Association of Afterschool Programs’ Contextual Characteristics and Children’s Moderate-to-Vigorous Physical Activity and Time Spent Sedentary

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Comprehensive Approach to School-Wide PA Promotion


PA Recommendations for Afterschool Programs (ASPs)

• Children engage in MVPA for 30 minutes

• Play outdoors whenever possible

• Not all ASPs have adequate outdoor facilities
Defining ASPs

• Characteristics:
  • **Time offered:**
    • M-F, 3-6pm, throughout the school year
    • Avg. 8.1 hours/week
  • **Schedule:**
    • homework time, snack, enrichment activities (crafts, arts, music), and PA opportunities
  • **Location:**
    • Varies (schools, community organizations, recreation facilities, churches, etc.)


ASP Setting

- Ideal setting to promote PA
  - 8.4 million youth
    - Age 5-18 years old (K-12)
    - Predominantly elementary age
    - 40% low-income schools
  - Most youth are not meeting PA recommendations in the ASP setting

ASP Setting

• Little is known about this setting and its influence on MVPA and sedentary behavior

• Most conclusions have been drawn from self-report data

  • Lack of objective measurements in the ASP setting
Purpose

• To examine the association between ASP contextual characteristics and children’s activity levels (MVPA and time spent sedentary) while attending an ASP

• Contextual characteristics of interest:
  • Activity Location: Indoor vs. Outdoor
  • Activity Structure: Organized vs. Free Play
Methods
Methods: Sample

• Results presented are baseline data as part of a larger group RCT

• 20 ASPs across South Carolina
  • Diverse sample:
    • Faith-based, Parks and Recs, School-based, Community-based
  • Serving 1,800+ youth
**Methods: Data Collection**

- **Program Demographics**
  - Avg enrollment: 88 kids (30-162 kids)
  - Avg Scheduled PA Time: 66 min/d
  - Avg ASP Length: 204 min/d

- **Child Demographics**
  - 5-12yrs, 50% girls, 55% W, 37% AA
  - Measured **1,365** children via accelerometry
    - (75% of children enrolled)
Methods: Measures

- **Physical Activity Levels:** MVPA and Sedentary
  - Accelerometry (Evenson and Matthews cutpoints)
  - Time on and off recorded

- **Activity Location:** Indoor vs. Outdoor
  - ActiGraph GT3X+ - Ambient Light Sensor
    - LUX value 32 under clothing (5sec epoch)
    - ROC Curve - AUC 0.93, Sens 92.7, Spec 92.6

- **Activity Structure:** Free vs. Organized Play
  - Direct Observation using SOSPAN
  - High Frequency Momentary Time Sampling

Methods: Analyses

• Mixed Model Regression
  • Multiple Days nested within Children nested within ASPs

• Separate models for Indoor and Outdoor MVPA and Sedentary
Results
Proportion of MVPA Spent Inside and Outside by ASP

One BAR Represents One ASP

Boys

Most MVPA Indoors

Most MVPA Outdoors

50/50 MVPA In/Out

Girls

Boys 49.7%

Girls 51.3%

MVPA Outside

Proportion of MVPA Spent Inside and Outside by ASP

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Girls

Boys 49.7%

Girls 51.3%

MVPA Outside
Modest association with total MVPA and % accumulated Outdoors - **Girls**

- **Bubble Size = Sample Size**
- **1 Bubble = 1 ASP**

- **High levels of MVPA**
- **High % accumulated outdoors**

- **MVPA 13.9 min/d**

- **50% In/Out**

- **High levels of MVPA**
  - **Low % accumulated outdoors**

**Minutes of MVPA/day during the ASP**
Modest association with total MVPA and % accumulated Outdoors - Boys

Bubble Size = Sample Size
1 Bubble = 1 ASP

High levels of MVPA
High % accumulated outdoors

50% In/Out

MVPA 17.9 min/d

High levels of MVPA
Low % accumulated outdoors
Higher Free Play to Organized Ratio Associated with Greater Time Sedentary Indoors

Model Derived Estimates

Girls

- INDOORS: 54min (50/50), 62.4min (Free Play Only)
- OUTDOORS: 26.5min (50/50), 27.2min (Organized Only), 25.7min (Free Play Only)

Boys

- INDOORS: 53.1min (50/50), 47.7min (Organized Only), 58.6min (Free Play Only)
- OUTDOORS: 21.4min (50/50), 19.5min (Organized Only), 23.4min (Free Play Only)

+8.4min
Sedentary over 50/50
Indoors

+5.5min
Sedentary over 50/50
Indoors
Higher Free Play to Organized Ratio Associated with Greater Time MVPA Indoors and Outdoors

Model Derived Estimates

Minutes Spent MVPA during ASP

Girls
- 50/50: 9.7
- Organized Only: 8.6
- Free Play Only: 10.8

Outdoors
- 50/50: 15
- Organized Only: 12
- Free Play Only: 18

Boys
- 50/50: 14.9
- Organized Only: 12.4
- Free Play Only: 17.3

INDOORS

+3.0 min MVPA over 50/50 Outdoors

+3.4 min MVPA over 50/50 Outdoors

MVPA over 50/50

+2.4 min MVPA over 50/50 Indoors

+2.4 min MVPA over 50/50 Indoors

MVPA over 50/50

50/50
Organized Only
Free Play Only

MVPA over 50/50

INDOORS
OUTDOORS
INDOORS
OUTDOORS

Policy to Practice in Youth Programs | Active Living Research | March 2014
Conclusions and Implications
Conclusions and Implications

• Current policies support outdoor play as much as possible

  • A modest relationship between MVPA minutes and % of time spent outdoors

• Playing outdoors may not be an option for some ASPs

  • Maximize PA within available resources
    • (i.e. indoor and outdoor PA spaces)
Conclusions and Implications

• Play structure:
  • Free play can only provide so much to daily activity levels
  • Developing strategies to improve the quality of organized games
  • Increase staff skills in facilitating organized play opportunities
Conclusions and Implications

- **Higher Sedentary Indoors** during Free Play
  - More non-active options
    - Computers, Chairs, Tables, Games
    - Girls observed choosing non-active options

- **Higher MVPA Outdoors** during Free Play
  - Organized PA poorly organized
    - Associated with increased lines, elimination, idle time, and less activity equipment
    - Limits activity levels - LET US Play
Questions