

# **Delta H.O.P.E. Tri-State Initiative**

## **Final Report to the Mississippi Alliance for Self-Sufficiency For the Period: August 2003 to June 2007**

### **Submitted by the Agriculture & Food Systems Institute**

#### **Background:**

The Mississippi Alliance for Self-Sufficiency (MASS), OrganWise Guys, Inc. (OWG), and the Agriculture & Food Systems Institute (AFSI) have collaborated with Mississippi State University Extension Service, LSU AgCenter, University of Arkansas Extension Service and elementary schools in the Delta regions of Mississippi (MS), Louisiana (LA), and Arkansas (AR) to improve children's health. The Delta "Healthy Options for People through Extension" (H.O.P.E.) Tri-State Initiative supports the implementation and evaluation of a multi-component classroom intervention to positively impact nutrition and activity patterns of elementary school children.

Inactive lifestyles have resulted in a nation of unfit children at risk for many health conditions. Recently, the Kaiser Family Foundation reported that young people (age 8-18 years) spent nearly four hours watching television, one hour using the computer, and almost an hour (49 minutes) playing video games each day.<sup>1</sup> In addition to sedentary behavior, excess caloric consumption and lack of food variety and healthy food access are contributing to the burgeoning problem of childhood obesity around the globe. Seventeen percent (17%) of children and adolescents in the United States (US) were overweight based on 2003-2004 data.<sup>2</sup> This represents more than a doubling of overweight prevalence among youth since the early 1970s. The Centers for Disease Control and Prevention (CDC) reports that African American and Hispanic children and youth 2-19 years are disproportionately affected by this problem, with 20% and 19.2% respectively classified as overweight compared to 16.3% of non-Hispanic white children. Today approximately nine million young people are considered overweight.<sup>3</sup>

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<sup>1</sup>Roberts DF, Foehr UG, Rideout V, Kaiser Family Foundation. Generation M: Media in the Lives of 8-18 year olds. 2005. Available at <http://www.kff.org/entmedia/upload/Generation-M-Media-in-the-Lives-of-8-18-Year-olds-Report.pdf>. Accessed August 10, 2007.

<sup>2</sup>Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. JAMA. 2006 Apr 5;295(13):1549-55.

<sup>3</sup>Obesity Still on the Rise, New Data Show. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity Web site. Available at <http://www.cdc.gov/nchs/releases/02news/obesityonrise.htm>. Accessed August 01, 2007.

With regard to physical activity, recent recommendations from the National Association for Sport and Physical Education suggest that children (6-11 years) should participate in at least 60 minutes of structured activity and/or free play each day.<sup>4</sup> An alternate approach that may be equally beneficial to health would be to engage in multiple short bouts of moderate intensity physical activity each day, 10 to 15 minutes in length,<sup>5,6</sup> for a total accumulation of at least 30 minutes for adults and 60 minutes for children and adolescents.<sup>7</sup>

According to 2005 and 2006 CDC data, each of the three states involved in this project -- Arkansas, Louisiana, and Mississippi -- report numbers near or above the national norms relative to the amount of leisure time reported, and prevalence of obesity and overweight.<sup>8</sup> Though the data available are from adults, current research suggests that adult role models influence the health behaviors of their children.<sup>9,10</sup> Table 1 below summarizes the national and state-specific data for self-reported physical activity and obesity/overweight prevalence.

**Table 1:** National and Delta HOPE State-Specific Physical Activity and Overweight/Obesity Prevalence\*

\*Numbers stated are the percentage of adults responding “yes” to the question.

	<b>National</b>	<b>Arkansas</b>	<b>Louisiana</b>	<b>Mississippi</b>
<i>Adults with less than 20 minutes of Physical Activity 3 or more days per week (2005)</i>	72.6	75.2	79.3	79.1
<i>Obesity (BMI above 30) (2006)</i>	25.1	26.9	27.1	31.4
<i>Overweight (BMI 25.0 – 29.9) (2006)</i>	36.5	36.9	35.9	35.3

<sup>4</sup> National Association for Sport and Physical Education. (2004). *Physical activity for children: A statement of guidelines for children ages 5-12* (2nd ed.). Reston, VA: Author.

<sup>5</sup> Blair S, Connelly J. How much physical activity should we do? The case for moderate amounts and intensities of physical activity, 1996; RQES: 67: 193-206.

<sup>6</sup> National Institutes of Health. Physical activity and cardiovascular health: NIH Consensus Statement. Kensington, MD: NIH Consensus Program Information Center. 1995.

<sup>7</sup> Corbin C, Pangrazi R. How much physical activity is enough? 1996; JOPERD: 67: 33-38.

<sup>8</sup> Behavioral Risk Factor Surveillance System, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Available at: <http://www.cdc.gov/brfss/>. Accessed August 01, 2007.

<sup>9</sup> Murtagh J, Dixey R, Rudolf M. A qualitative investigation into the levers and barriers to weight loss in children: opinions of obese children. Arch Dis Child. 2006 Nov;91(11):920-3. Epub 2006 Jul 4.

<sup>10</sup> Ornelas IJ, Perreira KM, Ayala GX. Parental influences on adolescent physical activity: a longitudinal study. Int J Behav Nutr Phys Act. 2007 Feb 2;4:3.

In addition, Youth Risk Behavior Surveillance System (YRBSS) data concerning physical activity and fruit and vegetable consumption was collected on high school students in each of the three states (in 2003 in MS, in 1997 in LA, and in 2005 in AR). Table 2 below summarizes national and state-specific responses on the YRBSS questionnaire.

**Table 2:** National and Delta HOPE State-Specific YRBSS Physical Activity, Fruit and Vegetable Consumption, and Overweight Data\*

\*Numbers stated are the percentage of youth responding “yes” to the question.

State	Not enrolled in PE	Consumed <5 fruit/veg in past 7 days	% of students overweight
Nationwide	67%	79.9%	13.1%
MS (2003 data)	69%	79.6%	15.7%
LA (1997 data)	53.6 %	83%	Not measured in 1997
AR (2005 data)	60%	81%	11%

**Overall Project Objectives for 2003-2007 School Years:**

Funding from the Mississippi Alliance for Self-Sufficiency (MASS) via a grant from the W. K. Kellogg Foundation for the Delta H.O.P.E. Tri-State Initiative project enabled AFSI to evaluate the extent to which the year three objectives put forth in the initial proposal were achieved. As a reminder, the Delta H.O.P.E. project included two programs: the OrganWise Guys (OWG) health promotion materials included read aloud books, games, dolls, and informational videos; and TAKE 10! (which included OWG characters), a classroom-based curriculum tool that integrated physical activity and health content with academic lessons in 10-minute increments.

The primary objectives for the 4 year (2003-2007) Delta H.O.P.E. initiative included:

- 1) Measuring the intensity, duration, and frequency of the activities that were implemented, and determine teachers’ perceived program usefulness program materials (through monthly calendars and end of year teacher surveys);

- 2) Measuring the level of student knowledge change relative to physical activity, nutrition, general health and safety knowledge via pre/post student knowledge assessments;
- 3) Measuring BMI-for-age percentiles and their change over time using data collected by Cooperative Extension Agents;
- 4) Evaluate the amount of accumulated activity during the school day by means of a 7-day recall electronic step counter by a sample of students (both intervention and control); and
- 5) Follow-up with the sample of schools that completed the School Health Index to determine if they were able to complete their respective objectives.

During the four year project, eighty-nine (89) elementary schools participated in the Delta H.O.P.E. Tri-State Initiative (once schools entered the intervention, they remained until the conclusion in June, 2007). Table 3 provides a summary of schools participating in the intervention (by school year and by state).

**Table 3:** Number of schools participating in Delta H.O.P.E. (by year and by state)

<b>School Year</b>	<b>Arkansas</b>	<b>Louisiana</b>	<b>Mississippi</b>	<b>Total</b>
<b>2003-04</b>	6 (2 <sup>nd</sup> grade)	8 (2 <sup>nd</sup> grade)	10	24
<b>2004-05</b>	12	14	31	57
<b>2005-06</b>	12	14	50	76
<b>2006-07</b>	12	14	63	89

Within the three states, a combined total of 1,485 classrooms (approximately 26,730 students) from schools in the Delta Region were given the opportunity to utilize the OWG/TAKE 10! materials through the intervention. Table 4 outlines the number of classrooms participating during each year of the intervention.

**Table 4:** Number of classrooms participating in Delta H.O.P.E. (by year and by grade)

	<b>K</b>	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>	<b>Fifth</b>	<b>Total</b>
<b>2003-04</b>	28	27	63	22	21	21	182
<b>2004-05</b>	159	158	153	149	149	144	912
<b>2005-06</b>	207	207	186	180	178	174	1,132
<b>2006-07</b>	274	269	249	232	231	230	1,485

Of the teachers who returned the monthly calendars, 47% reported implementing the TAKE 10! activities an average of three times (or more) per week. The first year of the intervention resulted in 51% of the participating teachers integrating the TAKE 10! activities in their classrooms three times or more per week. The percentage of teachers integrating three or more activities increased overtime (though the number of teachers grew rapidly), with 68% of the teachers in 2004-05, 63% in 2005-06, with the final year falling below the half-way mark with 45% of the teachers (over 1,000 teachers) integrating at least 30 minutes of physical activity in their classrooms on a weekly basis. The weekly implementation patterns for the individual teachers are reported in Table 5 by the number of times the teachers reported utilizing the 10 minute physical activities.

**Table 5:** Number of teachers reporting implementing TAKE 10! activities (by school year)

<b>School Year</b>	<b>N</b>	<b>1x/week</b>	<b>2 x/week</b>	<b>3x/week</b>	<b>4x/week</b>	<b>5x/week</b>	<b>6+/week</b>
<b>2003-04</b>	185	35	56	72	13	6	5
<b>2004-05</b>	764	91	153	344	92	53	31
<b>2005-06</b>	969	213	242	349	100	40	30
<b>2006-07</b>	2,415	845	459	338	266	266	217

Table 6 illustrates the average times per week (x 10 minutes) the intervention was utilized for the majority of the implementation period, and the approximate increase in physical activity for students over the implementation period (minutes and hours).

**Table 6:** Amount of physical activity (PA) added for students participating in the intervention

<b>School Year</b>	<b>N</b>	<b>Avg per week interventions</b>	<b>Total minutes of added PA</b>	<b>Total hours increase of added PA</b>
<b>2003-04*</b>	185	2.57	308	5.13
<b>2004-05</b>	764	2.94	1058.4	17.64
<b>2005-06</b>	969	2.60	937.7	15.62
<b>2006-07</b>	2,415	2.68	964.9	16.08

\*2003-04 was a 12-week intervention, the remaining years were 36-week interventions

In addition to the number of times teachers implemented a TAKE 10! activity, it was found that all pieces of the program materials were used to some extent by teachers. Each teacher received an individual, grade-specific TAKE 10! kit for his/her classroom and the school received a set of OWG materials (health- and nutrition-related books, videos, games, and a Little Organ Annie doll) to be shared throughout the school. Since the teachers do not receive their own classroom set of OWG materials, the materials are placed in a central location (often the media center) and are checked out throughout the school year. This “sharing” of materials is likely the reason that the OWG materials were not utilized as much as the TAKE 10! materials over the course of the intervention period. Table 7 provides average weekly use of the program materials as reported by teachers through monthly calendars.

**Table 7:** Program materials used as reported on monthly calendars

<b>Materials Available for Use (calendar response)</b>	<b>2003-04</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>
<b>TAKE 10! Activity Card</b>	1.71	2.74	2.53	2.57
<b>TAKE 10! Activity Worksheet</b>	0.53	.82	.76	.56
<b>OWG Younger Years Kit (Grades K-2)</b>	0.16	.75	.82	Books combined below
<b>OWG Hardback Book (Grades 3-5)</b>	0.11	.52	.49	.51 (books combined)
<b>OWG Video</b>	0.12	.64	.81	.75
<b>Little Organ Annie</b>	NA	NA	NA	1.25

At the conclusion of each implementation year, teachers were encouraged to complete an implementation survey. The survey consisted of two main sections, the first asked teachers if they utilized particular pieces of the program materials, the second section allowed teachers to report on the possibility of implementing the program on a daily basis, continuing to implement the program, recommending the OWG/TAKE 10! program to another teacher, helping students refocus, integrating physical activity and academics, reinforcing academic concepts, and student enjoyment of the activities. Responses were reported on a five-point Likert scale, with 5 = “strongly agree” and 1 = “strongly disagree”. Table 8 indicates how teachers responded to using the material provided. The responses on the end of year survey versus the monthly calendars were very different. The teachers indicated in the survey that they used materials that were not consistently documented on the calendars. Table 9 indicates the teachers perceptions of the program materials.

**Table 8:** Teachers response to the use of program materials via end of intervention year teacher surveys (by intervention year)

<b>Materials Available for Use</b>	<b>2003-04</b>	<b>2004-05</b>	<b>2005-06</b>	<b>2006-07</b>
<b>Activity Cards</b>	80	92	93	96
<b>Cool-Down Card</b>	68	65	67	54
<b>Reproducible Sheets</b>	60	76	81	63
<b>Stickers</b>	83	85	88	78
<b>Tracking Poster</b>	95	89	91	80
<b>Teacher Training Video</b>	56	35	21	12
<b>Student Knowledge Assessments</b>	18	67	23	15
<b>Hardy Heart Kit</b>	32	48	52	48
<b>Calci M. Bone Kit</b>	33	46	51	51
<b>Windy the Lungs Kit</b>	25	47	49	49
<b>Little Organ Annie</b>	38	68	72	76
<b>Gimme Five OWG Video</b>	47	64	66	72
<b>Calci’s Big Race OWG Video</b>	54	69	68	71

(numbers reported in percentages)

**Table 9:** Teachers response to perceptions of program materials via end of intervention year teacher surveys (by intervention year)

<b>Variable</b>	<b>2003- 04</b>	<b>2004- 05</b>	<b>2005- 06</b>	<b>2006- 07</b>
Possible to implement TAKE 10! once per day	31	65	69	27
Possible to implement more than one activity each day	22	34	27	8
Continue to use next semester	79	89	91	88
Will recommend to other teachers	64	85	90	86
Used as a model to create my own lessons	39	40	36	27
Helps students refocus their attention	69	72	77	74
Students request TAKE 10! when not done on a particular day	72	75	74	66
Integrates physical activity with academics	62	68	70	71
TAKE 10! is part of my daily routine.	72	81	77	77
My students enjoy the TAKE 10! Sessions.	95	98	97	92
The school assembly made my students more willing to participate	77	81	84	73
Used OWG Younger Years Kit to teach health concepts.	70	82	84	78
Students request OWG books when not read on a particular day.	23	35	27	32
Using Little Organ Annie helped my students learn the organs of their bodies.	75	80	81	72
Little Organ Annie helped bring the characters to life.	63	76	82	54
The video, Calci's Big Race, helped my students to understand the need for physical activity and calcium for bone health.	59	61	71	61
The video, Gimme Five, helped my students to understand the need for five fruits and vegetables a day.	63	62	65	58
I would recommend the OWG videos to fellow teachers.	62	70	72	57
The school assembly program helped me understand the TAKE 10! Health concepts.	84	87	84	78
The school assembly program made my students more willing to participate in TAKE 10!.	78	79	78	74
I would recommend the school assembly program to other schools.	69	72	77	69
After using the OWG/TAKE 10! Program, my students have a better understanding of health.	70	76	77	70
I would recommend the TAKE 10!/OWG Program to other teachers.	68	78	81	66



The overall purpose of the student knowledge assessments is to provide a tool for demonstrating students' mastery of important concepts and skills related to physical activity, nutrition, and general health habits addressed in the OWG/TAKE 10! program. The development of the student knowledge assessments was a multi-step process that included CHP staff, teachers, education and testing specialists, and program experts. The materials for kindergarten through grade 5 were reviewed and a matrix was prepared outlining student objectives by content areas (physical activity, nutrition, and general health) and grade levels. The cognitive level of the objectives was reviewed by teachers and education specialists and higher level processes were included as appropriate. Test questions were developed for the objectives that were determined "appropriate" and "basic" by teachers. Only objectives covered in the OWG/TAKE 10! program were assessed. The original three grade-specific assessments were to be implemented twice a year (pre and post) during the 2003-04 school year. After extensive discussion with teachers, the assessments were combined and reduced in size to ensure more students would be evaluated during the 2004-05 school year. Table 10 provides an outline of the objectives measured by grade level (the objectives remained the same for both years).

**Table 10:** Objectives by grade level for student knowledge assessments

<b>Grade</b>	<b>Nutrition Objectives</b>	<b>Physical Activity Objectives</b>	<b>General Health and Safety Objectives</b>
<b>K</b>	Name fruits and vegetables	Describe how to stretch	Know about bones
	Foods to eat for a good breakfast	Know exercise is important	Describe good health habits
	Eating breakfast is important	Distinguish between exercise and inactivity	Know about the lungs
<b>1st</b>			
	Name fruits and vegetables	Describe how to stretch	Know about bones
	Foods to eat for a good breakfast	Know exercise is important	Describe good health habits
	Eating breakfast is important	Distinguish between exercise and inactivity	Know about the brain

<b>Table 10 (continued): Objectives by grade level for student knowledge assessments</b>			
<b>Grade</b>	<b>Nutrition Objectives</b>	<b>Physical Activity Objectives</b>	<b>General Health and Safety Objectives</b>
<b>2nd</b>	Name fruits and vegetables	Describe how to stretch	Know about bones
	Name foods in the five food groups	Compare low and high intensity exercises	Describe good health habits
	Select healthy snacks	Know the number of days to be active each week	Describe good safety habits
<b>3rd</b>	Name fruits and vegetables	Describe how to stretch	Know about bones
	Name foods in the five food groups	Compare low and high intensity activities	Describe good health habits
	Select healthy snacks	Know the number of days to be active each week	Describe good safety habits
<b>4th</b>	Understand the benefits of eating fruits and vegetables	Explain about the heart and exercise	Describe the esophagus
	Tell recommended number of daily servings from the five food groups	Know the recommended number of minutes of exercise/day	Know about the pancreas
	State the recommendation for fats, oils, and sweets	Know the number of days to be active each week	Know how the lungs work
<b>5th</b>			
	Understand the benefits of eating fruits and vegetables	Explain about the heart and exercise	Explain the function of the organs of digestion
	Tell recommended number of daily servings from the five food groups	Know the recommended number of minutes of exercise/day	Know about the brain
	State the recommendation for fats, oils, and sweets	Know the number of days to be active each week	Know how the lungs work

Overall, the students (n=1,999, 89% of the 2003-04 participating students) scored well on the student knowledge assessments. All grade levels had at least 50% of the students' achieve full mastery of the objectives on the three combined health assessments. Over 90% of students in two of the six grades mastered the written objectives, with 90.9% of kindergarteners and 98.1% of first graders fully mastering the objectives. Close behind, 77.9% of the fifth graders, 77.5% of second graders, 58.3 % of third graders, and 55.0% of fourth grade students achieved full mastery. The

scores by grade level for each of the individual assessments and the overall combined scores are presented in Table 11.

**Table 11:** Mastery levels of student knowledge assessments (2003-04 school year)

<b>Grade</b>	<b>Mastery Level</b>	<b>Nutrition</b>	<b>Physical Activity</b>	<b>General Health and Safety</b>	<b>Combined</b>
<b>K</b>	Full Mastery	86.7	92.3	93.6	90.9
<b>n=275</b>	Partial Mastery	10.1	5.1	5.8	7.0
	Non-Mastery	3.2	2.6	0.6	2.1
<b>1st</b>	Full Mastery	97.8	98.9	97.6	98.1
<b>n=307</b>	Partial Mastery	2.2	1.1	2.4	1.9
	Non-Mastery	0.0	0.0	0.0	0.0
<b>2nd</b>	Full Mastery	74.1	81.9	76.5	77.5
<b>n=982</b>	Partial Mastery	24.4	16.0	21.5	20.6
	Non-Mastery	1.6	2.1	2.0	1.9
<b>3rd</b>	Full Mastery	51.9	62.6	60.2	58.3
<b>n=198</b>	Partial Mastery	32.5	31.3	28.5	30.8
	Non-Mastery	15.5	6.1	11.3	10.9
<b>4th</b>	Full Mastery	59.5	58.2	47.4	55.0
<b>n=94</b>	Partial Mastery	34.8	31.6	38.3	34.9
	Non-Mastery	5.7	10.2	14.3	10.1
<b>5th</b>	Full Mastery	67.3	87.5	79.0	77.9
<b>n=143</b>	Partial Mastery	29.0	11.7	16.9	19.2
	Non-Mastery	3.8	0.9	4.2	2.9

**Values expressed as percentage**

The students (N=13,212) taking the combined assessments also scored well. All grade levels had at least 60% of the students' achieve mastery (scoring above 70%) of the objectives on the post assessments. The scores by grade level for the pre and post test scores are presented in Table 12.

Mastery = score of 70 – 100%

Partial Mastery = score of 50 – 69 %

Non-Mastery = score of 0 – 49%

**Table 12:** Mastery levels of student knowledge assessments (2004-05 school year)

<b>Grade</b>	<b>Mastery Level</b>	<b>Pre-Test</b>	<b>Post-Test</b>
<b>K</b>	Full Mastery	62	86
<b>n=2,438</b>	Partial Mastery	27	9
	Non-Mastery	11	5
<b>1st</b>	Full Mastery	64	78
<b>n=2,460</b>	Partial Mastery	23	21
	Non-Mastery	13	1
<b>2nd</b>	Full Mastery	51	72
<b>n=2,322</b>	Partial Mastery	37	24
	Non-Mastery	12	4
<b>3rd</b>	Full Mastery	48	76
<b>n=2,211</b>	Partial Mastery	39	22
	Non-Mastery	13	2
<b>4th</b>	Full Mastery	41	71
<b>n=2,175</b>	Partial Mastery	29	22
	Non-Mastery	30	7
<b>5th</b>	Full Mastery	34	70
<b>n=1,606</b>	Partial Mastery	46	19
	Non-Mastery	20	11

**Values expressed as percentage**

The prevalence of childhood overweight has increased 300% since the 1960s becoming one the major public health concerns for children and youth <sup>11</sup>. In June 2007, the Expert Committee on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity released recommendations for the management of overweight and obese children<sup>12</sup>. The recommendations suggest that a yearly assessment of weight status in all children, from the ages of 2 to 18 years, be completed and that this assessment include calculation of height, weight, and body mass index (BMI) for age and plotting of those measures on standard growth charts. Thus, the gathering of body mass index data over the 3-year project in a subset of students participating in the Delta HOPE Tri-State initiative allows us to understand weight-related trends in Arkansas.

These new expert committee guidelines define **obesity** in children and youth by an age- and gender-specific body mass index (BMI) that is greater than or equal to the 95<sup>th</sup> percentile (2). Likewise, children and youth with BMI > 85<sup>th</sup> percentile, but < 95<sup>th</sup> percentile for age and sex, will be considered **overweight**. This term replaces the phrase “at risk of overweight” used previously. While this decision has met with controversy, in part due to the stigmatizing or “labeling” of heavy children at a young age, it is clear that not informing parents and children of the risks of carrying excess weight has critical consequences as well.

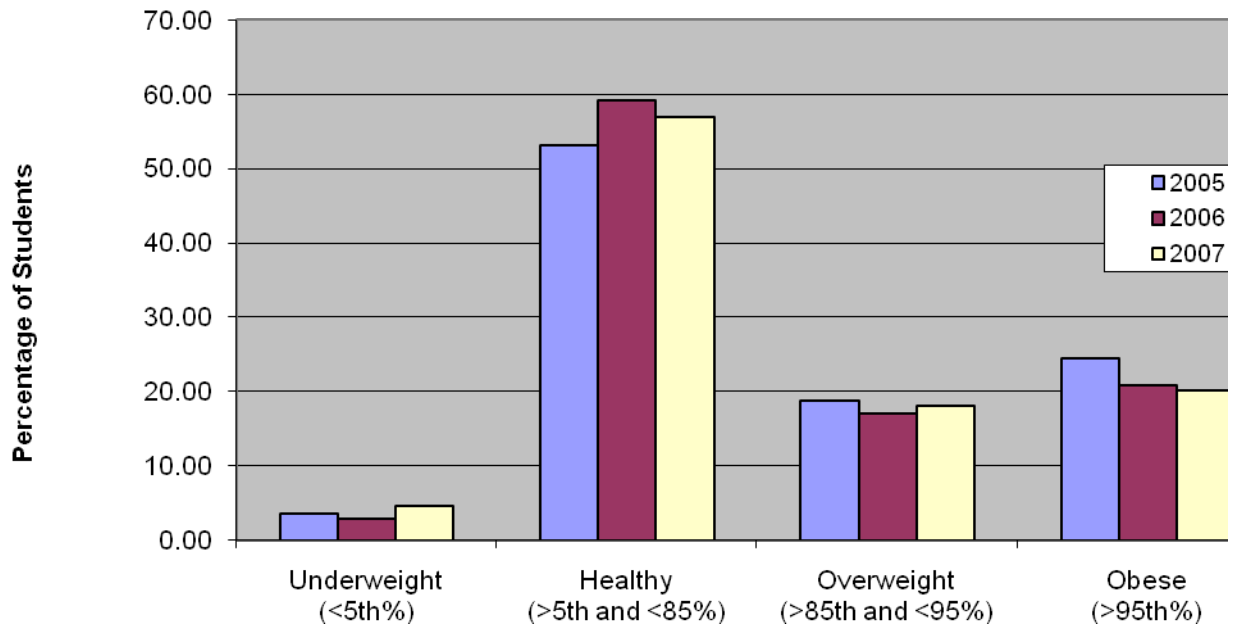
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<sup>11</sup> Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA* 2006;295:1549-1555.

<sup>12</sup> Barlow SE and the Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007;120:S164 - S192.

In reviewing the results of the BMI analysis for approximately 1,400 students in the Delta HOPE project, the trends suggest that the percentage of students in the overweight and obesity categories have declined over time. Further, the percentage of students in the healthy weight category has increased over the 3-year period. Specifically, between 2005 and 2007, the percentage of students in the obese category has declined from 24.43% to 20.24%. In the baseline year of 2005, 53.13% of students fell within the healthy weight category. In the final intervention year of 2007, 59.12% of students were within a healthy BMI for age percentile suggesting students are shifting from the higher categories to the healthy weight category. Figure 1 provides a representation of student BMI percentiles (in categories) by year. One concern suggested in this data analysis is the slight increase (1.02%) in children in the underweight category. While this one percent translates into an increase of 14 students in the underweight category over three years, it is clear that schools and school health professionals must continue to address both under and overweight as health concerns with the student population.

Figure 1: Delta H.O.P.E. BMI-for-age Percentile



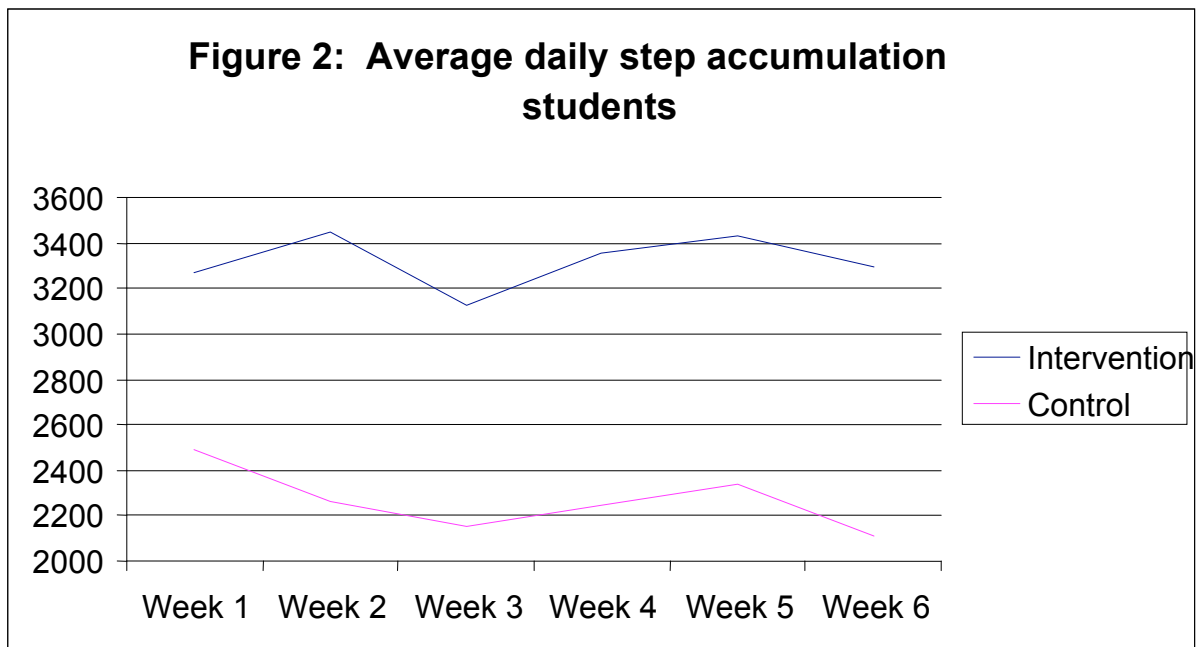
The Expert Committee recommends that physicians, allied healthcare professionals, and professional organizations advocate for the federal government to increase physical activity and nutrition education at school through intervention programs as early as grade 1 through the end of high school and college, and through creating school environments that support physical activity and healthy eating in general<sup>13</sup>. The recommendations also suggest that children of healthy weight participate in 60 minutes of moderate to vigorous physical activity daily. The inclusion of TAKE 10!<sup>®</sup> as an easy-to-implement and sustain structured physical activity program, and the OrganWise Guys<sup>®</sup> nutrition education materials and tools are clearly helping achieve the recommendations. Given the BMI results seen in a the small sample reported, it is clear the

<sup>13</sup> American Medical Association Expert Committee Recommendations Executive Summary. Accessed December 27, 2007. Available on-line at:

<http://www.ama-assn.org/ama1/pub/upload/mm/433>

sustainability of the components of the Delta HOPE Tri-State Initiative could be a critical contribution to achieving the recommendations of the expert committee. In addition, the program could help schools achieve the individual state mandates in Mississippi and Arkansas where legislation supports these school-based recommendations.

In the 2004-05 school year we also examined student step accumulation with 4<sup>th</sup> and 5<sup>th</sup> grade students at three elementary schools (1 control school (N=87) and 2 currently utilizing the intervention (N=322). Students wore their pedometers throughout the course of the school day for 6 weeks and recorded their steps on a daily step log. The average number of steps accumulated by the intervention group was 3,336 and the average number of steps accumulated by the control group was 2,266. This results in an additional 1,070 steps per day accumulated by the intervention group. **Figure 2** provides a weekly representation of the number of steps accumulated by each individual group.



In 2004-05, five schools completed two of the eight modules of the School Health Index (a tool created by the CDC to assess a school's coordinated school health efforts). The two modules that were selected for completion included: Module 3: Physical Education and Other Physical Activity programs and Module 4: Nutrition Services. After completing the initial survey with the two modules, most of the schools formed a School Health/Wellness committee and committed to include an intervention for



staff wellness. The utilization of the School Health Index was embraced by the participating schools. A follow-up in 2005-06 indicated that each of the schools followed through with their intervention plans, mostly consisting of a walking program for staff. The largest obstacle (indicated by the schools) was to secure funds to provide incentives for the staff to participate in the program.

### ***Summary***

By all accounts, the Delta H.O.P.E. Tri-State Initiative was a success in its four years of implementation:

- Throughout the intervention, relationships have been cultivated with state and local departments of education to assist in the implementation of the project;
- OWG/TAKE 10! was disseminated to 89 schools, including 1,485 classrooms reaching approximately 26,730 students;
- Participating students experienced an increase in the total number of minutes engaged in physical activity over the length of the 36-week intervention;
- Student knowledge of general health and physical activity increased;
- The percentage of students in the healthy weight category (through BMI measures) increased over the 3-year period;
- Teachers and students alike reported enjoying participation in the program; and
- The majority (88%) of the teachers intend to continue to use the program in the future.

While a limitation of the model is the self-reported utilization via the monthly calendars, the fact that short bouts of physical activity (via TAKE 10!) were completed in K-5 classrooms on average 2.57 times per week is an ideal way for schools to achieve state-specific physical activity recommendations while remaining focused on core academic achievement. Student exposure to positive health messaging from the various OrganWise Guys program materials keeps the information exciting and appeals to students with different learning styles. In summary, the Delta H.O.P.E. model offers flexibility and multiple learning mechanisms by which to integrate physical activity and health concepts into elementary classrooms. It is with great appreciation that AFSI submits the culminating 2003-2007 report for the Delta H.O.P.E. Tri-State Initiative on the grant in the amount of \$25,000 provided for the final year of evaluation.

