Newly Implemented Comprehensive School Physical Activity Programs and Children’s Physical Activity

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www.lsuactiveschools.org

Active Living Research
Reaching the goal of 60 min./day

- Parks (access): 1
- Modified recess: 5
- Modified playgrounds: 6
- Standardized PE curricula: 6
- Afterschool activity programs: 10
- Parks (renovated): 12
- Walk/bike to school: 16
- Classroom activity breaks: 19
- Mandatory PE: 23

(USDHHS, 2012)
Whole-of-School Approach (IOM, 2013)

Physical Education

Physical Activity During School

Physical Activity Before and After School

Staff Involvement

Family & Community Engagement

60 Minutes

Comprehensive School Physical Activity Program (CSPAP)

Erwin et al. (2013). CSPAP: A review;
Who leads a CSPAP?

NASPE survey: (2011)
Elementary (16%); Middle school (13%); High schools (6%)

“The expert and ‘champion’ for physical activity in and around the school day” (Beighle et al., 2009; Castelli & Beighle, 2007)
CSPAP Professional Development (PD) program for PE Teachers:

1. Attend a one day training workshop
2. View and complete 3 Modules: (Public Health, Advocacy, Sustainability)
3. Pre and post CSPAP assessments (Programs, Policies, Teacher Efficacy)
4. Upload and implement an ACTION PLAN
5. Submit artifacts (i.e., documentation)

Steps 2-5: Trainer consultation & technical assistance

(DPA duties, Carson, 2012)
Training Workshops 2011-2012

- **2011**
  - PE Teachers: 369
  - PETE Faculty: 44
  - School/District Staff (Health, PE): 22
  - KIN Students: 6

- **2012**
  - States: Nevada, Texas, Kentucky, Massachusetts, Minnesota, and California are highlighted.
## 5 Louisiana Trainings ‘12-’13

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>M</th>
<th>F</th>
<th>Elem</th>
<th>Sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baton Rouge</td>
<td>5.30.12</td>
<td>9</td>
<td>29</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>2. Baton Rouge</td>
<td>5.31.12</td>
<td>8</td>
<td>21</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>3. Lafayette</td>
<td>8.25.12</td>
<td>12</td>
<td>21</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>4. Ruston</td>
<td>5.23.13</td>
<td>3</td>
<td>22</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>5. Baton Rouge</td>
<td>5.28.13</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Total:
- 34 locations
- 102 schools
- 60 parishes

- 136 PE Teachers
- 109 Schools
- 19 Parishes

### Map
- Baton Rouge
- Lafayette
- New Orleans
- Lake Charles
- Alexandria
- Ruston
- Monroe
- Shreveport

Legend:
- 25+ schools
- 6-10 schools
- ≤ 5 schools
Aim #1: PD Impact on Youth PA

The purpose of this quasi-experimental, cluster controlled study was to evaluate the impact of the CSPAP PD program on changes in the PA levels of underserved 9-14 year-old children for one academic year post training.
Target Population: High Poverty and Minority Louisiana Public Schools (2011 LA Avg: > 67.2% Free/Reduced Lunch, > 52.5% minority)

- Assessed for eligibility ($N = 72$ Parishes, 800 schools)
- DOE contacted Parish PE Coordinator who distributed e-mail invites
- Consented full-time Elementary & Middle School PE Teachers ($n = 163$)

Nonrandomized Clusters: Summer Availability (Teacher Experience; Gender)

Treatment Teachers
DPA Trained in Summer 2012 ($n = 109$)
Consented (10%)
Teacher Subsample ($n = 11$)
Randomly selected students (10%) from 9-14 year old roster ($N = 239$)

Waitlist Control Teachers
DPA Trained in May 2013 ($n = 67$)
Consented (10%)
Teacher Subsample ($n = 5$)
Randomly selected student (10%) from 9-14 year old roster ($N = 114$)
Overall Research Design

- **Waitlist Control Teachers** ($n = 36$)
- **Treatment Teachers** ($n = 100$)

**CSPAP mentoring & resources via Moodle website (Artifacts)**

- 5 school day student PA & logs ($n = 5$ teachers)
  - May - June 2012
- 5 school day student PA & log ($n = 5$ teachers)
  - Feb. – April 2013
- 5 school day student PA & logs ($n = 11$ teachers)
  - Sept – Nov. 2012
- 5 school day student PA & log ($n = 11$ teachers)
  - May 2013

DPA Trained
Participants

▶ 16 teachers:

<table>
<thead>
<tr>
<th>2 Groups</th>
<th>F</th>
<th>M</th>
<th>Novice (1-5 yr)</th>
<th>Veteran (6-20 yr)</th>
<th>Senior (21+ yr)</th>
<th>Elem</th>
<th>MS</th>
<th>District Poverty</th>
<th>District Minority</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 Treatment</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>7</td>
<td>73%</td>
<td>66%</td>
</tr>
<tr>
<td>5 Control</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>71%</td>
<td>57%</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>72%</td>
<td>61%</td>
</tr>
</tbody>
</table>

▶ 353 students:

<table>
<thead>
<tr>
<th>F</th>
<th>M</th>
<th>Age (yrs)</th>
<th>Height (inches)</th>
<th>Weight (lbs)</th>
<th>BMI (kg/m²)</th>
<th>Grade</th>
<th>Minority</th>
</tr>
</thead>
<tbody>
<tr>
<td>198</td>
<td>155</td>
<td>11.0</td>
<td>58.8</td>
<td>103.7</td>
<td>20.9</td>
<td>5th</td>
<td>218</td>
</tr>
<tr>
<td>(1.4)</td>
<td>(4.8)</td>
<td>(33.9)</td>
<td>(5.3)</td>
<td>(4&lt;sup&gt;th&lt;/sup&gt;-8&lt;sup&gt;th&lt;/sup&gt;)</td>
<td>62%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sample CSPAP interventions during treatment

<table>
<thead>
<tr>
<th>CSPAP component</th>
<th>New PA opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
<td></td>
</tr>
<tr>
<td>During School</td>
<td>Classroom exercises (n=3)</td>
</tr>
<tr>
<td></td>
<td>PA curricular integration</td>
</tr>
<tr>
<td></td>
<td>PA off lunch period</td>
</tr>
<tr>
<td></td>
<td>Pedometer challenge</td>
</tr>
<tr>
<td>Staff/During School</td>
<td>Student/teacher yoga class</td>
</tr>
<tr>
<td>Before School</td>
<td></td>
</tr>
<tr>
<td>Family/Community</td>
<td>Family wellness night</td>
</tr>
</tbody>
</table>
Data Preparation & Analyses

- Wear time validation
  - 2+ days
  - Freedson child cut points (2005) for epochs
- Sample reduced to 339
  - Complete baseline/post data
- Three-level, Mixed Model Regression
  - Observations<=Children<=Teacher
    - Null: 18% of variance in MVPA explained by teacher
    - Null: 22% of variance in sedentary explained by teacher
  - Covariates: Pre-test age, race, BMI
  - Outcomes: MVPA & Sedentary
## Descriptive Data by Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n = 111)</th>
<th>Treatment (n = 228)</th>
<th>Total (N = 339)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td><strong>Baseline</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race (% non-white)</td>
<td>51%</td>
<td>-</td>
<td>66%</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>9.9</td>
<td>1.0</td>
<td>11.6</td>
</tr>
<tr>
<td>Height (inches)</td>
<td>56.4</td>
<td>3.9</td>
<td>59.9</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>91.2</td>
<td>27.7</td>
<td>110.0</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>20.0</td>
<td>4.9</td>
<td>21.4</td>
</tr>
<tr>
<td>Total PA (% wear time)</td>
<td>26%</td>
<td>5%</td>
<td>23%</td>
</tr>
<tr>
<td>MVPA (% wear time)</td>
<td>18%</td>
<td>4%</td>
<td>16%</td>
</tr>
<tr>
<td>Sedentary (% wear time)</td>
<td>74%</td>
<td>5%</td>
<td>77%</td>
</tr>
<tr>
<td><strong>Posttest</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total PA (% wear time)</td>
<td>20%</td>
<td>9%</td>
<td>21%</td>
</tr>
<tr>
<td>MVPA (% wear time)</td>
<td>14%</td>
<td>6%</td>
<td>15%</td>
</tr>
<tr>
<td>Sedentary (% wear time)</td>
<td>80%</td>
<td>9%</td>
<td>79%</td>
</tr>
</tbody>
</table>

Values in **bold** significantly different by group.
### Regression results for % time spent in MVPA

<table>
<thead>
<tr>
<th>MVPA (%)</th>
<th>Unstandardized coefficient</th>
<th>SE</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>-0.011</td>
<td>0.010</td>
<td>0.276</td>
<td>-0.030 - 0.009</td>
</tr>
<tr>
<td>Time</td>
<td>-0.045</td>
<td>0.005</td>
<td>&lt;0.001</td>
<td>-0.054 - 0.036</td>
</tr>
<tr>
<td>Condition X Time</td>
<td>0.026</td>
<td>0.006</td>
<td>&lt;0.001</td>
<td>0.015 - 0.038</td>
</tr>
<tr>
<td>Age (pre)</td>
<td>-0.005</td>
<td>0.002</td>
<td>0.008</td>
<td>-0.009 - 0.001</td>
</tr>
<tr>
<td>BMI (pre)</td>
<td>-0.001</td>
<td>0.000</td>
<td>&lt;0.001</td>
<td>-0.002 - 0.001</td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-0.017</td>
<td>0.004</td>
<td>&lt;0.001</td>
<td>-0.025 - 0.008</td>
</tr>
<tr>
<td>Other</td>
<td>-0.013</td>
<td>0.007</td>
<td>0.053</td>
<td>-0.026 - 0.000</td>
</tr>
<tr>
<td>Constant</td>
<td>0.271</td>
<td>0.022</td>
<td>&lt;0.001</td>
<td>0.227 - 0.315</td>
</tr>
<tr>
<td>ρ (teacher)</td>
<td>0.11</td>
<td>0.05</td>
<td></td>
<td>0.04 - 0.26</td>
</tr>
<tr>
<td>ρ (student)</td>
<td>0.35</td>
<td>0.06</td>
<td></td>
<td>0.24 - 0.47</td>
</tr>
<tr>
<td>log-likelihood</td>
<td>1168.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>-2315.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>-2265.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values is **bold** significantly at p<0.001
MVPA

% Wear Time Spent in MVPA (LS Mean)

Pre  Post

p < .001

Control

Intervention
Regression results for % time spent sedentary

<table>
<thead>
<tr>
<th>Sedentary (%)</th>
<th>Unstandardized coefficient</th>
<th>SE</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>0.015</td>
<td>0.014</td>
<td>0.280</td>
<td>-0.012 - 0.043</td>
</tr>
<tr>
<td>Time</td>
<td>0.062</td>
<td>0.006</td>
<td>&lt;0.001</td>
<td>0.050 - 0.074</td>
</tr>
<tr>
<td>Condition X Time</td>
<td>-0.039</td>
<td>0.007</td>
<td>&lt;0.001</td>
<td>-0.053 - 0.024</td>
</tr>
<tr>
<td>Age (pre)</td>
<td>0.008</td>
<td>0.003</td>
<td>0.002</td>
<td>0.003 - 0.013</td>
</tr>
<tr>
<td>BMI (pre)</td>
<td>0.002</td>
<td>0.000</td>
<td>&lt;0.001</td>
<td>0.001 - 0.003</td>
</tr>
<tr>
<td>White</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.019</td>
<td>0.006</td>
<td>0.001</td>
<td>0.008 - 0.030</td>
</tr>
<tr>
<td>Other</td>
<td>0.012</td>
<td>0.009</td>
<td>0.170</td>
<td>0.005 - 0.029</td>
</tr>
<tr>
<td>Constant</td>
<td>0.606</td>
<td>0.030</td>
<td>&lt;0.001</td>
<td>0.546 - 0.665</td>
</tr>
<tr>
<td>ρ (teacher)</td>
<td>0.14</td>
<td>0.05</td>
<td></td>
<td>0.06 - 0.31</td>
</tr>
<tr>
<td>ρ (student)</td>
<td>0.36</td>
<td>0.06</td>
<td></td>
<td>0.25 - 0.49</td>
</tr>
<tr>
<td>log-likelihood</td>
<td>989.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>-1956.27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIC</td>
<td>-1906.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Values in **bold** are significant at p<0.001
Sedentary Time

% Wear Time Spent Sedentary (LS Mean)

- Control
- Intervention

Pre  
Post

\( p < .001 \)
DISCUSSION POINTS

- Some preliminary evidence of CSPAP training effectiveness
  - Mandated testing in Spring

- CSPAP PD blunted:
  - The reduction of MVPA from Fall to Spring
  - The increase of sedentary behavior overtime

- CSPAP PD & interventions need time to take effect

(Carson et al, in progress, Preventive Medicine)
Implications for Practice & Policy

- Glimpse for the CSPAP potential
  - Creating a PD framework for the future
  - Menu with fine-tuned interventions

- Help convince teachers to assume this role
  - Incentivize: PD, time

- **United Front** supporting PA in schools

- Long-term sustainable strategies
  - Localized, in-person assistance
  - Teacher education
An Opportunity
Schools may never be asked again

Quality PE + School PA
A Roadmap for Research & Practice

Normative Behaviors & Beliefs

Policy

CSPAP Committee

Supportive Administration

Normative Behaviors & Beliefs

Physical Education

PA Before and After School

Family and Community Engagement

Staff Involvement

PA During School

Leaders

Facilitators

CSPAP Champion

Skills

Disposition

Safety

Resources

Knowledge

Carson et al., in press. Childhood Obesity
Acknowledgments

Co-Investigators:
- Darla M. Castelli, UT-Austin
- Aaron Beighle, UK

PD Task Force members:
- Georgi Roberts, FWISD
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**SHAPE America**
DPA Workshop Participation

June 2011 Pilot Training Texas
Total participants = 50 (47 teachers, 3 PE coordinators)

July 2011 Trainings Kansas
1. Wichita, KS (37 teachers, 7 PETE)
2. Overland Park, KS (22 teachers, 11 PETE)

2011-2013 Training Participants
Join the CSPAP Movement

Schools and School Leaders:
- www.letsmove.schools.org
- CDC CSPAP Guide

School-based PA Researchers:
- CSPAP symposium: SHAPE America, St. Louis, April 2014
- CSPAP special issue: *JTPA* Oct. 2014
- CSPAP special interest group
Thank You!

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