Supporting Inclusion in Recreation and Exercise:
Benefits, Quality Indicators, and Research

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Objectives

• Describe the impact of I/DD on physical health and on overall wellness and quality of life
• Describe the importance of exercise for various groups of individuals with I/DD
• Identify causes of low fitness levels for various groups of individuals with I/DD
• Identify barriers to participation in fitness/recreational activities
• Identify quality indicators for fitness/recreational activities
Aging with I/DD

Effects of aging experienced earlier than general population

Higher rates of particular health problems as compared with age-matched peers:

– Obesity
– Hypertension
– Increased cholesterol
– Heart disease
– Diabetes
– Respiratory infections
– Osteoporosis
Importance of exercise

Health and fitness has significant economic and social consequences
Impacts ADLs and functional skills
Prevent secondary chronic conditions
Affects employment opportunities
- Manual labor skills and stamina to sustain
Common barriers to long-term exercise participation

Pain
Fear of injury
Decreased energy level
Lack of transportation
Lack of staff awareness of disability and how to adapt
Inaccessible/inappropriate equipment
Lack of support for participation (dressing, transfers)
Cerebral Palsy

• CP is a nonprogressive lesion to the developing brain

• Can also affect sensation, perception, cognition, communication and behavior
Fitness considerations in Individuals with cerebral palsy

- Physical fitness is very low
- Risk for secondary conditions related to physical activity is greater than able-bodies peers
  - Obesity
  - Type 2 diabetes
  - Hypertension
  - Cardiovascular disease
Exercise Response

As compared with able-bodied peers -

• Higher heart rates, blood pressure, lactate concentrations for a given submaximal work

• Slightly lower peak physiological responses (10-20%)

• Up to 50% lower physical work capacity

• Decreased mechanical efficiency
Causes of low fitness levels

• Poor exercise habits
• Difficulty performing skilled movements
• Contralateral and ipsilateral muscle imbalances
• Poor functional strength
• Fatigue and stress
• Transient increase in spasticity and incoordination after strenuous exercise
Long-term effects of exercise training

• Physical adaptation and response to training
  – Peak O2 uptake and ventilatory threshold
  – Increased work rate at a given submaximal heart rate
  – Increased ROM
  – Improved coordination and skill of movement
  – Increased skeletal muscle hypertrophy and strength

• Improved sense of wellness, body image and ADL capacity
Initiating a program

• Comprehensive medical and health history
• What are individual’s needs, goals, and limitations?
• Effects of medications
Purpose of exercise testing

• Identify limiting factors for engagement in regular physical activity
• Identify risks for secondary conditions
• Determine functional capacity and limitations
• Determine appropriate intensity range for exercise – aerobic, strength, endurance
Exercise recommendations

- Improve health and increase daily functional activities
- Identify and mediate barriers to participation
- Abilities, interests, personal goals, enhances individual quality of life
- Allows independence
- Progression at individual rate and with principle of specific adaptations to imposed demands
Intellectual Disabilities

• Tend to be sedentary and rarely participate in exercise programs

• Significant risk for chronic health conditions
Determinants of exercise participation

- Personal characteristics
  - Age, level of adaptive behavior, health status
- Perceived benefits
- Socio-emotional barriers
- Access barriers
Social-emotional considerations

- Misinterpretation of social and emotional situations can cause inappropriate responses
- Difficulty generalizing information or learning from past experiences
Exercise considerations

• Motor abilities and skills typically delayed
• Lack of movement experiences
• Co-existing conditions – physical disabilities, obesity, hearing loss, visual impairments, autism, seizure disorders, sensory deficits
• Common problems
  – Overweight/Obesity
  – Body mechanics
  – Postural deviations
  – Balance
  – Risk for other diseases
Down Syndrome

- Decreased muscle tone
- Ligamentous laxity
- Perceptual difficulties
- Poor balance
- Hearing/vision problems
- Immature respiratory/cardiovascular systems
- Obesity - 20%
  - Inverse relationship between IQ and body mass
- Co-morbidities
Fitness considerations

As compared with able-bodies peers:

• Lower maximal heart rates and peak O2 consumption

• Wide interindividual variability

• Effects of sedentary lifestyle and lack of motivation during exercise testing
Fitness characteristics in DS

• Unable to achieve same cardiorespiratory fitness as those with ID who do not have DS
• Peak heart rates 30-35 contractions per minute lower
• Vo2 peak levels 30-35% lower than ID peers
Fitness characteristics in DS: Cardiorespiratory limitations

- Pulmonary hypoplasia
- Reduced peak ventilation
- Skeletal muscle hypoplasia
- High prevalence of circulatory abnormalities and heart defects
- Muscle strength typically 30-50% lower than able bodied peers
Effects of exercise training in DS

- Endurance combined with light, progressive resistance training increased VO2 peak
- Combined strength and resistance training may have larger impact on cardiovascular fitness than aerobic exercise alone
- Strong correlation between leg strength and VO2 peak
- Combination of exercise training and caloric restriction most effective for weight loss
Endurance exercise testing

• Reliable and valid
  – 1 mile RWFT
  – 1.5 mile run/walk

• Validated field tests for ID
  – 1-mile Rockport Walk Fitness Test
  – 20 m. shuttle run
  – 16 m. shuttle run
  – 600 yd. run/walk
Strength testing in ID

• Validated isokinetic and isometric protocols

• Caution with use of free weights
Keeping individuals with ID engaged

- Enhancing motivation
  - Individual preferences
  - Age appropriate (Modify for mental age and functional ability)
  - Demonstration, modeling, physical prompting
  - Simple verbal instruction
  - May need physical assistance or equipment adaptation
  - Music
  - Short exercise sessions
  - External pacers
Keeping individuals with ID engaged

• Response to resistance training appears to be same as general population – standard exercise guidelines
• Intensity difficult for this population
• Precautions for hypotonia and postural alignment
Hearing-impairments

• Hearing loss does not alter exercise response
• Deaf individuals (children and adults) have higher incidence of overweight/obesity
• Fewer social opportunities, lower self-esteem, lack of self-confidence, isolation
• Sensorineural hearing loss may affect balance and spatial orientation
  – Secondary effect on cardiorespiratory efficiency
Exercise benefits for those with HI

• Opportunities to improve socialization skills in group activities
• Improvements in balance and spatial orientation through practice of movement skills
• Increased improved self-image and self-confidence
• Decreased social isolation
Exercise considerations

- Use communication preference of the individual
- Experienced speech readers only capture 30% of spoken language
- Be aware of balance and spatial orientation problems
Visual impairments (VI)

- Does not alter exercise response
- Blindness by loss of peripheral vision field leads to greater difficulty in mobility than lack of acuity
- Associated poor balance, forward head posture, low cardiovascular fitness, obesity, lack of confidence, timidity, self-stimulatory behaviors, fewer social skills could affect exercise response
Visual impairments

- Decreased walking speed
- Increased number of collisions with objects and people in the environment
- Increased risk of falling and fear of falling
- Reduced mobility and loss of independence
- Some of these effects are exacerbated under conditions of poor illumination or low contrast
- Visual field extent, contrast sensitivity, and motion thresholds are associated with mobility performance
Exercise benefits for those with VI

– Opportunities for socialization, practice balance skills, improve confidence, self-image and spatial orientation

– Cardiovascular fitness, decreased obesity

– Increased confidence and decreased fear of falling
Adults with Learning Disabilities

• Sarcopenia develops at lower age than in general population
• Positively associated with mobility impairment and inflammation
• Negatively associated with body mass index (BMI)

• Bastiaanse L et al, Research in Developmental Disabilities, 33, 6, 2004-2012
Success requires options

Personal training
Independent exercise
Fitness assistance
Group activities
Activity parameters

- Frequency, intensity, duration
- Even mild physical activity can prevent secondary conditions
- Address common issues associated with aging
Social inclusion through recreation

• Opportunity
• Motivation
• Planning participation
  – Fun
  – Based on individual’s preferences
  – Opportunities to make friends
Quality Indicators

• Administrative support
  – Mission and philosophy
  – Staff training
  – Reflects existing laws

• Cultural competence
  – Programs account for cultural diversity
  – Programs offered are valued by cultural and peer groups
  – Fitness culture representing abilities and ages where the individual is comfortable
  – Personal challenge and choice
Quality indicators

• Program offerings
  – Physical
  – Affordable
  – Social
  – Supports and accommodations
Quality indicators

- Staff trained in characteristics of different disabilities and effects of aging
- Staff trained to appropriately adapt activities for different disabilities
- Suitable equipment and activities
- Initial screening of physical abilities and personal goals
- Ongoing assessment of needs, preferences, abilities with modifications as needed
- Support of social interaction
Organizational barriers

- Attitudinal
- Administrative
- Architectural
- Programmatic

Solutions

• Values – respect, appreciation, and acceptance of all individuals
• Effective social inclusion techniques – disability awareness education
• Peer partners
• Cooperative learning
Positive effect of fitness/recreational activities on well-being

- Strength and flexibility
- Maintain bone integrity
- Improve/maintain cardiovascular function
- Weight control
- Improve mental health/decrease stress
- Sharpen cognitive abilities
- Social activity
- Maintain ability to engage in other social activities
The benefits of fitness/recreational activities can be available to all with knowledge and training, embracing values, individualized assessment, and thoughtful planning.