Simulated Effects of School Policy Changes in After-School Sports on Sport Participation Rates among North Carolina Middle School Students

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Study Background

• Youth sport programs can provide essential physical activity
  • WHO (2003)

• Importance of school settings to provide sport programs
  • Especially for rural and socio-economically disadvantaged youth
    • Edwards (2009)

• Current school policies may limit participation in school-sponsored co-curricular sports
  • Casper et al. (In press)
Study Background

- Two specific policies in North Carolina
  - 6th Graders not allowed to participate in competitive interscholastic sports
  - Prioritization of interscholastic sports over intramural sports and non-competitive activities
    - Increased efficacy of intramurals and non-competitive activities to increase participation and rates of physical activity
Study Objectives

• The purpose of this study was to examine the potential impact of policies changes that would increase both the reach and efficacy of middle school resources for co-curricular physical activity

• Allow 6th grade participation in interscholastic sports
• Provide intramural sports and non-competitive activities
Methods

• Simulation Analysis

• Data Sources
  • Individual-level data
    • 4 North Carolina Middle Schools (2009) (n = 2,582)
    • NELS:88 (1988) (n = 27,394)
  • Activity-level data
    • SOPLAY (2009) (1,188 observations)
  • School-level data
    • 325 NC Middle Schools (2009)
      • SHPPS-based instrument
Methods

- **Assumptions**
  - Sampled participation patterns were representative
  - Activity levels were constant across activity type
  - Equilibrium of supply and demand
  - Fixed roster limits for competitive sports
    - Grade-level differences on “making the cut”
  - Types of sport participation
Methods

- **Initial calculations**
  - **Stratified approach**
    - Grade-level, Race/Ethnicity, Economically disadvantaged status, and sport program type
    - OLS regression models predicting participation rates
  - **Participation style**
    - Estimated participation by activity and delivery system

<table>
<thead>
<tr>
<th>Type of sport participation</th>
<th>Pct. Of Participants in IS Only School</th>
<th>Pct. Of Participants in IM Only School</th>
<th>Pct. Of Participants in IM/IS School</th>
<th>Avg. No. of Activities/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Only</td>
<td>48.6</td>
<td>50.4</td>
<td>28.5</td>
<td>3</td>
</tr>
<tr>
<td>Intramural (IM) Only</td>
<td>--</td>
<td>22.5</td>
<td>8.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Interscholastic (IS) Only</td>
<td>19.8</td>
<td>--</td>
<td>13.0</td>
<td>1.3</td>
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<tr>
<td>IM &amp; IS</td>
<td>--</td>
<td>--</td>
<td>14.7</td>
<td>2.4</td>
</tr>
<tr>
<td>IM &amp; Community</td>
<td>--</td>
<td>27.1</td>
<td>5.6</td>
<td>5</td>
</tr>
<tr>
<td>IS &amp; Community</td>
<td>31.6</td>
<td>--</td>
<td>9.3</td>
<td>3.8</td>
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<tr>
<td>IM, IS, &amp; Community</td>
<td>--</td>
<td>--</td>
<td>20.0</td>
<td>5</td>
</tr>
</tbody>
</table>
Baseline Estimates

- State-level estimates of current sport participation and physical activity levels
  - **62.3%** of all middle school students
    - 6th Graders: **59.4%**
    - 7th/8th Graders: **63.4%**
  - Suggests **124,502 not participating statewide**
  - Disparities based on economic status

<table>
<thead>
<tr>
<th>Economic Status</th>
<th>Total Students</th>
<th>Participation Rate</th>
<th>Avg. METs during afterschool (All students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economically disadvantaged</td>
<td>146,053</td>
<td>52.3%</td>
<td>2.39</td>
</tr>
<tr>
<td>Non-economically disadvantaged</td>
<td>184,009</td>
<td>70.2%</td>
<td>2.70</td>
</tr>
</tbody>
</table>
Simulation of Policy I

- Simulation of 6th Grade Students Allowed to Play School Sports
Simulation of Policy 1

- Simulation of 6th Grade Students Allowed to Play School Sports
Simulation of Policy I

- Simulation of 6th Grade Students Allowed to Play School Sports

![Graph showing Play Sports and Avg. METs comparison between Current and Simulation.](image)
Policy Comparisons

Reach - Participation Rates

- Current participation rate
- Simulation 1 (6th grade IS Participation)
- Simulation 2 (Univeral IM Only)
- Simulation 2 (Full Opportunity)

Lines represent:
- ED
- Non-ED
- Overall
Policy Comparisons

**Efficacy - Average METs**

- **Current participation rate**
- **Policy 1 (6th grade IS Participation)**
- **Policy 2 (Universal IM Only)**
- **Policy 2 (Full Opportunity)**

Legend:
- *ED*
- *Non-ED*
- *Overall*
Key Findings

- 39% of NC middle school students, and nearly half economically disadvantaged students, may not be participating in sport
- On its own, the removal of restriction on 6th grade participation in interscholastic sport would not increase sport participation among all middle school students
- The adoption of policies to provide intramural sports may have the greatest potential to increase sport participation rates and average METs among middle school students, particularly economically disadvantaged
Questions & Comments

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Simulation of Policy 2

- Universal adoption of intramural only school sports
  - Overall 1.05% increase in sport participation and average METs increase of 5.4%

<table>
<thead>
<tr>
<th>Economically Disadvantaged</th>
<th>Participation Rate</th>
<th>Participants</th>
<th>Average METs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>52.3%</td>
<td>76,386</td>
<td>2.39</td>
</tr>
<tr>
<td>Simulation</td>
<td>56.1%</td>
<td>82,009</td>
<td>2.58</td>
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<tr>
<td>Difference</td>
<td>+ 7.4%</td>
<td>+ 5,623</td>
<td>+ 7.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Participation Rate</th>
<th>Participants</th>
<th>Average METs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>70.2%</td>
<td>129,174</td>
<td>2.70</td>
</tr>
<tr>
<td>Simulation</td>
<td>68.3%</td>
<td>125,702</td>
<td>2.82</td>
</tr>
<tr>
<td>Difference</td>
<td>- 2.7%</td>
<td>- 3,472</td>
<td>+ 5.4%</td>
</tr>
</tbody>
</table>
Simulation of Policy 2

- Universal Adoption of “Full Opportunity” Sports
  - Overall 21.2% increase in sport participation and average METs increase of 5.1%

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</tr>
<tr>
<td>Simulation</td>
<td>71.5%</td>
<td>104,455</td>
<td>2.65</td>
</tr>
<tr>
<td>Difference</td>
<td>+ 36.8%</td>
<td>+ 28,069</td>
<td>+ 10.9%</td>
</tr>
</tbody>
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<td>2.70</td>
</tr>
<tr>
<td>Simulation</td>
<td>78.6%</td>
<td>144,609</td>
<td>2.74</td>
</tr>
<tr>
<td>Difference</td>
<td>+ 11.8%</td>
<td>+ 15,435</td>
<td>+ 1.5%</td>
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