A Community-based Fitness Program for Adults with Cerebral Palsy

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Objectives
- Recognize the role of fitness and physical activity in the promotion of health, participation and the prevention of secondary conditions for individuals with cerebral palsy.
- Integrate information from current research and model programs into the design and implementation of fitness and physical activity programs for individuals with cerebral palsy.
- Recognize the need to educate community-based fitness facilities and staff on the unique needs of adults with childhood onset disability.

Physical Fitness
- Capacity to successfully meet the present and potential physical challenges of life
- Allows daily activity and leisure and enough energy left for emergency

Physical Activity
- Any body movement produced by skeletal muscles that results in energy expenditure (Caspersen, 1989)
- Capacity - What can they do, i.e. level of ability
- Performance - What do they do, i.e.

Factors Influencing Health and Fitness
- Physical (age, gender, growth)
- Heredity
- Environmental
- Social/Emotional (motivation)

Threshold for Function Shifts
- CAPACITY: Nutrition, Endurance, Strength, Flexibility, Cognition, Motivation
- FUNCTIONAL RESERVE
- THRESHOLD
- AGE: Intervention
- Secondary Conditions Co-morbidities
Conceptual Model

- Aerobic fitness
- Strength
- Pain
- ROM
- Spasticity

Intervention

Exercise/P

Outcomes

- Economy of Motion
- HRQL
- Activity Level
- Participation
- Pain

Adulst with CP

Health-Related Fitness Components

- Cardiorespiratory Endurance
- Muscle Strength
- Muscle Endurance
- Flexibility
- Body Composition
  - fat free mass (muscle)
  - bone mineral density (BMD)

Stages of Change

- Consideration
- Action
  - Precontemplation
  - Contemplation
  - Preparation
  - Action
  - Maintenance

FITT Principles

- Frequency (days per week)
- Intensity (mild, moderate, vigorous)
- Type (aerobic, anaerobic)
- Time (duration- minutes)

Outcomes

- Muscle Performance (Strength)
- Cardiorespiratory/Aerobic Fitness
- Body Composition
- Flexibility
- Self Efficacy/Concept/Perception
- QOL
- Caregiver Burden
- Activity
- Participation

Assess Physical Activity

- Physical Activity and Disability Survey (PADS) National Center for Health, Physical Activity and Disability
  - Accelerometers
  - Actigraph
  - VitaMove
  - Pedometers (w/c)
- Step Watch
Participation

- Life Habits Questionnaire (LIFE-H30 is short form). Noreau et al., 2004
- Community Integration Measure (CIM) McColl et al., 2001
- COPM Law et al. 1994

Outcomes

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Assessment</th>
<th>Occasion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Visual Analog Scale</td>
<td>Pre, post, 6 mo</td>
</tr>
<tr>
<td>Functional Mobility</td>
<td>Gross Motor Function Measure (GMFM)</td>
<td>Pre, post, 6 mo</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Modified Ashworth Scale</td>
<td>Pre, post, 6 mo</td>
</tr>
<tr>
<td>Activity Level</td>
<td>Physical Activity &amp; Disability Scale</td>
<td>Pre, 6 mo</td>
</tr>
<tr>
<td>Ventilatory Efficiency/ Economy of Movement</td>
<td>Peak VO2</td>
<td>Pre, post, 6 mo</td>
</tr>
<tr>
<td>Health Related Quality of Life</td>
<td>SF-12</td>
<td>Pre, 6 mo</td>
</tr>
</tbody>
</table>

Monitor Exercise Intensity

- Pulse rate
- Talk test
- Heart Rate Monitor
- Polar (E200)
- Ratings of Perceived Exertion
  - Borg RPE Scale
  - Modified Borg Scale

Clinical Implications

- Adults aging with CP do develop secondary impairments/conditions as a result of but unrelated to their primary condition.
- Aquatic exercise is a feasible and effective community intervention to improve higher level motor skills related to gross motor function and mobility.
- There is potential to improve BMD in adults with CP through high intensity aquatic resistive exercise.
- High compliance is encouraging towards participation in accessible community-based physical activity.

Issues

- Dose (intensity, load, duration)
- Endurance
- Motivation
- Safety
  - Consider functional impairments
  - Cognitive level
  - Falls #1 concern
- Accessibility
- Man Power
- Transportation
- Advertising
- Sustainability?
Barriers to Exercise and Fitness for Adults

- Lack of knowledge by the consumer to the availability of programs and facilities (Rimmer et al., 2004)
- Diminishing functional reserve
- Lack of accessible facilities and educated staff and liability
- Third party payer support
- Community support
- Cost
- Lack of evidence to support the need
- Transportation

Facilitators

- Motivation
- Equal Partners in program
- Facility Support
  - Staff training
  - Accessible locker rooms, pools and gyms
  - Scholarships for memberships
- Community Support
  - Workout partners

Program Planning

- Generalized Model for Health Promotion
  - Understanding & engaging
  - Assessing needs
  - Setting goals and objectives
  - Developing an intervention
  - Implementing the intervention
  - Evaluating the results

(McKenzie, Neiger, Smeltzer, 2005)

Future Research

- What is the “active ingredient” for exercise/PA?
- How do you select an intervention that “becomes self-reinforcing”?
- What is the effectiveness of current interventions in promoting health and wellness and preventing the “negative spiral” (i.e. musculoskeletal and neuromuscular impairments, loss of ambulation and resulting secondary medical conditions) in individuals with childhood onset disability?

References


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