Physical Activity Levels of School-Aged Children in a Ballroom Dance Classroom Program

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Disclosure Slide

• I have no relevant financial relationships with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in this CME activity.

• I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
Background

- Childhood obesity is increasing
- School based programs are used to modify physical activity behaviors
- Few programs have been evaluated and established programs may not meet recommendations of maintaining the appropriate level of activity
Healthy People 2010

- Moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days
- Vigorous physical activity that promotes cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion
- Daily physical education for all students
- At least 50% of school physical education class time spent being physically active
Physical Activity

• As recommended in June 2007 by the Expert Committee (AMA, HRSA, CDC):
  
  – Increasing physical activity in school through intervention programs and through creating school environments that support physical activity in general
  
  – Children should participate in at least 60 minutes of moderate to vigorous physical activity accumulated throughout the day in enjoyable activity

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Project Objectives

• To describe the levels of physical activity achieved by students in a ballroom dance program

• To determine if students meet physical activity recommendations
  – To determine if a class composed of ballroom dance engages children in moderate to vigorous physical activity (MVPA) for at least 50% of class time
• **Hypothesis:** A dance program for school-aged children meets national recommendations to engage children in MVPA for at least 50% of class time.

• **Long term objective:** To establish effective school programs to modify behaviors in children that may impact subsequent morbidity and mortality as related to overweight.
Methods

- Descriptive prospective study
  - School based arts in education program
  - Public schools
  - 4th and 5th grade students
  - 10 week program consisting of 45-60 minutes of class per day twice a week
  - Merengue, rumba, foxtrot, waltz, tango, swing, line dances
Methods

- Inclusion criteria: children enrolled in the 4th or 5th grade in 2 public elementary schools in New York City taking part in the ballroom dance curriculum (February – June 2006)

- Exclusion criteria: children without parental consent

- IRB and NYC DOE approved study
Measurements

- Random classes during first half and second half of program

- Physical activity assessments
  - Subjective: System for Observing Fitness Instruction Time (SOFIT) observation method
    - Validated HR observation system
  - Objective: Heart rate monitoring
    - Determine % time subject maintains a HR representative of MVPA (≥25% HRR)
Results

- 79 (96.3%) of 82 subjects enrolled
- Age: 10.3 years old (8.5-11.9)
- Gender: 35 (44.3%) male; 44 (55.7%) female
- Ethnicity: 88% Hispanic/Latino, 5% African American, 1% White, 1% Other, 5% Unknown
- BMI:
  - Overweight: 24%
  - Obese: 34%
  - Normal weight: 42%
# SOFIT Observations

<table>
<thead>
<tr>
<th>Activity (% class time)</th>
<th>1st half</th>
<th>2nd half</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting</td>
<td>9.2%</td>
<td>4.0%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Standing</td>
<td>40.9%</td>
<td>29.0%</td>
<td>34.1%</td>
</tr>
<tr>
<td>Walking</td>
<td>16.3%</td>
<td>16.8%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Very Active</td>
<td>33.7%</td>
<td>50.2%</td>
<td>43.1%*</td>
</tr>
<tr>
<td>Mean Minutes in MVPA</td>
<td>22.5</td>
<td>35.7</td>
<td>30.1</td>
</tr>
<tr>
<td>% of class time in MVPA</td>
<td>50.0%</td>
<td>67.0%</td>
<td>59.7%</td>
</tr>
<tr>
<td>Mean lesson length (min)</td>
<td>44.4</td>
<td>51.1</td>
<td>48.2</td>
</tr>
<tr>
<td>Overall Lesson Length (min)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*22.0 minutes*
## HR Monitoring

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; half</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; half</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td># of students with HR recordings</td>
<td>14</td>
<td>62</td>
<td>76</td>
</tr>
<tr>
<td>Mean HR during class (bpm)</td>
<td>118.2</td>
<td>116.5</td>
<td>116.8</td>
</tr>
<tr>
<td>% of time at ≥25% HRR</td>
<td>63.4%</td>
<td>69.7%</td>
<td>68.6%</td>
</tr>
<tr>
<td>% of students with ≥25% HRR for ≥50% of class time</td>
<td>64.3%</td>
<td>72.6%</td>
<td>71.1%</td>
</tr>
</tbody>
</table>
Limitations

• Direct comparison not available between subjective SOFIT data measuring classroom activity and objective HR monitoring data recording individual activity

• Standardized curriculum, but variability seen

• Differences in population, geography, and season affecting level of activity may limit generalizability
Conclusions

• A ballroom dance program does meet national recommendations of providing at least 50% of class time in MVPA.

• Recommendations for minimal time spent daily in both moderate and vigorous activity were met.

• Increasing time in MVPA is demonstrated as program progresses.

• Dance may be an appropriate means for children to achieve MVPA.
Future Directions

- Impact of the program on BMI and sustainability of results
  - Potential confounders: other activity, baseline fitness levels, dietary habits
  - Increasing length of intervention
Special Thanks To:

• PS 115 and 128
• GCRC staff at Weill Cornell Medical College
• The American Ballroom Theater
QuickTime™ and a decompressor are needed to see this picture.