# Supporting Inclusion in Recreation and Exercise:

Benefits, Quality Indicators, and Research

Cindy Potter, PT, DPT, PCS

# 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

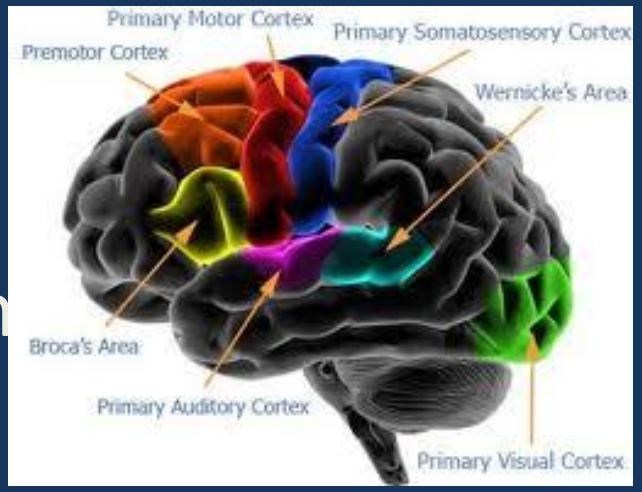
Affects employment opportunities

- 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 threshhold
  - 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

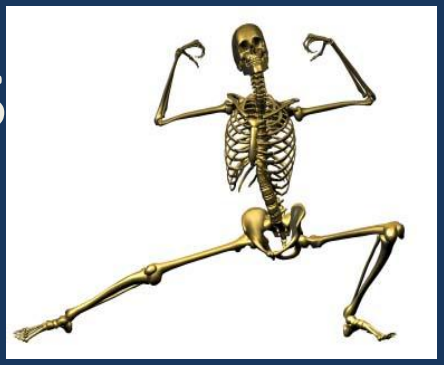
# Initiating a program

- 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

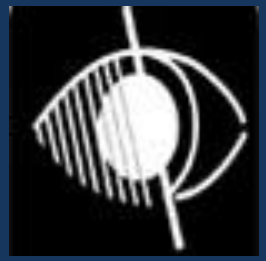
# Exercise benefits for those with HI

- 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

- Heyne, Solving Organizational Barrriers to Inclusion Using Education, Creativity and Teamwork. Available at http://ici.umn.edu/products/impact/a62/over9.html

# 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.**