses the acronym RAMP—**R**estoring **A**ctivity, **M**obility and **P**articipation—to reflect the broad need to create a barrier-free environment.\* From a public health perspective, there is a logical progression through the domains that the graphic presents through the metaphor of “ramping up” to successive levels.

As illustrated in Figure 3, the RAMP model consists of four components—**Access**, **Participation**, **Adherence**, and **Health and Function**—each building on the previous component and reflecting the interconnectedness between components in achieving optimal health and well-being among people with disabilities. The metaphor also reflects the logical sequencing of the four components: *Access* is necessary for *participation*, and regular *participation* and

\*Stairs are often a symbol of inaccessible features in the built environment, while the “ramp” is considered a highly accessible feature which makes the illustration more accommodating of people with disabilities.



Figure 3  
RAMP (**R**estoring **A**ctivity, **M**obility and **P**articipation)  
Framework for Increasing Physical Activity Among People  
with Disabilities, 2001 and 2003.

*adherence* are necessary to obtain benefits in *health and function*.

The first component in the RAMP model is *Access*. Within the context of physical activity, access refers to offering the individual an opportunity to experience typical use of the environment or exercise product (i.e., equipment). The most common access issues for people with disabilities involve physical access—getting the person into the building, allowing full use of available facilities, and allowing access on and off the equipment. A more subtle aspect of access is information on the availability of facilities, services, programs, and equipment. Without at least *awareness* of the options available, the options are functionally unavailable.

One way that health and fitness professionals can make their facilities more accessible is when purchasing new equipment, they could consider *universal design* features such as swivel-away seats that allow wheelchair users to access the machine from their wheelchair; easy reach to changing weight on various resistance machines; easy transfer onto cardiovascular exercise equipment such as seen on recumbent steppers; good color contrasts so that users with visual impairments can operate equipment and reduce the risk of injury; wide enough space between machines to allow a wheelchair user to transfer onto and off of the machine; and similar changes that can make the equipment much more user friendly. Other features of access include entrance ways and exits that are wide enough for wheelchairs; paths of travel that are free of temporary or permanent obstacles; firm surfaces for supporting people with balance impairments and those who use wheelchairs; locker rooms that contain wide, padded benches to allow individuals to transfer from their wheelchair to allow for dressing and changing; a few lockers that can be reached from the height of a wheelchair; swimming pools with transfer walls, lifts or sloped entries to allow easy entrance and exit for individuals who are unable to climb stairs; and many other features that make the facility accessible to people with disabilities.

The second component focuses on promoting *Participation* in healthful levels of physical activity by people with disabilities. Participation goes beyond physical access and use of universal design and refers to developing modalities of physical activity that are both beneficial and satisfactory for people with disabilities. While access is primarily concerned with *availability* of opportunities for recreation, leisure and exercise, participation is primarily concerned with the *usability* or *stage of readiness* to use available physical activity opportunities. For a person with a disability, simply having access to a facility (e.g., swimming pool, weight training room, or exercise equipment) is necessary but not sufficient for a successful outcome. For example, someone who has a disability may be able to get into an exercise room (i.e., weight room) but have little or no success with participating in programs that are available with the existing equipment (e.g., circuit training class). A pool lift allows someone to enter the water (access) but is of little utility if the person is unable to participate in the aqua-aerobics class due to a lack of adaptive equipment. Group exercise classes (e.g., Tai Chi,

Pilates, yoga, aerobics), team sports (e.g., basketball, softball), exercise rooms (e.g., cardio and strength equipment) and outdoor recreation activities (e.g., cycling, climbing) often must be modified for people with disabilities to allow them to have satisfying and beneficial experiences.

The second component in the RAMP model is **Participation**. The emphasis of the participation component in the RAMP model is to ensure that the experiences of people with disabilities are not diminished relative to the experiences of other participants. If people with disabilities are able to participate in more forms of physical activity with reasonable accommodations and adaptations, there is an increased likelihood that they will meet the U.S. recommended guidelines of 30 minutes or more a day of moderate to vigorous intensity levels of physical activity most days of the week. The participation component also stands for education and training of professionals who have little or no background in working with people with disabilities. Many people with disabilities find that the lack of knowledge about disability, poor professional behavior and negative attitudes limits their opportunity to participate in a much wider variety of physical activity programs.

Adapted physical activity and therapeutic recreation professionals can play a major role in enhancing participation by children, adults and seniors with disabilities in all areas of indoor and outdoor physical activity. These professionals have training and experience in adapting sports, recreation and physical activity programs to allow people with disabilities to obtain a much more enriching experience. Health and fitness professionals with little background in working with people with disabilities should determine if there are any local professionals with this specialty certification who can assist them in making their programs more accommodating for people with disabilities. Many of these professionals work in public schools, hospitals and long-term care facilities and may be available to conduct a workshop or provide consultation on an as-needed basis.

The third component of the RAMP model addresses the issue of **Adherence**, which presents the greatest challenge in securing the health benefits of physical activity. To achieve the full benefits of physical activity on health, the individual must participate in moderate physical activity on most days throughout the lifespan. While some of the health benefits associated with moderate physical activity can be realized in the short term, others continue to accrue over the long term. Further, most of these health benefits lessen and fade if the individual relapses into a sedentary lifestyle.

While adherence to a physically active lifestyle is a chronic problem for most people, it presents substantially greater difficulties for people with disabilities because of limited opportunities with regard to access and participation. One of the great challenges facing health and fitness professionals is to find effective adherence strategies for people with disabilities. Possible strategies for increasing adherence to beneficial recreation and exercise programs involve varying the types of activities or activity locations and developing social support networks that connect people and make the physical activity part of a socially engaging experience.

When any new member with a disability joins a facility or program, it is important for the health/fitness professional to learn more about their social history and determine a good match with another member or members who have similar interests and levels of health and function.

At the top of the RAMP model, the fourth component, addresses **Health and Function**. The ultimate goal for health/fitness professionals is to improve quality of life and help lower the risk of various health conditions. One important element of health and function is identifying effective methods for measuring and monitoring physical activity in people with disabilities. For example, movement of upper extremities may account for only a small portion of total energy expenditure in the ambulatory population. However, wheelchair users use their upper body for all activities of daily living and for exercise such as arm cranking and wheelchair propulsion. Consequently, quantifying upper-extremity movement is necessary for an adequate measure of physical activity among wheelchair users.

Another issue associated with the health and function domain is avoiding an overuse injury resulting from repetitive motions associated with a certain exercise. For example, while walking is widely promoted as a safe and beneficial form of physical activity for the general population, this modality is not applicable to people who rely on wheelchairs for mobility or have severe orthopedic impairments (e.g., rheumatoid arthritis, osteoarthritis). Further, inferring an equivalent benefit for “wheeling” a manual wheelchair or walking for an extended period with a significant mobility limitation may predispose the participant to increased risk of overuse injuries and pain. Therefore, health and fitness professionals must establish good monitoring strategies to ensure that the modalities chosen are safe and effective for the participant.

Building a program for individuals with disabilities based on the four interconnected components of the RAMP model will assist health and fitness professionals in **Restoring Activity, Mobility and Participation** in the lives of people with disabilities. Three of the components in the RAMP model reflect key elements of the physical activity guidelines as follows:

Participation = the equivalent of at least 30 minutes of moderate physical activity

Adherence = most days of the week

Health and Function = achievements in beneficial health outcomes (e.g., musculoskeletal, cardiorespiratory, functional, metabolic, and mental health).

The first component, access, defined as opportunities and options to participate in healthful physical activity, is added because people with disabilities have significantly less access to the types of areas, structures, fixtures and equipment needed to participate in regular physical activity.

## Targeting People with Disabilities in Local Communities

An important goal for health and fitness professionals is to identify and recruit members of their community who

underutilize fitness and recreation venues. A significant number of these individuals will include people with chronic health conditions (i.e., obesity, asthma, type 2 diabetes, heart disease, cancer), and youth, adults and seniors with physical, cognitive and sensory disabilities.<sup>22, 44, 53, 54</sup> One way to identify people with disabilities is to connect with local organizations who serve the disabled community. These include special education programs, independent living centers, developmental disability service providers, rehabilitation facilities, hospitals, long-term care facilities, public health departments and local area agencies on aging. Each of these organizations serves individuals with disabilities and can become an important conduit for recruitment. The first step in this process is to meet with professionals who work in these facilities such as physical and occupational therapists, nurses, developmental disability service providers and public health officials, to make them aware of the accessible physical activity programs that are available in their community, and to partner with them on transitioning people with disabilities into all areas of indoor and outdoor physical activity including the use of parks, trails, pools, fitness facilities and other venues.

## Conclusion

Health and fitness professionals have a unique opportunity to improve the health and well-being of millions of people with disabilities who are not engaging in moderate, health-enhancing physical activity. Physical, programmatic, and attitudinal barriers that affect the ability of many people with disabilities to become physically active must be eliminated if we are going to achieve higher levels of physical activity in this underserved segment of the population. Increased participation in physical activity and improved fitness levels could have substantial health benefits for this underserved audience. Small increments in physical activity could pay substantial dividends in reducing health care expenditures and caregiver burden. Lowering the incidence of chronic conditions (i.e., type 2 diabetes, heart disease), minimizing or eliminating secondary conditions directly or indirectly resulting from the disability (e.g., obesity, weakness, fatigue, reduced mobility, social isolation), and reducing the need for personal assistance in performing ADL and IADL are important outcomes of regular physical activity. The focus of this effort should be on offering programs, services and facilities that are *universally designed* and fully accessible to all people *with* and *without* disabilities.

Public health programs and professionals who work in local and state health departments, fitness and recreation centers, and rehabilitation facilities, must recognize the low rates of physical activity reported among people with disabilities and begin to develop effective and cohesive strategies that address this problem. While most of the financial resources in public health have been directed at prevention of disease, injury, and *disability*, there is growing recognition among public policy experts that prevention of secondary conditions is an equally important issue among people with disabilities. Health promotion activities, especially increased participation in physical activity, can have an enormous positive impact on reducing secondary conditions and improving health, function and quality of life in people with

disabilities adding a new and highly valued dimension to the careers of health and fitness professionals.<sup>14, 53</sup>

## A One-Stop Resource on Physical Activity and Disability

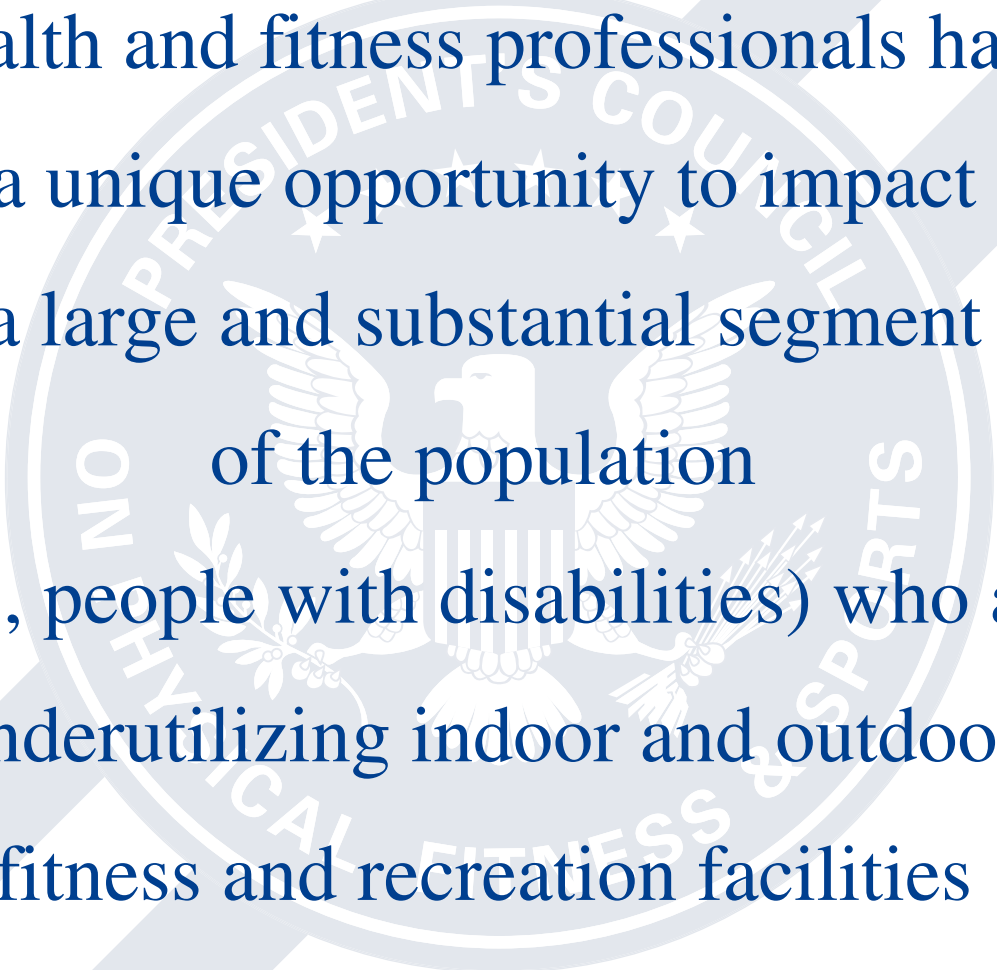


Health and fitness professionals desiring information on physical activity and disability will find a wealth of information on the National Center on Physical Activity and Disability (NCPAD, [www.ncpad.org](http://www.ncpad.org)) website. NCPAD is a cooperative agreement with the Centers for Disease Control and Prevention's (CDC) Disability and Health team and is aimed at promoting physical activity among people with disabilities. NCPAD serves as a central repository of information on physical activity and disability, actively collecting information from research, best professional practices, information on public and private recreation and fitness facilities serving people with disabilities, and businesses that provide equipment and services supporting physical activity participation by people with disabilities. In addition, NCPAD has actively promoted the importance of physical activity in attaining and maintaining optimal health for people with disabilities. This is being accomplished through a variety of promotional resources and outreach activities in partnership with advocacy organizations, service providers, and individual consumers.

Health/fitness professionals can use the NCPAD web-based resources when designing programs for clients that include guidelines, web-based physical activity assessment tools, and information on community-based resources and activity programs that promote long-term physical activity maintenance. NCPAD's information is centralized on the website and provides a range of resources on physical activity and disability including networking opportunities, searchable databases, assessment tools, and research. NCPAD Information Specialists are available at 800-900-8086 or [ncpad@uic.edu](mailto:ncpad@uic.edu) to answer questions, including but not limited to appropriate exercise for individuals with a specific disability, available adaptive equipment, the location of accessible fitness programs and sport team opportunities, and more.

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The seal of the President's Council on Physical Fitness & Sports is centered in the background. It features an eagle with wings spread, perched on a shield with vertical stripes. The eagle is surrounded by a circular border containing the text "THE PRESIDENT'S COUNCIL ON PHYSICAL FITNESS & SPORTS".

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