SHSI Overview

• Four year initiative (2016 – 2020)
• Nine schools participating:
  • Arcadia Elementary School – District 6
  • Boiling Springs Intermediate School – District 2
  • Campobello Gramling School – District 1
  • Clifdale Elementary School – District 3
  • Lone Oak Elementary School – District 6
  • Oakland Elementary School – District 2
  • O.P. Earle Elementary School – District 1
  • R.P. Dawkins Middle School – District 6
  • Woodland Heights Elementary School – District 6
• $774,000 committed
Spartanburg Healthy Schools Initiative

Technical Assistance
POINT TO THE CHILD WHO DOESN'T DESERVE A HEALTHY SCHOOL
6 Steps

1. Build Support
2. Assess Your School
3. Develop Your Action Plan
4. Explore Resources
5. Take Action
6. Celebrate Successes
6 Steps

1. Build Support
2. Assess Your School
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SHSI Technical Assistance

• Local, hands on, and personalized support
• Formal and informal training throughout the four years
• Per School: 10-12 in-school meetings
  • Six or more with committee
  • Four with coordinator each year (more as requested)
• Group trainings: Four to five each year
• Unlimited email and phone support
• Connect schools with resources; develop school-community partnerships
• Steer towards PSE changes with all decisions
• Healthy Schools Program Training and remote support from Beth Barry, AHG
6 Steps

1. BUILD SUPPORT

2. ASSESS YOUR SCHOOL

3. DEVELOP YOUR ACTION PLAN

4. EXPLORE RESOURCES

5. TAKE ACTION

6. CELEBRATE SUCCESSES

HEALTHY SCHOOLS PROGRAM

6 STEP PROCESS
Healthy Schools Program

Here’s Your Action Plan

Choose an item below to access notes, resources, implementation strategies, and explain how to meet each of these criteria.

- Local wellness policies - 102
  ANSWERED: NOT MEETING

- Essential topics on physical activity - 203
  ANSWERED: NOT MEETING

- Essential topics on healthy eating - 204
  ANSWERED: NOT MEETING

- Health-related fitness - 304
  ANSWERED: NOT MEETING

- Promotion or support of walking and bicycling to school - 307
  ANSWERED: NOT MEETING
6 Steps

1. Build Support
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6 Steps

1. BUILD SUPPORT
2. ASSESS YOUR SCHOOL
3. DEVELOP YOUR ACTION PLAN
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6. CELEBRATE Successes
Boiling Springs Intermediate

Oakland Elementary
SHI Baseline Assessment

% of Assessment Items Fully Implemented

- Policies & Env: 47%
- Health Ed: 37%
- PE & PA: 73%
- Nutr Serv: 68%
- Staff Wellness: 20%
- Fam & Com Inv: 22%
Spartanburg Healthy Schools Initiative

EVALUATION
Evaluation Team

• Andrew Kaczynski, PhD\textsuperscript{1}
• Melissa Fair, MPH\textsuperscript{1,2}
• Julian Reed, Ed.D., MPH\textsuperscript{3}
• Sarah King, BS\textsuperscript{1}

\textsuperscript{1} Arnold School of Public Health, University of South Carolina
\textsuperscript{2} Institute of for the Advancement of Community Health, Furman University
\textsuperscript{3} Department of Health Sciences, Furman University
Setting and Study Population

• Setting
  • 4 out of 7 Spartanburg County School Districts (1, 2, 3, and 6)
  • 12 schools (9 intervention, 3 control)
  • 10 elementary, 2 middle

• Study Population
  • ≈ 4700 students attending intervention schools
  • ≈ 1400 students attending control schools
  • Grades 1st-8th
### Evaluation Measures Summary

<table>
<thead>
<tr>
<th>Measure</th>
<th>Fall 2016 (Baseline)</th>
<th>Spring 2017 (Follow-up 1)</th>
<th>Sample Population</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Health Index</td>
<td>X</td>
<td>X</td>
<td>10 schools (intervention)</td>
<td>School Staff enter information into Alliance database</td>
</tr>
<tr>
<td>School Environment Audit</td>
<td></td>
<td>X</td>
<td>13 schools</td>
<td>Evaluation Research Assistants</td>
</tr>
<tr>
<td>Student Nutrition and PA Survey</td>
<td>X</td>
<td>X</td>
<td>4-8th, 13 schools</td>
<td>School Staff administer survey to students</td>
</tr>
<tr>
<td>Fitnessgram (BMI, PACER)</td>
<td>X</td>
<td>X</td>
<td>Height/weight, 1^st^-2^nd</td>
<td>PE education teachers enter to Fitnessgram, Transferred by district</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All measures: 3^rd^-8^th</td>
<td>personnel</td>
</tr>
<tr>
<td>Sqord Objective Physical Activity</td>
<td></td>
<td>X</td>
<td>Sample of 3^rd^-8^th, 10</td>
<td></td>
</tr>
</tbody>
</table>

**Table Notes:**
- X: Indicates the presence of the measure.
- Sample Population details provide the specific groups or numbers involved in each measure.
- Method descriptions detail the process used for data collection and management.
Measures Presented Today

• School Environment Audit
• Student Nutrition and PA Survey
• Youth Body Mass Index (BMI)
• Aerobic Fitness
  • Fitnessgram® PACER
• Sqord Physical Activity Tracker
  • Objective PA Measure
Preparing for Evaluation

• Selection of Schools
  • Intervention vs. Control

• Establishing Partnerships
  • Meetings with school principals and district administration to explain evaluation requirements
  • Creation of data-sharing agreements and MOUs with each district
  • Building capacity for mining and secure sharing of district data
Preparing for Evaluation

• Measures Decisions
  • Selection of student survey to assess nutrition and physical activity behaviors
  • Development of School Nutrition and Physical Activity Built Environment Audit

• Data Collection Methods
  • Establishing data collection timelines and sampling frames
  • Scheduling of data collection in schools

• Data Collection Training
  • Sqord PA Tracker and Fitnessgram trainings for PE teachers
  • School audit training for student research assistants
School Environment Audit

• Developed by SHSI evaluation team
• No existing measure capturing full range of school nutrition and PA environments
• Administered by trained student research assistants in 13 schools (intervention and control)
• Data collected Spring of 2017
• Examines:
  • Indoor Physical Activity Spaces
  • Outdoor Physical Activity Spaces
  • Eating Facilities
Indoor Physical Activity Spaces

- 8/9 schools’ gymnasium quality was observed as “usable for all activities” (conducive to performance of all gross motor activities)

- 1 school’s gymnasium size was rated as “limited in terms of students movement or active play”

- 8/9 schools’ gymnasiums cleanliness were observed as very clean
Indoor Physical Activity Spaces

- 5/9 schools had water fountains in the gym
- All schools had 2 or more basketball hoops that were all usable
- 2/9 schools had multipurpose space
Outdoor Physical Activity Spaces

• 2 schools did not have a playground

• All schools had ball play equipment

• 7/9 schools had sport fields

• 8/9 schools had a blacktop

• 8/9 schools had play structures and outdoor areas separated or distanced from the road
Outdoor Physical Activity Spaces

- Two schools had a running/walking path
  - one of which was in poor quality
- 0 schools had a nature trail
- 5/9 schools had a school garden
- 7/9 schools’ sidewalks had some cracks or unevenness
- 2/9 schools had bike parking, both of which were in poor quality
- 0 schools had bike lanes nearby
Healthy Eating Spaces

• All schools had a cafeteria/common area for eating

• All schools’ cafeteria cleanliness was ranked as very clean with little to no evidence of trash, exposed food, or standing water

• All schools’ meal preparation area was ranked as sufficient for the size of the school

• All schools had either a few or a lot of posters about healthy nutrition within the cafeteria

• All schools offered breakfast and served fruit
Healthy Eating Spaces

• 2 schools did not have an oven/stove top

• 7/9 schools offered 1 or more high sugar/high fat foods

• 7/9 schools had a microwave within the cafeteria

• 3/9 schools had vending machines that were accessible to students
Student Nutrition and PA Survey

• School Nutrition and Physical Activity Survey (SPAN)
• Validated by researchers at University of Texas Houston
• 52-item, student self-reported 24-hour food, screen time and PA recall
• 4th-8th grade youth from 13 schools (intervention and control)
• Data collected Fall 2016 and Spring 2017
• Completed on computers, under teacher supervision
White Grains

- A slightly higher percentage of female students consumed 2-3 servings of White grains ($p=.044$) on the prior day compared to males.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>0-1 Servings</th>
<th>2-3 servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3.6%</td>
<td>96.4%</td>
</tr>
<tr>
<td>Female</td>
<td>2.0%</td>
<td>98.0%</td>
</tr>
</tbody>
</table>
Brown Grains

• A greater percentage of Hispanic students (8.6%) consumed 2-3 servings of brown grains on the prior day compared to White (4.9%), Black (5.6%), or Other (2.5%) students (p=.076)

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>0-1 Servings</th>
<th>2-3 servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>95.1%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>94.4%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>91.4%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Other</td>
<td>97.5%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
Fruit and Vegetables

- 31.8% of students in 3rd-5th grades ate 5 or more servings of fruits and vegetables on the prior day versus 22.2% of students in 6th-8th grades (p<.001).

<table>
<thead>
<tr>
<th>Grade Levels</th>
<th>&lt; 5 servings</th>
<th>≥ 5 servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd-5th</td>
<td>68.2%</td>
<td>31.8%</td>
</tr>
<tr>
<td>6th-8th</td>
<td>77.8%</td>
<td>22.2%</td>
</tr>
</tbody>
</table>
Regular Soda

• 47.4% of male students consumed 1 or more regular soda drinks on the prior day compared to 40.3% of female students (p<.01).

• 46.4% of free & reduced lunch status students consumed 1 or more regular soda drinks on the prior day compared to 40.9% of paid lunch status students (p<.05).

• 32.5% of Other Minority consumed 1 or more regular soda drinks compared to 44.6% White, 46.7% of African American, and 41.3% of Hispanic students (p<.05).
Candy

- 46.9% of female students consumed 1 or more servings of candy versus 39.4% of male students (p<.01)

<table>
<thead>
<tr>
<th>Gender</th>
<th>No Candy</th>
<th>≥ 1 serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60.6%</td>
<td>39.4%</td>
</tr>
<tr>
<td>Female</td>
<td>53.1%</td>
<td>46.9%</td>
</tr>
</tbody>
</table>
Breakfast

• 79.0% of male students ate breakfast on the prior day compared to 75.6% of female students (p=.087)

• 81.3% of students in 3rd-5th grades ate breakfast on the prior day compared to 72.3% of students in 6th-8th grades (p<.001)
Restaurants

• 48.8% of male students ate at 1 or more restaurants on the prior day versus 41.5% of female students (p<.01)

• 53.3% of African American students ate at 1 or more restaurants on the prior day versus 42.7% of White, 40.8% of Hispanic, and 46.3% of Other Minority students (p<.01)
Screen Time
(TV, DVDs, Movies, Computers, and Video Games)

• 87.6% of male students had more than 2 hours of screen time on the prior day compared to 79.7% of female students (p<.01)

• 94.7% of African American students had more than 2 hours of screen time on the prior day compared to 81.7% of White, 78.0% of Hispanic, and 87.0% of Other Minority students (p<.01)
Fitnessgram PACER and BMI

- PACER: Validated measure of youth physical fitness (3rd-8th)
- BMI: Height and weight (1st-8th)
- Data collected and entered by trained PE teachers
- 13 Intervention and Control schools
- Pre and post follow-up
- Traditional and Block Schedules
What is BMI?

**Adult Body Mass Index (BMI)**
- BMI = weight in kilograms / square of height in meters
- Does not directly assess percent body fat
- Studies have shown that for the average individual BMI is a good indicator of total body fatness and risk for some chronic diseases
  - Used to screen for weight categories

**BMI is expressed differently for youth**
- Same formula as adults, however, is age- and sex-specific
- Takes into account changes in weight and height with age
- Expressed relative to other children of the same sex and age categories using percentiles

<table>
<thead>
<tr>
<th>Weight Status Category</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5(^{th}) percentile</td>
</tr>
<tr>
<td>Normal or Healthy Weight</td>
<td>5th percentile to less than the 85(^{th}) percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95(^{th}) percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95(^{th}) percentile</td>
</tr>
</tbody>
</table>
## Demographic Characteristics of Elementary School Youth

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade (n=2353)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>358</td>
<td>15.21%</td>
</tr>
<tr>
<td>2</td>
<td>411</td>
<td>17.47%</td>
</tr>
<tr>
<td>3</td>
<td>387</td>
<td>16.45%</td>
</tr>
<tr>
<td>4</td>
<td>387</td>
<td>16.45%</td>
</tr>
<tr>
<td>5</td>
<td>810</td>
<td>34.42%</td>
</tr>
<tr>
<td><strong>Gender (n=2353)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1148</td>
<td>48.79%</td>
</tr>
<tr>
<td>Female</td>
<td>1205</td>
<td>51.21%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity (n=2320)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1239</td>
<td>53.41%</td>
</tr>
<tr>
<td>Black</td>
<td>436</td>
<td>18.79%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>477</td>
<td>20.56%</td>
</tr>
<tr>
<td>Asian</td>
<td>49</td>
<td>2.11%</td>
</tr>
<tr>
<td>Multiple Races</td>
<td>119</td>
<td>5.13%</td>
</tr>
<tr>
<td><em><em>Lunch Status</em> (n=2328)</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Pay</td>
<td>769</td>
<td>33.00%</td>
</tr>
<tr>
<td>Reduced</td>
<td>117</td>
<td>5.03%</td>
</tr>
<tr>
<td>Free</td>
<td>1442</td>
<td>61.94%</td>
</tr>
</tbody>
</table>
**Analysis of Variance of BMI Percentiles by Demographics**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td><em><em>Grade</em> (n=2353)</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>58.57</td>
<td>32.07</td>
</tr>
<tr>
<td>2</td>
<td>59.04</td>
<td>33.83</td>
</tr>
<tr>
<td>3</td>
<td>63.26</td>
<td>32.26</td>
</tr>
<tr>
<td>4</td>
<td>66.50</td>
<td>31.14</td>
</tr>
<tr>
<td>5</td>
<td>64.24</td>
<td>32.46</td>
</tr>
<tr>
<td><strong>Gender (n=2353)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>63.60</td>
<td>32.58</td>
</tr>
<tr>
<td>Female</td>
<td>61.80</td>
<td>32.41</td>
</tr>
<tr>
<td><em><em>Race/Ethnicity</em> (n=2320)</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>57.69</td>
<td>33.50</td>
</tr>
<tr>
<td>Black</td>
<td>66.22</td>
<td>30.15</td>
</tr>
<tr>
<td>Hispanic</td>
<td>72.93</td>
<td>29.16</td>
</tr>
<tr>
<td>Asian</td>
<td>62.09</td>
<td>34.38</td>
</tr>
<tr>
<td>Multiple Races</td>
<td>60.04</td>
<td>30.47</td>
</tr>
<tr>
<td><em><em>Lunch Status</em> (n=2328)</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Pay</td>
<td>58.38</td>
<td>33.02</td>
</tr>
<tr>
<td>Reduced</td>
<td>61.57</td>
<td>33.08</td>
</tr>
<tr>
<td>Free</td>
<td>64.95</td>
<td>31.90</td>
</tr>
</tbody>
</table>

*Significant differences by grade, race/ethnicity, and lunch status (p<.05)
Tests: Analysis of Variance with Tukey post hoc comparisons
Summary of Significant Findings for Mean BMI Percentile Scores

• By Grade Level:
  • 4th and 5th grade youth have higher BMI percentile score compared to 1st grade youth
  • 4th grade youth have higher BMI percentile score compared to 2nd grade youth
• No significant differences by gender
• By Race/Ethnicity:
  • Hispanic & Black youth have higher BMI percentile score compared to White youth
  • Hispanic youth have higher BMI percentile score compared to Black youth and youth from multiple race categories
  • There were no significant differences in average BMI percentile for Asian youth compared to any other race categories
• By Lunch Status:
  • Youth who receive free lunch have higher BMI percentile scores compared to youth who receive full price lunch
  • There were no significant differences in BMI percentile scores for youth who receive reduced-price lunch compared to free or full pay
Weight Categories by Grade Level (n=2352)*

*Chi-square test of association, significance at (p<.05)
Weight Categories by Gender (n=2353)

*Chi-square test of association, significance at (p<.05)
Weight Categories by Race/Ethnicity (n=2327)*

*Chi-square test of association, significance at (p<.05)
Weight Categories by Lunch Status*

*Chi-square test of association, significance at (p<.05)
## Analysis of Variance PACER laps among 3rd-5th grade elementary school youth by demographics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade</strong> (n=1523)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>13.41</td>
<td>7.43</td>
</tr>
<tr>
<td>4</td>
<td>16.55</td>
<td>9.88</td>
</tr>
<tr>
<td>5</td>
<td>18.24</td>
<td>10.80</td>
</tr>
<tr>
<td><strong>Gender</strong> (n=1524)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17.70</td>
<td>11.14</td>
</tr>
<tr>
<td>Female</td>
<td>15.65</td>
<td>8.74</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong> (n=1511)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>16.14</td>
<td>9.07</td>
</tr>
<tr>
<td>Black</td>
<td>14.77</td>
<td>10.42</td>
</tr>
<tr>
<td>Hispanic</td>
<td>19.93</td>
<td>11.43</td>
</tr>
<tr>
<td>Other</td>
<td>16.43</td>
<td>10.06</td>
</tr>
<tr>
<td><strong>Lunch Status</strong> (n=1586)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Pay</td>
<td>17.80</td>
<td>9.98</td>
</tr>
<tr>
<td>Reduced</td>
<td>14.05</td>
<td>9.05</td>
</tr>
<tr>
<td>Free</td>
<td>16.18</td>
<td>10.03</td>
</tr>
</tbody>
</table>

*Significant differences by grade, gender race/ethnicity, and lunch status (p<.05)*

Tests: Analysis of Variance with Tukey post hoc comparisons
Summary of Significant PACER Lap findings by Demographics

• By Grade Level:
  • With increasing grade level (i.e. 3 to 4 and 4 to 5) youth demonstrated greater physical fitness, as measured by the number of PACER laps completed.

• By Gender:
  • Male youth demonstrated greater physical fitness (measured by number of PACER laps completed) compared to female youth.

• By Race/Ethnicity:
  • Hispanic youth had greater physical fitness compared to all other race categories.
  • There were no other significant differences by race categories.

By Lunch Status:
• Youth who received full price lunch had greater physical fitness, as measured by number of PACER laps completed, compared to students who received free reduced price lunch
SQORD Elementary School MVPA Data (minutes)

No significant differences for gender
**SQORD Middle School MVPA Data (minutes)**

*Significant differences for gender were observed for Total and School MVPA*
SQORD Elementary School Pedometer Data

No significant differences for gender
SQORD Middle School Pedometer Data

*Significant differences for gender for Total, School and Home Pedometer Steps
Next Steps for Evaluation

• Increased accountability for school and district level data collection and transmission
  • Only received BMI data on about 2400 students of the estimated 4700 attending intervention schools, or only about 51% of students
  • Only received PACER for 1596 3rd-5th grade students of an estimated 2820 attending intervention schools, or only about 56.6% of students
  • Improvements made to trainings and frequencies of training
  • Increased communication evaluation of requirements, deadlines, etc. by the implementation team to schools

• Longitudinal examination of dependent variables (i.e. health behaviors, weight status, physical fitness)

• Comparison of change in trends in intervention vs. control schools

• Examination of additional measures being collected (e.g. academic achievement, attendance, and office referrals in relation to other measures)
Questions/Comments