

Promoting Physical Activity and Exercise in Older Adults With Developmental Disabilities

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Increasing physical activity among all Americans is a public health priority. Physical inactivity contributes to the development of many secondary health complications such as obesity, diabetes, and cardiovascular disease. Older adults with developmental disabilities must also participate in physical activity to prevent these types of secondary health complications. The purpose of this article is to review the consequences of inactivity among older adults with developmental disabilities and the benefits of exercise for this population. Barriers to physical activity and ways to promote activity in this population are discussed. The article will also review public health initiatives and community programming efforts to increase activity in older adults with developmental disabilities. Finally, some basic suggestions to promote fitness among individuals with developmental disabilities are also reviewed. **Key words:** *aging, exercise, fitness, physical activity*

NATIONAL PUBLIC INITIATIVES such as *Healthy People 2010*¹ have placed physical activity and fitness as a national priority. Physical inactivity is directly linked to many secondary health conditions such as coronary artery disease, congestive heart failure, hypertension, stroke, and some cancers.² In addition, physical inactivity is known to contribute to obesity.² Emerging research suggests that dementia is more likely to develop in individuals who are less active and that diet and exercise can ward off Alzheimer's disease.³ Adults with developmental disabilities have similar health issues as the general population. These issues include obesity, diabetes, and cardiovascular disease.⁴ The prevalence of obesity in individuals with intellectual disabilities is higher than that in the general population.⁵ Higher rates of obe-

sity are reported in individuals with mild to moderate cognitive limitations than in those with more severe impairments.⁶ In addition, older individuals with intellectual disabilities demonstrate a higher prevalence of obesity than younger individuals.⁶ Cardiac conditions are 3 to 4 times more likely in individuals with Down syndrome than in the general population.⁵ In addition to the secondary health complications related to physical inactivity, other consequences of inactivity exist for older adults with developmental disabilities. People may experience diminished self-concept, greater dependence on others for daily living, and reduced ability for ongoing, meaningful social interactions.⁶

Individuals with intellectual disabilities are more likely to be physically inactive than people in the general population.⁶⁻⁹ This deconditioning can lead to a whole host of medical conditions as stated above. In addition, Bottomley¹⁰ points out that deconditioning can potentially lead to difficulties with mobility as well as the performance of self-care, vocational, habilitative, and leisure activities. It is well documented that persons with intellectual disabilities experience high rates of morbidity and mortality.¹¹ Costs such as doctor

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visits and hospital stays associated with this status of inactivity are estimated at over 12 million dollars. Indirect cost such as lost wages have been estimated even higher.¹² Promoting physical activity, exercise, and fitness is thought to be part of the solution to maintaining health among all individuals, including those aging with intellectual or other developmental disabilities. The importance of physical activity among those with these disabilities has been recently acknowledged by leading health promotion agencies.¹ Rehabilitation professionals have knowledge about functional limitations caused by various developmental disabilities in addition to knowledge of basic principles of exercise. This places them in a unique position to promote health through physical activity and exercise in older adults and elders with developmental disabilities.

BARRIERS TO PARTICIPATION IN PHYSICAL ACTIVITIES

Physical activity is “any bodily movement produced by skeletal muscles that results in energy expenditure.”¹³ *Exercise*, on the other hand, is a type of physical activity that is “planned, structured, and repetitive”^(p.128) and has the objective of improvement or maintenance of physical fitness.¹³ Regular exercise is associated with decreasing cardiovascular risk factors by lowering resting heart rate and blood pressure, reducing total body fat, and improving glucose tolerance.¹⁴ Naturally occurring moderate physical activity that increases energy expenditure, such as walking, most probably has a similar impact and can promote fitness. *Fitness* is further defined as health- or skill-related qualities such as cardiorespiratory endurance, muscular strength, body composition, flexibility, agility, balance, coordination, or power. Physical activity has been identified as being of greatest importance to public health.¹³ This article will focus on physical activity and exercise as a means to promote the health of older adults with developmental disabilities.

By increasing physical activity in older adults with developmental disabilities, providers can aim to reverse physical deconditioning, optimize physical functioning, and enhance overall well-being.¹⁵ According to the *Healthy People 2010 Midcourse Review*,¹ adults with disabilities report less overall activity than adults without disabilities. A natural resource to increase participation in physical activity for adults is community-based fitness facilities or health clubs. However, these facilities pose many challenges to individuals with physical, intellectual, or developmental disabilities. Rimmer et al¹⁶ identified 10 themes affecting participation in physical activity by adults with disabilities and offered specific suggestions to overcome these challenges (Table 1).¹⁶

Given the changes associated with the normal process of aging, older adults with developmental disabilities would likely face similar, or possibly more, challenges as those identified by Rimmer and colleagues. Rehabilitation professionals can assist with such challenges by offering support to local fitness centers regarding adaptive equipment and accessibility. In addition, partnering with physical and occupational therapists to develop programs specifically for older adults with developmental disabilities can also help increase the variety of programs available.

Rimmer et al¹⁷ also found accessing health clubs for people with mobility disabilities and visual impairments difficult. Using the Accessibility Instruments Measuring Fitness and Recreation Environments (AIMFREE) tool,¹⁸ the authors measured the accessibility of the built environment, equipment, information, policies, swimming pools, and professional behavior in 35 fitness facilities across the United States. Many facilities did not have adequate space to transfer from a wheelchair to exercise equipment. In addition, less than one third of facilities were likely to provide bulletin board information in 1 or more alternative formats. While many facilities had specific procedures for handling complaints or designated people to oversee compliance with Americans with Disabilities Act

Table 1. Challenges and solutions to physical activity participation in the community for persons with disabilities¹⁶

| Challenges | Suggested solutions | |
|--|--|---|
| Built and natural environment | Add curb cuts Widen doorways Add elevators Use nonslip mats in locker rooms Provide adequate accessible parking spaces Install push-button operated doors | Construct multilevel front desks to accommodate members in wheelchairs Provide ramps or lifts to pools, whirlpools, and hot tubs |
| Cost/economic | Offer scholarships or sliding fees to members with disabilities Include accessibility as an item in facility budgets | Seek grant funding to help fund accessibility projects Provide tax credits from government for facilities to update and comply with the ADA |
| Equipment | Use Velcro straps to help individuals grip equipment Provide upper body aerobic equipment | Provide strength equipment that minimizes need to transfer Ask individuals with disabilities for input regarding specific exercise equipment |
| Guidelines, codes, regulations, and laws Information | Create legislation to enforce ADA guidelines Provide information to fitness professionals regarding adaptive equipment | Publish information about accessible facilities in community |
| Emotional/psychological | Allow consumers to try the facility before joining Add peer support | Provide facility orientations Utilize rehabilitation professionals to help ease transition to community settings |
| Knowledge, education, and training | Provide on-site training about people with disabilities and accessibility issues to fitness center staff | Allow time off from work to attend seminars and trainings about disabilities |
| Perceptions and attitudes | View costs associated with accessibility as an investment | Be aware of, and sensitive to, needs of persons with disabilities |
| Policies and procedures | Review policies to make them more responsive to needs of individuals with disabilities Be responsive to requests to adapt equipment | Have a formal review process for complaints related to accessibility Prorate membership fees based on accessibility |
| Resource availability | Increase fitness and recreation programs that are accessible for individuals with disabilities Combine resources among nearby communities to help increase programs | Hire volunteers or student interns Offer free or reduced fee transportation to facility |

(ADA), facilities were less likely to include people with disabilities on their advisory boards. Less than 25% of health clubs had policies that concerned availability of information in alternative formats or prorated membership fees for people with disabilities. While most facilities' staff ranked high for providing good ideas to people with disabilities and asking consumers with disabilities if they need assistance before providing it, the researchers found that staff members talked directly to the personal assistants rather than the person with the disability in many cases. The study noted that the more difficult items for facilities to provide such as adaptive fitness equipment, power-assisted doors, audible cues in elevators, and provision of information in alternative formats are all associated with increased cost.¹⁷ Although no research is available on the specific barriers faced by older adults with developmental disabilities, it can be assumed that they face similar challenges. As individuals age, they experience changes in vision, hearing, and vestibular functioning. Changes in flexibility, strength, and posture are also observed. While it is known that these changes occur, the extent to which these changes affect individuals with developmental disabilities is unknown.¹⁹ Changes in sensory and musculoskeletal systems could further impact the challenges that older individuals with developmental disabilities face when considering participation in physical activity programs at a local fitness center.

IMPROVING FITNESS IN OLDER ADULTS WITH DEVELOPMENTAL DISABILITIES

National public health initiatives promote physical activity and exercise among individuals with disabilities. The *Healthy People 2010*¹ initiative aims to decrease the disparities in physical activity participation across all groups in the United States, including people with disabilities. In addition, the *Surgeon General's Call to Action to Improve the Health and Wellness of Persons With Disabilities*²⁰ aims to improve the health and wellness of this population by identifying barriers to overcome and setting goals on which

to focus. The *Call to Action* emphasizes that the overall health of people with disabilities can be improved by encouraging them to participate in healthy behaviors and wellness programs. The goals of the *Call to Action* encourage individuals with disabilities to be more active and maintain a healthy lifestyle, promote accessible healthcare and supportive services, ensure that health providers are knowledgeable in strategies to serve individuals with disabilities with dignity, and promote awareness of the strengths of individuals with disabilities by all citizens.

To accomplish these goals, the *Call to Action* suggests adapting health promotion and wellness materials in alternative formats for people with disabilities. Increasing the amount and specificity of information available to people with developmental disabilities will help them learn how to meet their specialized wellness goals.²⁰ Videos created in collaboration with individuals with intellectual disabilities may also be helpful.

Older adults with mild intellectual disabilities can improve physical performance with physical training targeted at improving balance and strength.²¹ For example, 22 older adults between 54 and 66 years of age with mild intellectual disabilities participated in 1 of 2 groups: a balance and muscle strengthening exercise group and a general exercise group. Both groups performed exercises 3 days a week for 6 months. A modified Timed Up and Go Test,²² the Functional Reach Test,²³ knee flexion and extension strength, and the Harter Self-Perception Profile²⁴ (a well-being questionnaire) were administered before and after the exercise programs. The researchers found that both groups improved in self-concept of well-being, but only the group receiving balance and strength training exercises improved in knee muscle strength. The authors concluded that adults with mild intellectual disabilities can improve physical performance through an exercise program specific for balance and strength training.²¹ Targeted exercises will impact specific areas, however, a general exercise program can have positive effects as well and may be easier to

implement for some elders with intellectual disabilities.

Rimmer et al²⁵ examined the effects of a 12-week exercise program that combined strength and cardiovascular exercises in 52 adults with Down syndrome between 30 and 70 years of age. Participants were randomly divided into either an exercise group or a control group. The exercise group performed 30 to 45 minutes of cardiovascular exercise and 15 to 20 minutes of muscular strength and endurance exercises 3 times per week during the 12-week program. Researchers found that participants in the exercise group increased in strength and endurance and had a slight reduction in body weight compared with the control group.²⁵

Group health education programs focusing on eating and exercise habits in individuals have also been found to be effective but at varying degrees for adults with and without intellectual disabilities.²⁶ Rimmer et al used the health education learning program curriculum in eight 90-minute sessions which focused on exercise, nutritional choices, and stress reduction in addition to a traditional weight loss program. Sessions were taught separately for each group. After each education session, participants were offered the option of a brisk walk with the instructor. Study participants were also offered 2 to 4 optional home visits to help establish an exercise program, develop a dietary plan, and make a grocery store visit to identify healthy choices. Mean body mass index significantly decreased in the individuals without disabilities but only in 18.5% of the individuals with intellectual disabilities. Although an education program may be beneficial for some individuals, those with intellectual disabilities may need more of a structured, individually designed program.²⁶ Marshall et al²⁷ also found that health promotion educational sessions led to weight reduction in older adults with intellectual disabilities.

PSYCHOSOCIAL BENEFITS OF EXERCISE

Allen et al²⁸ examined the effects of a strength training program in individuals with

cerebral palsy. Ten participants performed an individualized strength exercise program that lasted for 60 to 90 minutes. The exercise program was followed by a short period of social interaction. Most participants reported that the key benefit to the exercise program was enjoyment due to opportunities for social interaction. Participants felt that positive attention from others also contributed to enjoyment of the program. Improvements in muscle strength and functional activity were also reported among participants.²⁸

Heller et al⁹ examined the psychosocial benefits of an exercise program for adults with Down syndrome. Adults 30 years and older with Down syndrome were divided into an intervention group ($n = 32$) or a control group ($n = 21$). The intervention group participated in a 12-week exercise and health education program, whereas the control group received no exercise training. Participants in the intervention group performed 30 to 35 minutes of cardiovascular exercise and 15 minutes of muscle strength and endurance. Participants also attended health education classes. Findings indicate that participants in the intervention group perceived fewer barriers to exercise after completing the exercise and education program. In addition, people in the intervention group were more likely to report increased confidence to perform exercise.⁹ Social isolation experienced by aging adults with intellectual disabilities may worsen existing health conditions.²⁹ Exercise programming that decreases feelings of social isolation and increases confidence could help promote the overall well-being of older adults with developmental disabilities.

PROGRAMS AVAILABLE TO PROMOTE FITNESS AMONG OLDER ADULTS WITH DEVELOPMENTAL DISABILITIES

A variety of programs designed specifically for adults with developmental disabilities have been developed. For example, Carter et al³⁰ created an interdisciplinary, inter-agency group fitness program in a small rural community. The program involved a 5- to 10-minute warm-up, 20- to 30-minute

cardiovascular workout, followed by a 25- to 30-minute weight training program, and a 5- to 10-minute cooldown, following a set protocol.^{31,32} The program took place 3 times a week for 1 semester. Orientation to the building, equipment, gym, restrooms, and exercise protocol was provided as well as modifications and accommodations to meet the individualized needs of the participants. The participants showed an improvement in weight, blood pressure levels, and resting heart rates following the 12-week program. In addition, positive social interaction was noted.

The third edition of the *Exercise and Nutrition Health Education Curriculum for Adults With Developmental Disabilities*³³ incorporates exercises, health promotion activities, physical activities, health education, and nutrition promoting life-long healthy lifestyles. In addition, self-efficacy, self-advocacy, and rights and responsibility, problem-solving techniques and conflict resolution strategies are incorporated into the training. Eleven quick-and-easy self-report assessment tools are included in the curriculum (see Table 2).

The Special Olympics⁴⁶ program is another option to promote fitness in older adults with developmental disabilities. Special Olympics offers several competitive and noncompetitive opportunities for individuals with in-

tellectual disabilities. These programs have been shown to promote physical fitness, self-concept, self-confidence, and social interactions. They offer year-round training and competition in 30 Olympic-type winter and summer sporting events. The Special Olympics Healthy Athletes Initiatives includes several programs that address the overall health of the athletes. The initiatives are led by an interdisciplinary team of healthcare providers. For example, podiatrists and physical therapists participate in the *Fit Feet* program to evaluate foot and ankle problems as well as shoe wear. Physical therapists within the *FUNfitness* program, evaluate flexibility, strength, and balance. The *Health Promotion* initiative educates individuals with developmental disabilities in the importance of maintaining an active and healthy lifestyle and the importance of physical fitness in improving long-term health outcomes.⁴⁶

Another program offered by Special Olympics is the *Athlete Leadership Program*.⁴⁷ This program promotes athletes in Special Olympics to serve on boards of directors, as coaches, as officials, and as volunteers within Special Olympics programs. This program promotes fitness as well as leadership and may be an ideal program for older adults with developmental disabilities to be engaged in an activity program when they are no longer able to compete.

Many elders with developmental disabilities may not have the physical capacity or support services to participate in highly structured programs like Special Olympics or going to a fitness center. However, there are resources available that may be appropriate for elders who are frail or experiencing dementia or behavioral considerations. The *Move, Experience, and Engage (MEE) Calendar*,⁴⁸ developed at Georgetown University Center for Child and Human Development, provides 365 different activities to promote movement through fun, engaging activities for adults with developmental disabilities. A series of flexibility, strengthening, and balance activities is part of the calendar. Photographs of older adults performing the

Table 2. Physical fitness, activity assessment tools used with older adults with developmental disabilities³³

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| Energy Fatigue Scale ³⁴ |
| Jette Pain Measures ³⁵ |
| Life Satisfaction Scale for Adults with Developmental Disabilities ^{36,37} |
| Choice Making Scale ³⁸ |
| Knowledge Scale ^{36,38} |
| Exercise and Activity Inventory ³⁹ |
| Exercise Perception Scale ⁴⁰ |
| Barriers Scale ⁴¹ |
| Exercise: Social/Environmental Support Scale ⁴² |
| Self-Efficacy Scale ⁴³ |
| Community Integration Scale ^{44,45} |

exercises are included. Adaptations are suggested throughout the calendar to promote as much participation as possible. The exercises are especially geared to the older adult and use resistance bands and accessible household items to provide resistance. Also, the *Fit For Life*⁴⁹ video exercise program is another easy-to-institute program of simple exercises for older adults. The video highlights 4 older adults with varying degrees of intellectual and physical disabilities performing a group exercise program under the direction of physical therapists. Because the program uses individuals with developmental disabilities, viewers are able to see the acceptable diversity in performance of the exercises and the support needed.

SUMMARY

Older adults with developmental disabilities represent a heterogeneous group. Many of the studies discussed above focused on a specific developmental disability rather than looking at adults with developmental disabilities as a single group. Some general recommendations to promote health and fitness for all people with developmental disabilities have been discussed in the literature. First, the programs that focus on educating individuals with developmental disabilities about physical activity should work to increase understanding as well as provide practical ideas for application.⁷ In addition, education about the importance of physical activity should be started during childhood and should continue throughout transition to adulthood.⁷ Second, Rimmer⁵⁰ suggests that creating linkages between rehabilitation facilities and community-based fitness centers can help ease the transition to the community. Increasing fitness professionals' knowledge and skills related to health promotion and disability is an important factor.⁵⁰ Third, exploration of ways to reduce cost such as scholarships and sliding fee scales¹⁶ or third party payer initiatives must be explored since cost is frequently cited as a barrier to exercise.

Fitness programs should include a focus on increasing cardiovascular endurance, strength, and flexibility as well as emphasize the importance of good nutrition.⁵⁰ Discussions of health behaviors such as smoking cessation, stress management, and coping strategies are also essential to a general health promotion program for individuals with disabilities.⁵⁰ Appropriate and ongoing education regarding healthy living practices related to nutrition and exercise, among others, should be provided for people with intellectual disabilities as well as their caregivers.⁵¹ Durstine et al¹⁵ suggest strategies for increasing participation and enjoyment, including establishing short-term goals, emphasizing variety and enjoyment, and providing positive reinforcement through periodic testing, recruiting family support of the exercise program, using progress charts to record achievements, and recognizing individual accomplishments. In addition, it is imperative that the individual's healthcare team supports the physical activity program.¹⁵ Rehabilitation professionals possess knowledge of impairments and functional limitations associated with disabilities in addition to basic exercise guidelines. This knowledge can be utilized to adapt existing exercise programs or assist in creating new ones to help promote physical activity in older adults with developmental disabilities.

CONCLUSION

Like all of us, older adults and the elderly with intellectual and other developmental disabilities need to be as physically active and fit as possible. Family members, support professionals, and professional service providers should create opportunities promoting an active and healthy lifestyle. Rehabilitation professionals, especially physical therapists and occupational therapists, are in unique positions to lead the community in organizing appropriate programs promoting fitness in this population. Comprehensive exercise programs should include 5 basic fitness parameters: muscle strength, muscle and

cardiovascular endurance, flexibility, and body composition. The National Center for Physical Activity and Disability⁵² suggests that cardiovascular fitness is the most important component and promotes walking, stationary cycling, dance videos, and miscellaneous activities such as jogging, swimming, hiking, stair climbing, rowing, and skating as examples to meet cardiovascular fitness.

Older adults with developmental disabilities have lower levels of physical activity or exercise than the general population. This article highlights some of the research efforts investigating barriers and facilitators to physical activity. While some studies have been conducted to examine the effects of

exercise programs, more studies need to be performed to learn about the effects of these programs in prevention of secondary health conditions related to inactivity. Fitness and healthcare professionals should work together to explore options for increasing physical activity among older adults with developmental disabilities. Rehabilitation professionals need to become more involved in planning exercise programs so that the specialized needs of individuals with developmental disabilities can be addressed. In addition, more research is needed about the effects of exercise programming for older adults with developmental disabilities so that beneficial programs can be replicated.

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