The Effects of a Structured Pedometer Exercise Program on Blood Pressure and BMI of Children Aged 9-12 Years

Stephanie A. Recko
University of Dayton, stander@udayton.edu

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The Effects of a Structured Pedometer Exercise Program on Blood Pressure and BMI of Children Ages 9-12 Years

Stephanie A. Recko
Advisor: Dr. Lloyd Laubach

Introduction

- Sedentary lifestyle becoming the natural lifestyle of people in the United States
- About 1 in 3 U.S. adults is obese (BMI>40)
- 17% of children and teens are affected by obesity
- CDC defines child obesity by using “BMI-for-Age”
  - A percentile ≥ 95th is considered obese

Current Pedometer Research

Dr. Dena Bravata
- Meta-analysis of current pedometer studies
  - Mostly women (85%)• Mean age of 49 years
Research with Children
  - Dr. Catrine Tudor-Locke
  - Recommendation for children ages 6-12
    - Females: 11,000 steps/day
    - Males: 13,000 steps/day
  - Found that from age 6-12
    - Females take on average 3,272 steps less than recommended
    - Males take on average 3,864 steps less than recommended

Limited Research conducted on developing a walking program for children

Purpose of Study

- To determine the effect of a structured pedometer walking program on blood pressure and BMI of children aged 9 to 12 years
- Experimental hypothesis: The program will help motivate children to become more active and improve their blood pressure and BMI

Methods

- Case study of 5 children (began with 10, but 5 subjects dropped-out)
  - 3 males, 2 females
  - Mean age: 10.6 ± 1.34 years
  - BMI range: 15.4 to 27.8 kg/m²
- Pedometer used: Yamax Digi Walker SW-200
  - Dr. Patrick Schneider research for accuracy and validation
- Pre and Post Testing
  - Height and weight measured without shoes and in athletic wear
  - Blood pressure taken twice on right arm for both pre and post testing
  - Data statistically analyzed using SPSS v18
- Both group and individual results examined

Case Results

- Subject 2: 12 year old female
  - BMI category: healthy weight
  - Blood pressure: normal

Discussion

- No statistically significant changes
  - Small number of subjects
  - Short period of time
- All subjects improved number of daily steps
  - Mean improvement of 2628.7 steps/day
- 3 of the 5 subjects saw weight gain
  - Growth, poor diet, lack of further exercise, etc.
- Further research needs to be conducted in order to make more definite conclusions

Group Results

Practical Applications

- May be beneficial to conduct during the school year as opposed to summer
  - Eating schedule
  - Possibly less drop-outs due to vacations
- Bigger pool of subjects
- Long-term results
  - Will improvements made continue or more improvements?
  - Methods of body composition instead of BMI

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>t (&gt;3.18)</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (lbs)</td>
<td>104.96</td>
<td>32.73</td>
<td>-0.947</td>
<td>.336</td>
</tr>
<tr>
<td>Height (in)</td>
<td>66.4</td>
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<td>BP Systolic (mm/Hg)</td>
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<td>Daily Step (count)</td>
<td>7326.6</td>
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Daily steps improved by 2,628.69 steps

Body mass index-for-age percentiles: Boys, 2 to 20 years

Procedure

- Length: 3-4 weeks
- Each child given a pedometer and log book to record daily steps
  - Parents asked to initial after each data entry
- Preliminary step counting performed to define baseline for average number of daily steps
- Daily step goal was given for each child

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Case Results

- Subject 5: 10 year old male
  - BMI category: healthy weight
  - Blood pressure: normal

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