Schools Working at Prevention (SWAP)
Quantitative Evaluation: Miami-Dade High Schools 2013

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Participants

A Program Evaluation of the Schools Working at Prevention (SWAP) program was performed by examining data from 350 high school students from 13 high schools; American, Coral Gables, Coral Park, Hialeah, North Miami, Palmetto, Ronald Reagan, South Ridge, Southwest, Sunset, Turner, Varela and Westland High schools.

The average age of the students was 15.6 years, with a standard deviation of 1.2 years and ages ranging from 13 to 19 years. Forty-seven percent of the students were in the 9th grade and 28% were in 10th grade, with approximately 12% in 11th grade and 12% in 12th grade. The students were predominately Hispanic (73%) with African American students representing the second largest ethnic group (19%). The students were 57% male.

Measures of Physical Fitness

Physical Fitness was measured before and after participating in the program using the following performance tests.

1) Pacer Shuttle Run: number of laps
2) Time to run one mile
2) Number of pushups performed
3) Number of curl-ups performed
4) Number of inches the trunk could be lifted

For time to run one mile change in fitness was calculating by subtracting performance after intervention from performance prior to intervention. For all other measures, change in fitness was measured by subtracting performance prior to intervention from performance after the intervention. A positive number indicated improved fitness.

Physical Fitness Pass rates: Students were classified as having achieved an appropriate level of fitness if they met or surpassed the age and gender specific criteria for each test.

Measures of Body Mass and Nutrition

Body mass index (BMI): BMI was calculated for all students and they were assigned age and gender specific BMI percentiles based on CDC guidelines. Students were classified as follows based on BMI percentiles.

Underweight/Normal	0-84
Overweight	85-94
Obese	➢ 94

Measure of Nutrition

Students completed the nutrition questions on the YRBS questionnaire. A fruit score and a vegetable score were calculated by adding the appropriate item scores.

Nutrition Pass Rates: Students were classified as having met nutrition criteria if they consumed at least two servings of fruit and 3 servings of vegetable per day.

Measures of Physical Activity

Pedometer: Students wore pedometers for seven consecutive days and recorded the number of steps per day for each day.

Pedometer Pass Rates: Students who walked 9100 steps in a day were classified as having achieved the goal of 60 minutes of physical activity for that day. The number of days per week that a student engaged in 60 minutes of physical activity was also calculated. To allow comparison with Activity Recall data, we also calculated the percent of time students engaged in 60 Minutes of activity per day.

3 Day Activity Recall: Students also completed a 3 day activity recall questionnaire. We calculated the number of minutes of moderate, heavy and very heavy activities reported each of the 3 days pre, mid and post program.

3 Day Recall Pass Rates: Students who reported a total of 60 minutes of moderate, heavy or very heavy activities for a day were classified as meeting the activity criteria for that day. We calculated the number of days per testing period that students met the activity criteria. To allow comparison with the Pedometer data we also calculated the percent of time students engaged in 60 Minutes of activity per day.

RESULTS

Student Characteristics

The students had an average BMI of 23.3 (Table 1) and a median BMI percentile of 71 which is within normal range according to CDC guidelines. However, 18.3% of the students were classified as overweight and 17.2% were classified as obese at baseline (Table 2).

Table 1: Body Composition Characteristics Prior to Beginning Program n=179

Characteristic	Mean	Median	Standard deviation
Weight (in pounds)	144.8	135.5	38.2
Height (in inches)	65.8	66.0	3.5
Body Mass Index	23.3	22.0	4.8
Body Mass percentile	64.3	71.0	28.9

Table 2: Proportion of Students in BMI Categories Prior to Beginning Program

Category	Number of Students	Percent
Underweight/ Normal	222	64.5
Overweight	63	18.3
Obese	59	17.2

Physical Fitness

Of all the students with initial fitness data, only 20.0% achieved the appropriate fitness level on the Pacer Shuttle Run, however 36.8% met passing criteria for the 1 mile run (Table 3). A much larger proportion of students met fitness criteria for the strength tests push-ups (54.4%), curl-ups (75.4%) and trunk lift (82.8%) see Table 3. These findings suggest that the students were more fit in terms of strength than aerobic capacity initially. Both physical fitness scores and pass rates improved between the initial and final time periods.

Table 3: Fitness Characteristics across Time Periods

Characteristic	Mean	Median	Standard deviation	% Pass
Initial: Pacer Shuttle Run (n=350)	31.9	26.0	19.5	20.0%
Time2: Pacer Shuttle Run (n=324)	39.7	24.3	33.0	30.6%
Time3: Pacer Shuttle Run (n=282)	46.1	29.7	35.0	35.1%
Final : Pacer Shuttle Run (n=303)	50.5	29.5	43.0	42.2%
Initial: Time to run 1 mile (minutes) (n=306)	11.3	10.8	3.2	36.8%
Final: Time to run 1 mile (minutes) (n=301)	10.2	4.7	9.6	54.9%
Initial:: Number of push-ups (n=350)	14.0	13.0	9.8	55.4%
Final: Number of push-ups (n=307)	17.4	10.2	16.0	64.5%
Initial:: Number of curl-ups (n=349)	32.3	30.0	17.9	75.4%
Final: Number of curl-ups (n=307)	39.0	20.9	35.0	76.9%
Initial:: Trunk lift (inches) (n=349)	11.0	12.0	2.7	82.8%
Final: Trunk lift (inches) (n=307)	11.6	1.8	12.0	93.5%

In students with both initial and final fitness test data, there was a statistically significant improvement in all fitness tests (Table 4). There also was a dramatic improvement in the percentage of students who met age and gender fitness criteria for each test (Table 5 and Figure 1). The proportion of students meeting criteria for the Pacer Shuttle more than doubled and increased by more than 20% for the time to run 1 mile.

Table 4: Change in Fitness from Initial to Final

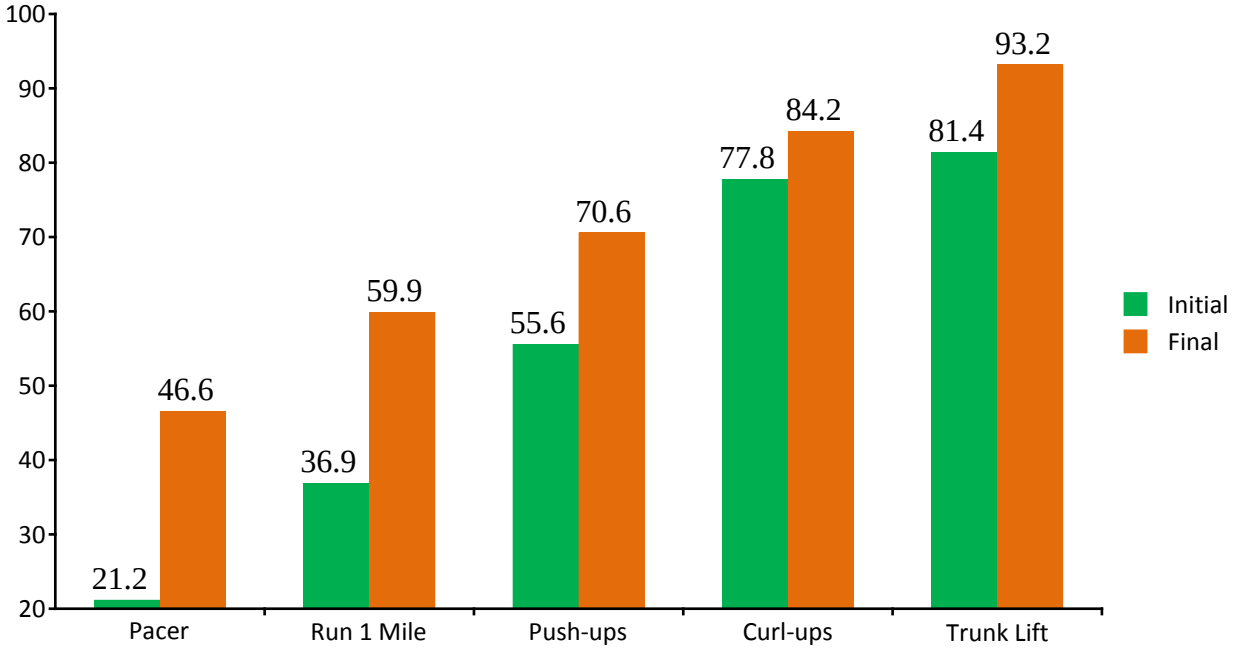
ristic	Mean Change	Standard deviation	p-value*
uttle (n=275)	17.2	18.8	<.0001
n 1 mile (minutes) (n=234)	1.0	1.9	<.0001
f push-ups performed (n=279)	2.9	6.5	<.0001
f curl ups performed (n=279)	5.6	19.9	<.0001
n=280)	1.1	4,6	<.0001

*paired t-test

Table 5: Change from Initial to Final Fitness Pass Rates for Students with Initial and Final Data

Characteristic	Initial % Pass Rate	Final % Pass Rate	p-value*
Pacer Shuttle Run (n=275)	21.2	46.6	<.0001
Time to Run 1 Mile (n=347)	36.9	59.9	<.0001
Number of Push-ups (n=279)	55.6	70.6	<.0001
Number of Curl-ups (n=279)	77.8	84.2	.0094
Trunk Lift (n=279)	81.4	93.2	<.0001

Figure 1: Initial to Final Change Fitness Test Pass Rates



Nutrition and Body Mass

Although 10.4% of the students ate 3 vegetables per day and 35.2% ate 2 fruits per day, only 7.8% met the full nutrition criteria initially (Table 6). The number of fruits and vegetables consumed per day did not change significantly (Table 7) The proportion of students meeting the target of 3 vegetables per day increased slightly, but the proportion eating 2 fruits decreased significantly (Table 8, Figure 2). Although the mean BMI percentile decreased and proportion of students classified as underweight or normal weight increased, neither of these changes were statistically significant (Tables 7 & 8).

Table 6: Body Mass and Nutrition Characteristics across Time Periods

Characteristic	Mean	Median	Standard deviation	% Pass
Initial: 3 Vegetables per day (n=346)	1.3	0.9	1.4	10.4%
Time2: 3 Vegetables per day (n=328)	1.5	1.7	0.9	11.6%
Time3: 3 Vegetables per day (n=298)	1.3	1.4	0.9	10.1%
Final: 3 Vegetables per day (n=303)	1.4	1.7	0.9	11.5%
Initial: 2 Fruits per day (n=347)	1.8	1.2	1.9	35.2%
Time2: 2 Fruits per day (n=298)	1.8	2.2	1.2	30.8%
Time3: 2 Fruits per day (n=184)	1.7	1.4	1.2	32.2%

Final: 2 Fruits per day (n=303)	1.7	1.9	1.2	27.7%
Initial: 2 Fruit and 3 Vegetable Criteria				7.8%
Time2: 2 Fruit and 3 Vegetable Criteria				7.9%
Time3: 2 Fruit and 3 Vegetable Criteria				5.4%
Final: 2 Fruit and 3 Vegetable Criteria				7.3%
Initial: BMI Percentile (n=344)	64.3	74.5	27.7	64.5%
Final: BMI Percentile (n=328)	64.2	28.0	70.0	67.1%

Table 7: Change in Nutrition from Initial to Final

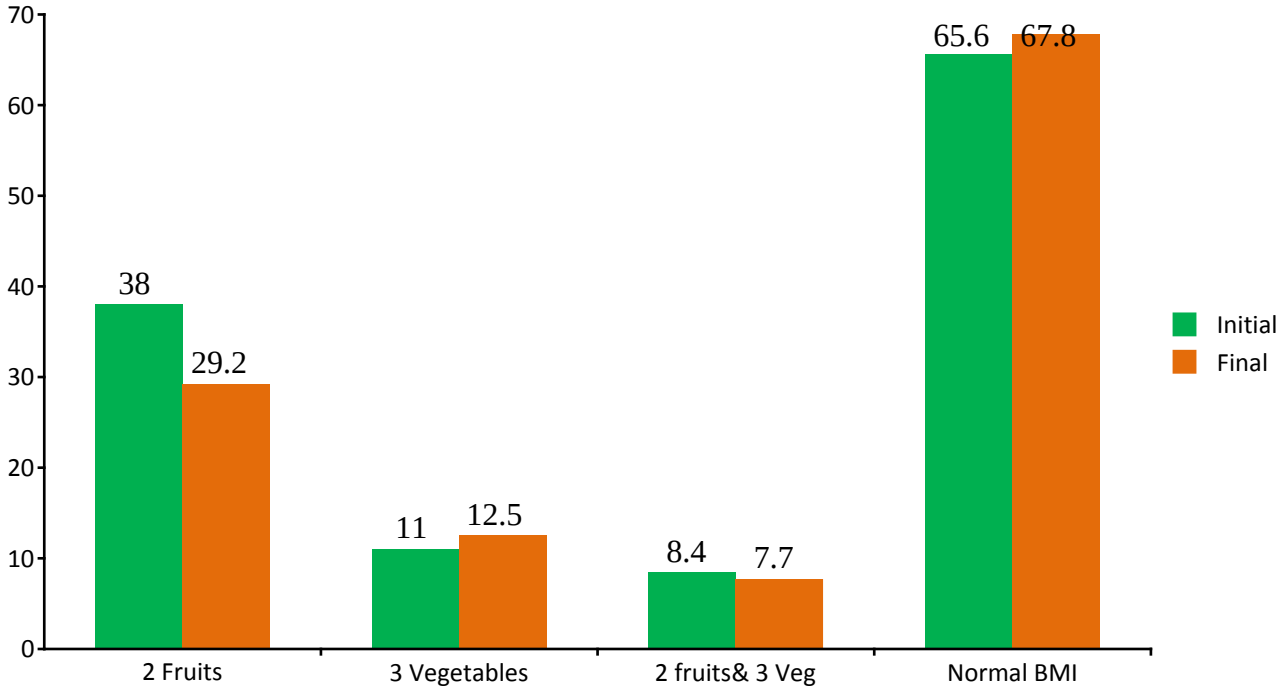
tic	**Mean Change**	**Standard deviation**	**p-value***
Vegetables per day (n=273)	0.15	1.8	.1803
Fruits per day (n=274)	-0.08	2.4	.5676
ile (whole group) (n=276)	0.08	14.5	.3319

*paired t-test

Table 8: Change from Initial to Final for Normal BMI and Fruit and Vegetable Consumption Data for Students with Initial and Final Data

Characteristic	**Initial % Pass Rate**	**Final % Pass Rate**	**p-value***
2 fruit servings per day	38.0	29.2	.0073
3 vegetable servings per day	11.0	12.5	.5465
2 fruit and 3 vegetable servings per day	08.4	07.7	.7237
BMI Normal or Underweight	65.6	67.8	.2568

Figure 2: Initial to Final Change in Nutrition and Body Mass



Change in Fitness and Nutrition by BMI Group.

Although the BMI percentile of the total group did not change, the BMI percentiles of the Overweight and Obese students decreased significantly (Tables 9 & 10, Figure 3). The students who were classified as overweight or obese demonstrated improved fitness, as measured by the Pacer Test, to a similar degree as did the normal weight students (Table 9, Figure 4). All three BMI groups also increased in 60 minute activity days. (Figure 5)

Figure 3: Change in BMI Percentile by BMI Group

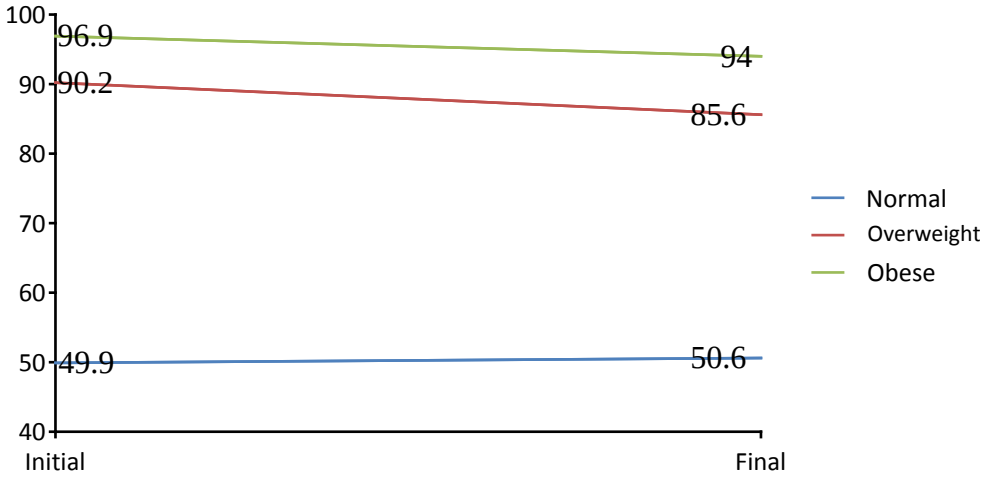

100
90
80
70
60
50
40
96.9
90.2
49.9
94
85.6
50.6
Initial
Final
Normal
Overweight
Obese

Figure 4: Change in Pacer Test by Body Mass Group

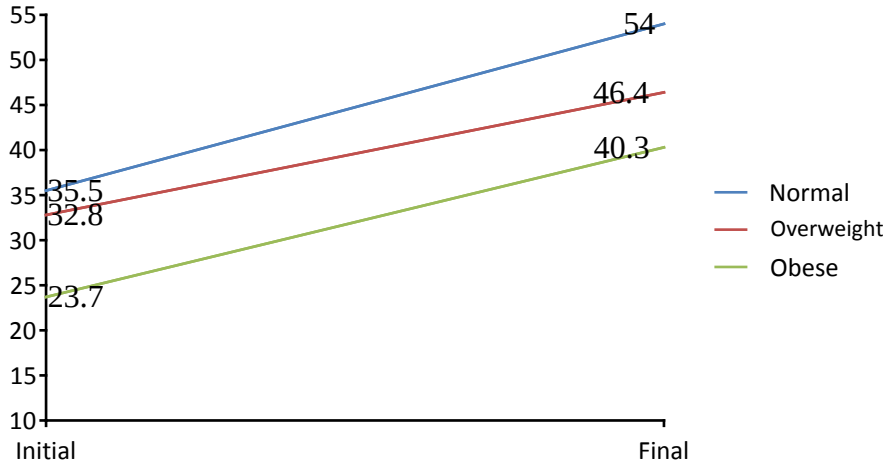


Figure 5: Change in 60 Minute Activity Days by Body Mass Group

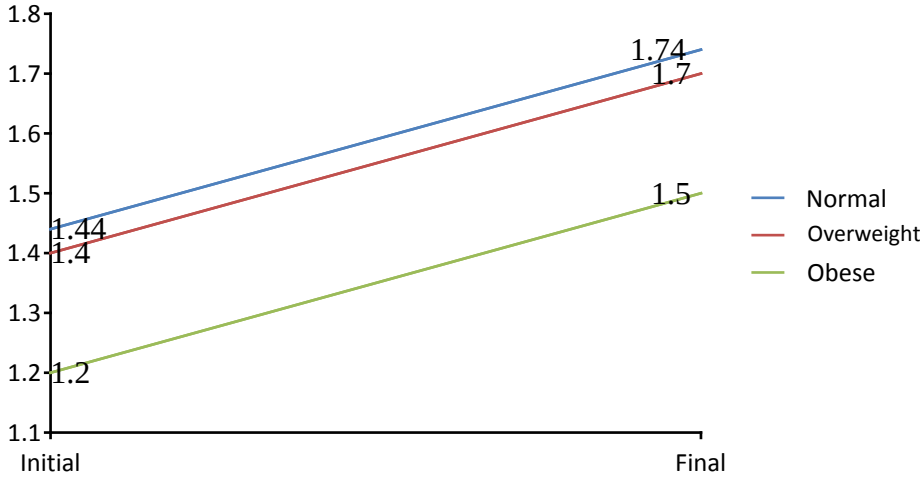


Table 9: Comparison Change in Fitness, Activity, Nutrition and BMI% by BMI Group

Variable	Initial Mean (SD)	Final Mean (SD)	p-value time time*group
Pacer Shuttle			
Normal/Underweight (n=176)	35.5 (21.8)	54.0 (31.7)	<.0001
Over weight (n=49)	32.8 (17.7)	46.4 (24.2)	0.2705
Obese (n=45)	23.7 (11.3)	40.3 (23.3)	
Days with at least 60 Min Activity By Pedometer			0.0429
Normal/Underweight (n=135)	1.4 (1.9)	1.7 (2.4)	
Over weight Hispanic (n=37)	1.4 (1.8)	1.7 (2.4)	0.9987
Obese (n=28)	1.2 (1.8)	1.5 (2.2)	
Vegetable Consumption			
Normal/Underweight (n=175)	1.4 (1.4)	1.5 (1.8)	.0873
Over weight (n=44)	1.3 (1.4)	1.2 1.4)	.0423
Obese (n=51)	1.3 (1.4)	1.3 (1.4)	
Fruit Consumption			
Normal/Underweight (n=176)	1.7 (1.7)	1.8 (2.2)	.8436
Over weight (n=44)	1.7 (1.4)	1.8 (1.7)	.8054
Obese (n=51)	2.0 (2.0)	1.8 (1.7)	
BMI Percentile			
Normal/Underweight (n=181)	49.9 (23.2)	50.6 (24.6)	.3280
Over weight (n=45)	90.2 (02.8)	85.6 (09.9)	.0420
Obese (n=50)	96.9 (01.3)	94.0 (08.5)	

#Repeated Measures ANOVA,

Table 10: Comparison Change in Fitness, Activity, Nutrition and BMI% by BMI Group

tic	Mean Change	Standard deviation	p-value*
le (Underweight/Normal) (n=181)	-0.70	16.6	.5688
le (Overweight) (n=50)	4.60	8.6	.0005
le (Obese) (n=45)	2.90	8.1	.0198

Physical Activity

The average number of days with 60 minutes of activity, as measured by the 7 day pedometer report, fluctuated across the 4 time periods but increased from initial to final testing (Figure 6). This differed from the findings for the 3 Day Activity Recall in that the recall demonstrated very little change in the number of activity days (Figure 7). The proportion of students meeting the criteria of 60 minutes per day of physical activity differed substantially depending on whether physical activity was determined using Pedometers or the 3 Day Recall test (Figure 8

Figure 6: Mean Number of Days with 60 min of Activity as Measured by 7 Day Pedometer Report

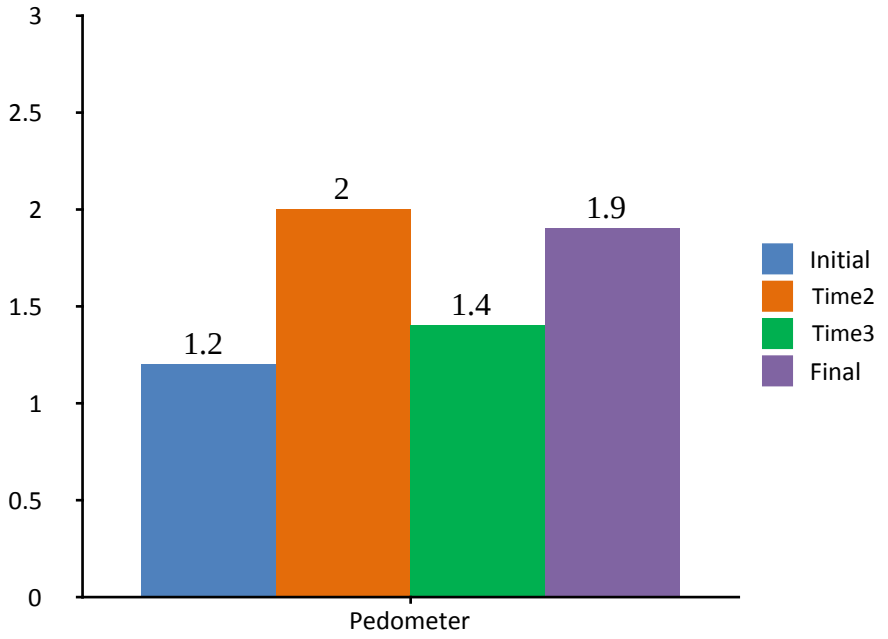
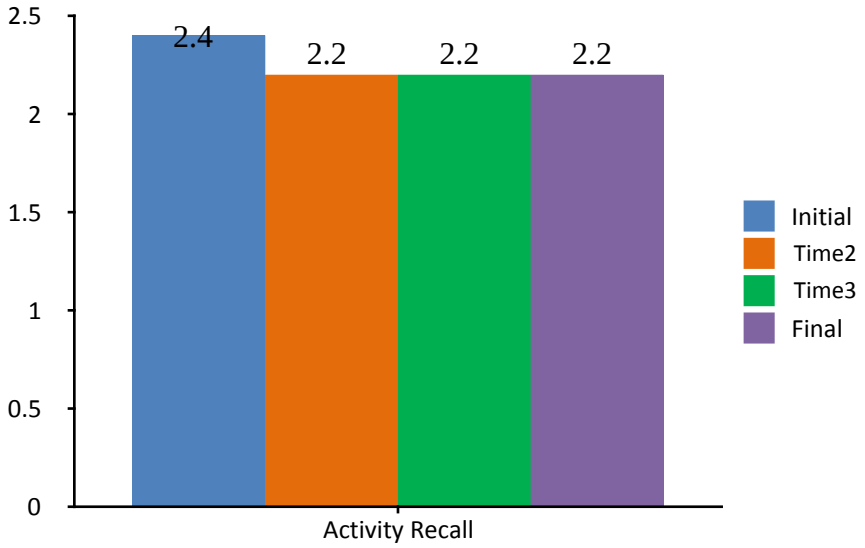
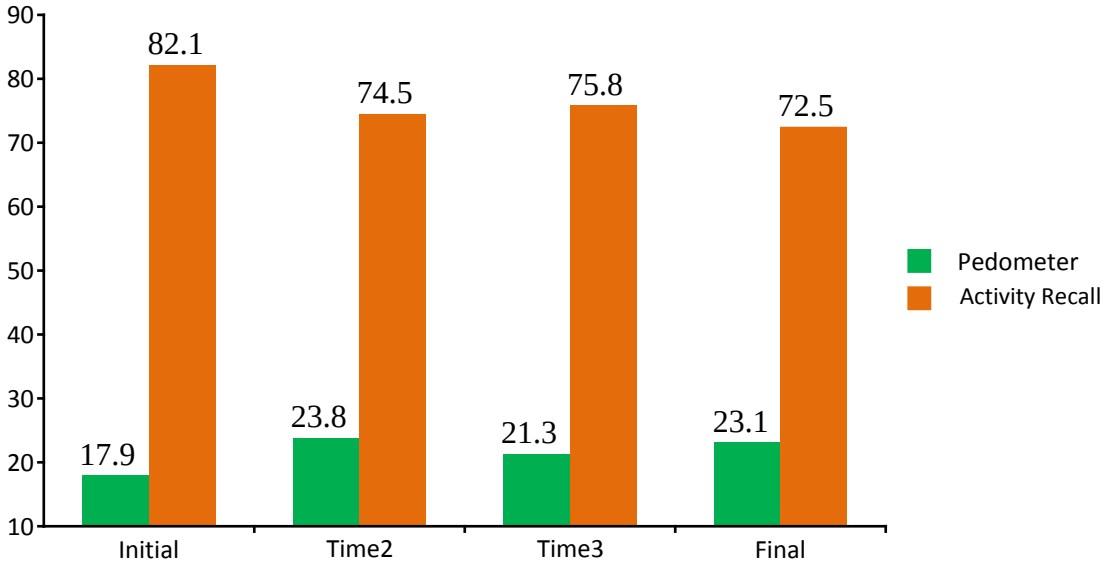


Figure 7: Mean Number of Days with 60 min of Activity as Measured by 3 Day Activity Recall n=228



The two tests differed in the days of activity observed. When you compare two tests on the percent of time the students engaged in 60 minute of physical activity per day of observation, the percent days with 60 minutes of activity is much higher for the 3 Day recall than for the Pedometer (Figure 8).

Figure 8: Percent of the Time Students Engaged in 60 Minutes of Activity per day as Measured by Pedometer and 3 Day Activity Recall n=153



Using data from only those students tested at all 4 points in time, the pedometer data demonstrated a decrease in the proportion of students who engaged in 60 minutes of daily activity 1 to 2 days per week and an increase in the proportion who engaged in 60 minutes of daily activity 5 to 7 days per week (Table 11 & Figure 9)

Figure 9: Proportion of Students Performing 60 Min of Activity 0 to 7 Days per week as measured by Pedometer for Students Reporting Data for all 4 Time Points (N=185)

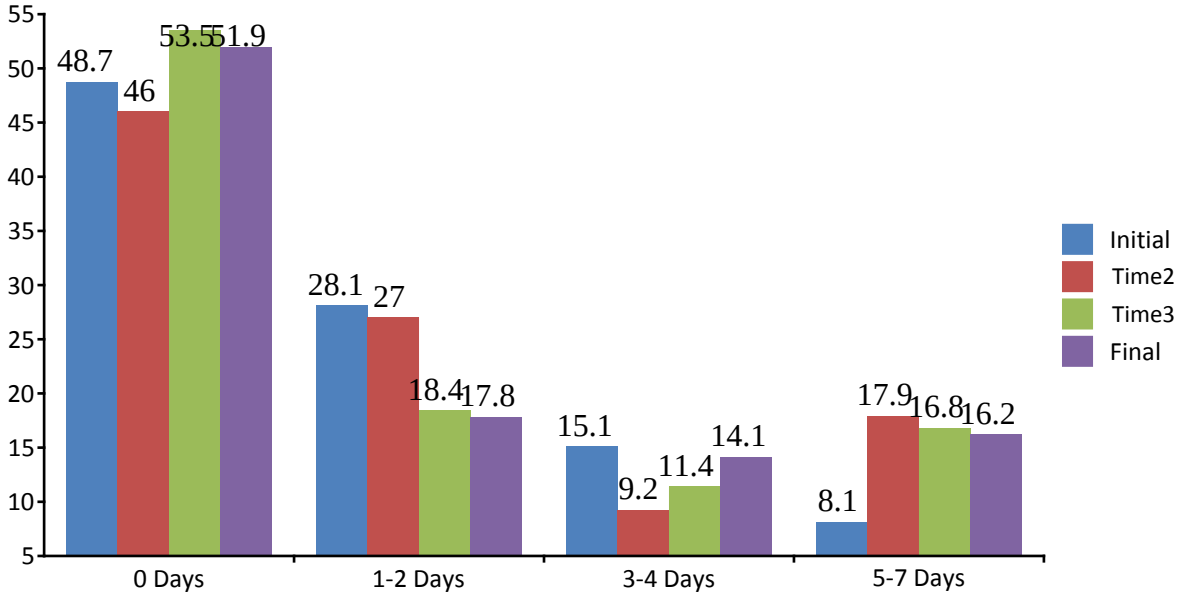


Table 11: Days with 60 Minutes or More of Physical Activity

Days with > 60 Min of Activity as Measured by Pedometer	Initial N=277		Time 2 N=313		Time 3 N=274		Final N=296	
	N	%	N	%	N	%	N	%
0 Days	127	45.8	135	43.1	147	53.7	138	46.6
1 Day	56	20.2	48	15.3	35	12.8	31	10.5
2 Days	22	7.9	31	9.9	15	5.5	22	7.4
3 Days	22	7.9	15	4.8	17	6.2	19	6.4
4 Days	25	9.0	18	5.8	11	4.0	19	6.4
5 Days	12	4.3	19	6.1	15	5.5	16	5.4
6 Days	5	1.8	21	6.7	16	5.8	22	7.4
7 Days	8	2.9	26	8.3	18	6.6	29	9.8
Days with > 60 Min of Activity as Measured by 3 Day Recall	**Initial N=325**		**Time 2 N=278**		**Time 3 N=262**		**Final N=272**	
	N	%	N	%	N	%	N	%
0 Days	15	4.6	21	7.6	19	7.3	22	8.1
1 Day	37	11.4	40	14.4	36	23.7	36	13.2
2 Days	88	27.1	66	23.7	67	25.6	79	29.0
3 Days	185	56.9	151	54.3	140	53.4	135	49.6

Ethnic Groups

To determine whether the SWAP program was effective for students in all ethnic groups, we compared the change between the initial and final test for physical fitness and BMI percentile of African American, Hispanic and other students. All three groups of students improved in the Pacer Test and 1 Mile Run (Table 12, Figures 10 & 11). All three groups improved in the push-ups and curl-ups but the rate of improvement was somewhat greater for the African American students (Table 12, Figures 12 & 13)

Figure 10: Change in 1 Mile Run Time by Ethnic Group

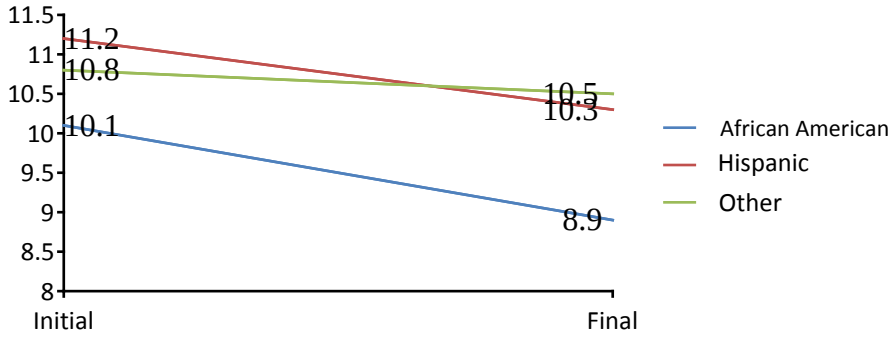


Figure11: Pre-Post Change in Mean Pacer Test by Ethnic Group

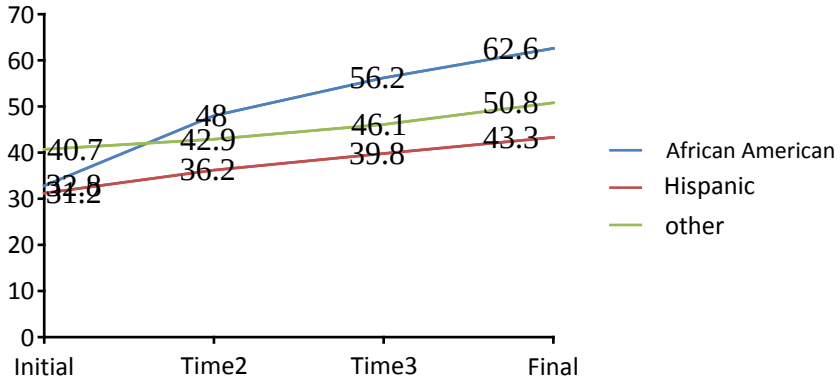


Figure 12: Change in Number of Push-ups by Ethnic Group

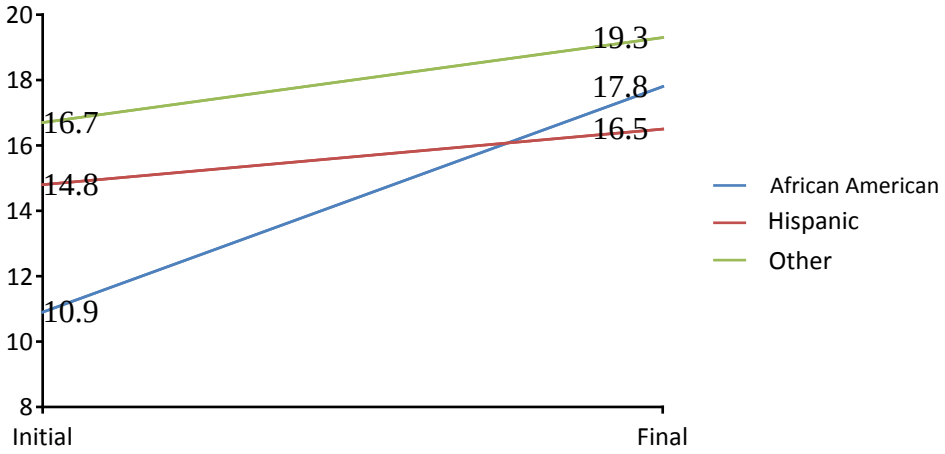


Figure 13: Change in Number of Curl-ups by Ethnic Group

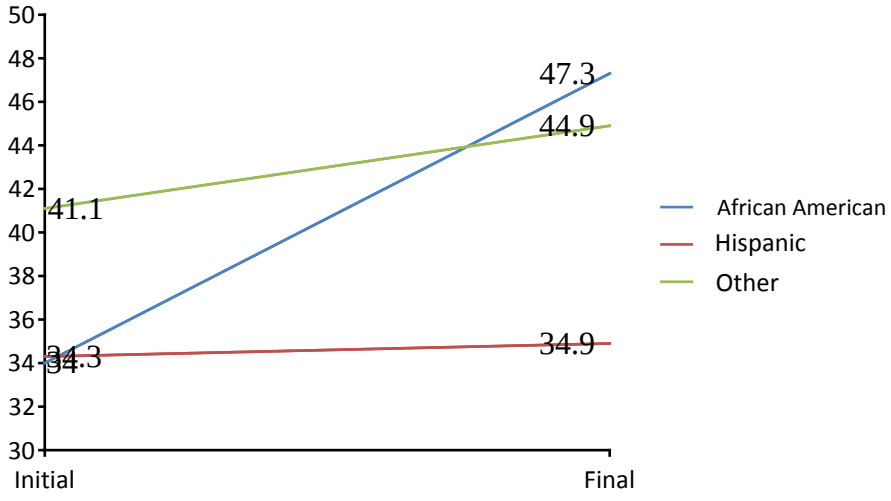


Table 12: Comparison Change in Fitness and BMI% by Ethnic Group

Variable	Initial Mean (SD)	Final Mean (SD)	p-value time effect time*group
Pacer Shuttle			
African American (n=43)	32.8 (26.7)	62.6 (42.7)	<.0001
Hispanic (n=141)	32.0 (17.8)	45.1 (24.6)	<.0001
Other(n=15)	40.7 (27.8)	50.8 (31.2)	
Time to Run 1 Mile			
African American (n=41)	10.1 (2.7)	8.9 (2.1)	<.0001
Hispanic (n=142)	11.2 (3.1)	10.3 (2.8)	.4380
Other (n=11)	10.8 (3.2)	10.5 2.7)	
Number of Curl Ups			
African American (n=42)	34.0 (13.1)	47.3 (20.8)	.0132
Hispanic (n=178)	34.3 (20.4)	34.9 (19.6)	.0008
Other (n=16)	41.1 (25.4)	44.9 (27.3)	
Number of Push Ups			
African American (n=42)	10.9 (07.1)	17.8 (07.8)	<.0001
Hispanic (n=178)	14.8 (09.6)	16.5 (09.9)	<.0001
Other (n=16)	16.7 (14.2)	19.3 (10.6)	
Trunk Lift			
African American (n=42)	09.4 (2.5)	10.7 (1.5)	<.0001
Hispanic (n=178)	11.1 (2.6)	11.6 (2.0)	.0843
Other (n=16)	10.9 (2.5)	11.7 (1.7)	
BMI Percentile			
African American (n=41)	54.8 (28.0)	54.8 (29.8)	.8971
Hispanic (n=176)	68.4 (26.7)	68.3 (26.3)	.9970
Other (n=16)	63.8 (36.3)	63.6 (32.9)	

#Repeated Measures ANOVA,

Gender Groups

To determine whether SWAP was effective across gender groups, we compared the Initial to Final changes in fitness of male and female students. Both male and female students improved in similarly in time to run 1 mile (Figure 14) and Pacer test (Figure 15) (Table 13) as well as in other Fitness Gram tests (Table 13).

Figure 14: Pre-Post Change in Time to Run 1 Mile by Gender

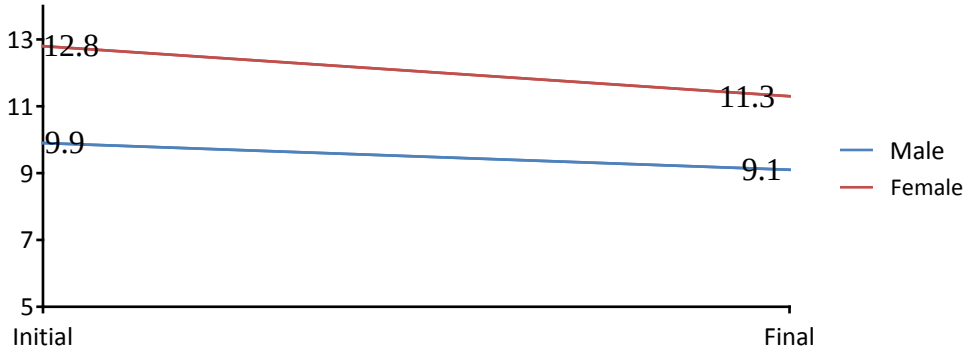


Figure 15: Pre-Post Change in Mean Pacer Test by Gender for Students with Data at All 4 Time Periods

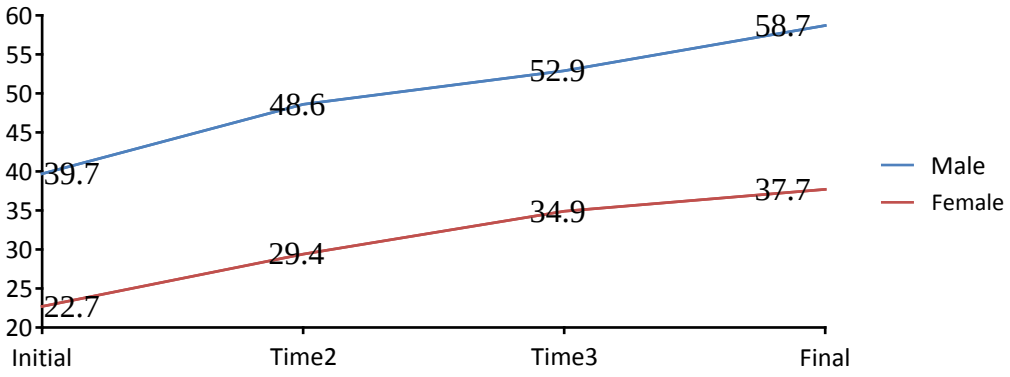


Table 13: Comparison of Change in Fitness and BMI% by Gender

Variable	Initial Mean (SD)	Final Mean (SD)	p-value# time time*group
Pacer Shuttle			
female (n=115)	22.9 (11.1)	38.0 (23.9)	<.0001
male (n=158)	39.9 (22.1)	58.5 (30.3)	.1328
Time to Run 1 Mile			
female (n=94)	12.8 (2.8)	11.3 (2.4)	<.0001
male (n=139)	9.9 (2.7)	9.1 (2.5)	.0053
Number of Curl Ups			
female (n=115)	30.1 (17.7)	37.1 (21.6)	<.0001
male (n=162)	37.1 (18.9)	41.7 (21.4)	.3394
Number of Push Ups			
female (n=115)	7.0 (5.7)	9.7 (5.9)	<.0001
male (n=162)	19.2 (9.2)	22.4 (9.4)	.5356
Trunk Lift			
female (n=116)	10.4 (2.5)	11.4 (2.0)	<.0001
male (n=161)	11.0(2.6)	11.6 (1.7)	.0713
BMI Percentile			
female (n=113)	64.2 (25.6)	62.8 (26.5)	.3346
male (n=161)	65.9 (29.3)	65.4 (28.5)	.6062

#Repeated Measures ANOVA

Student Survey on iPad Use

A convenience sample of 125 students completed a Survey on iPad use during the SWAP program. A large majority of the students indicated that they used the iPad to review, MyPyramid Diet Analysis (64.8%) and the Nutrition and Diet Analysis Lab (71.2%). Overall a large proportion of the students agreed that the iPad helped them learn course materials (68.6%) and complete assignments (73.6%) (Table 14).

Table 14: Student iPad Use

#	Question	% Yes	% No
1	Did you use the iPad through a wireless connection at school?	49.6	50.4
2	Were you allowed to use your iPad outside of the classroom?	42.7	57.3
3	Did you use the iPad through a wireless connection at home?	45.6	54.4
4	Did you use the iPad through a wireless connection at a public library?	20.2	79.8
5	Did you use the iPad through a wireless connection at a public location like Starbucks or the Metrorail?	28.0	72.0
6	Did you use the iPad to review the Fitness Podcasts?	48.0	52.0
7	Did you use the iPad to review the MyPyramid Diet Analysis?	64.8	35.2
8	Did you use the iPad to review Designing your Exercise Program Lab?	39.2	60.8
9	Did you use the iPad to review the Achieving Energy Balance Lab?	41.9	58.1
10	Did you use the iPad to review the Nutrition & Diet Analysis Lab?	71.2	28.8
11	Do you think using the iPad helped you to learn the course materials?	68.6	31.4
12	Do you think using the iPad helped you to complete assignments?	73.6	26.4

Teacher Survey

Ten teachers completed a survey concerning their experience participating in the SWAP program during the past year. The teachers had participated in the SWAP program for an average of 2.2 (sd 1.0) years. They had an average of 19.8 (sd 14.7) years of experience teaching physical education and had taught at their current school an average of 10.7 (sd 4.9) years. The teachers had an average age of 47.5 (sd 10.9) years and 80% of the teachers were women. The teachers reported that the SWAP classes met an average of 3.2 (sd 1.1) times per week for an average of 277.3 (sd 93.1) minutes of class time per week.

Teacher Preparation and Resources

The majority of teachers agreed or strongly agreed that they were well prepared to teach various aspects of the SWAP program and had enough space to conduct their classes. However, some teachers felt they needed more computer technical support, pedometers and cardio equipment (Table 15).

Table 15: Teacher Preparation and Resources

Statement	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Median
I had enough space to conduct my classes.	0	0	0	50.0	50.0	4.5
I had enough computers to meet the needs of my students.	0	20.0	10.0	50.0	20.0	4
I had adequate computer technical support.	0	20.00	10.0	40.0	30.0	4
The resource materials were helpful in planning class activities.	0	0	0	33.33	66.67	5
I had enough strength training equipment to meet the needs of my students.	0	0	40.0	30.0	30.0	4
I had enough cardio exercise equipment to meet the needs of my students.	10.0	10.0	0	20.0	60.0	5
I felt adequately prepared to teach my students to use the various pieces of exercise equipment?	0	0	0	50.0	50.0	4.5
I had enough heart rate monitors and pedometers to meet the needs of my students.	0	20.00	10.0	10.0	60.0	5
I felt adequately prepared to teach my students how to use the exercise equipment.	0	0	0	50.0	50.0	4
I felt adequately prepared to teach my students how to use the various exercise monitors. (Heart Rate Monitors, pedometer).	0	0	10.0	40.0	50.0	4
I felt adequately prepared to teach the SWAP course material.	0	0	0	60.0	40.0	4

Student Participation

The teachers reported that the majority of the students in the SWAP program evaluated their levels of physical fitness, learned to use novel exercise equipment, regularly used cardio fitness and strength training equipment, used iPads to learn about fitness and health and increased their level of fitness activity outside of class. Teachers reported a smaller proportion of students changed eating habits and used computer based technology (Table 16).

Table 16: Student Participation

Statement	Few 0-19% %	Some 20-39% %	Many 40-59% %	Most 60-79% %	Almost All 80-100% %
Learned to use exercise equipment that they never had access to before the program?	0	0	30.0	30.0	40.0
Actively engaged in evaluating their levels of physical fitness?	0	0	10.0	30.0	60.0
Actively engaged in evaluating their eating habits?	0	0	40.0	30.0	30.0
Improved their fitness level?	0	0	0	70.0	30.0
Reported changing their eating habits?	0	20.0	40.0	20.0	20.0
Reported increasing their level of physical activity outside of class?	0	0	30.0	50.0	20.0
Regularly used the cardio fitness equipment such as the treadmill, stair master or spinning bikes?	0	0	10.0	30.0	60.0
Regularly used the strength training equipment such as the free weights, body bars, body power machines, exercise balls?	10.0	0	20.0	30.0	40.0
Completed fitness testing at the beginning and the end of the course?	0	0	0	10.0	90.0
Effectively used the computer based technology such as the fitness gram	11.11	11.11	22.22	11.11	44.44
Effectively used fitness technology such as the heart monitors?	30.0	0	30.0	30.0	10.0
Effectively used iPads to learn about fitness and health	10.0	0	10.0	30.0	50.0

Effectiveness of SWAP Class Topics

The teachers reported that "Exercising Safely", "Fitness Evaluation", "Nutrition", "Musculoskeletal System", and "Flexibility" were the most effective topics. They reported that "Being an Informed Consumer" was the least effective topic (Table 17).

Table 17: Effectiveness of SWAP Class Topics

Activity	Did Not Perform %	Not Effective %	Somewhat Effective %	Effective %	Very Effective %	Median
What is Fitness?	0	0	10.0	50.0	40.0	4
Exercising Safely	0	0	0	40.0	60.0	5
Fitness Evaluation	0	0	0	50.0	50.0	4.5
Principles of Training	0	0	10.0	60.0	30.0	4
Nutrition	0	0	20.0	20.0	60.0	5
Weight Control	0	0	20.0	40.0	40.0	4
Managing Stress	0	0	40.0	40.0	20.0	4
Cardio-respiratory System	0	0	11.1	44.4	44.4	4
Musculoskeletal System	0	0	1.00	40.0	50.0	4.5
Flexibility	0	0	20.0	30.0	50.0	4.5
Personal Fitness Plan	0	0	30.0	30.0	40.0	4
Being Informed Consumer	10.0	0	30.0	40.0	20.0	4
Using the Web	20.0	0	20.0	40.0	20.0	4
Using the iPad	12.50	0	0	50.00	37.50	4

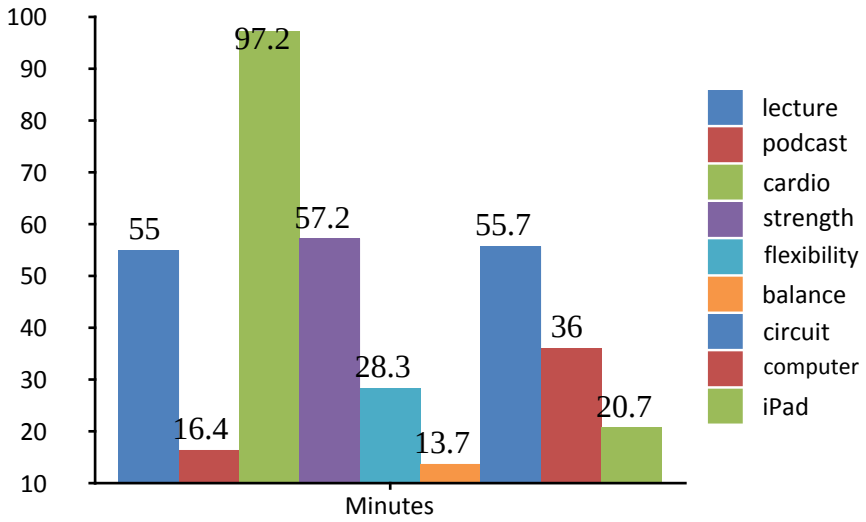
Frequency of SWAP Class Activities

All of the teachers reported performing cardiovascular, flexibility and strengthening activities every week every week. Seventy-eight percent of the teachers reported using iPads occasionally or every week (Table 18). The greatest minutes per week were spent in Cardio activities, followed by muscle strengthening, circuit training and lecture (Figure 17).

Table 18: Frequency of SWAP Class Activities

Statement	Never performed this activity %	Occasionally performed this activity %	Performed this activity every week (enter minutes per week) %	***Total Minutes per week*** Mean (sd) range
Provided class instruction by lecture	0	11.11	88.9	55.0 (30.4) 20-120
Provide class instruction by Podcast	44.44	33.33	22.22	16.4 (24.3) 0-60
Provide class instruction by individual review of computer based material	0	66.67	33.33	36.0 (8.9) 30-50
Performed cardiovascular activities	0	0	100	97.2 (57.9) 30-200
Performed muscle strengthening activities	0	0	100	57.2 (36.2) 15-140
Performed flexibility activities	0	0	100	28.3 (13.9) 10-60
Performed balance activities	11.11	33.33	55.56	13.7 (13.8) 0-45
Used iPad for class activities	22.22	44.44	33.33	20.7 (20.5) 0-60
Used circuit plan to access exercise equipment	11.11	11.11	77.78	55.7 (52.5) 0-140

Figure 17: Class Activity Minutes per Week



Equipment Use

Eighty-nine percent of teachers reported using recumbent and upright cycles, treadmills and cross trainers every week (Table 19). Most teachers used the BOSU balance trainer, the weight training station, resistance bands, cross trainer and Hop Sports occasionally or weekly. No teachers reported using a balance board, balance beam or rowing machine (Table 19). Cross trainers were used the more minutes per week than any other equipment (Figure 18).

Figure 18: Equipment Use Minutes per Week

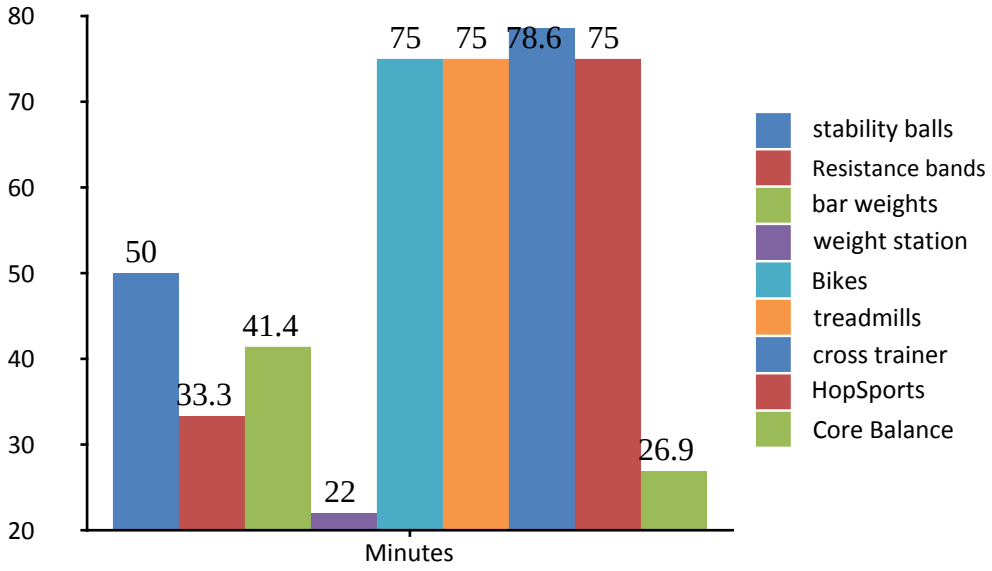


Table 19: Equipment Use

Statement	Never used this equipment %	Occasionally used this equipment %	Used this equipment every week (enter minutes per week) %	***Total Minutes per week*** Mean (sd)
Stability balls	11.11	44.44	44.44	50.0 (50.1) 0-140
Core balance discs and foam rollers	44.44	33.33	22.22	26.9 (48.0) 0-140
BOSU balance trainer	55.56	44.44	0	1.7 (4.1) 0-10
Balance board	100	0	0	0
Balance beam	100	0	0	0
Climbing wall	66.67	22.22	11.11	20.0 (52.9) 0-140
Resistance bands	0	44.44	55.56	33.3 (20.6) 10-70
Bar Weight Training Equipment	11.11	44.44	44.44	41.4 (46.0) 0-140
Weight Training station	25	50	25	22.0 (20.5) 0-40
Recumbent cycles	0	11.11	88.89	75.0 (48.7) 30-150
Upright cycles	0	11.11	88.89	75.0 (48.7) 30-150
Spinning cycles	55.56	0	44.44	32.5 (53.6) 0-140

Treadmills	0	11.11	88.89	75.0 (48.7) 30-150
Rowing machine	100	0	0	0
Cross Trainer	0	11.11	88.89	78.6 (49.5) 30-150
Video Exergaming	77.78	22.22	0	8.7 (24.7) 0-70
Used HopSports	22.22	44.44	33.33	75.0 (110.0) 0-300

Summary

The students who participated in the SWAP program achieved substantial gains in performance of both strength and aerobic capacity physical fitness tests, the proportion of students who met fitness criteria increased significantly after participating in the program. Although the physical activity data was somewhat variable, the proportion of students engaged in 60 minutes of activity 5 to 7 days per week increased. The nutrition results are mixed in that on average students increased the servings of vegetables eaten per day but decreased the servings of fruit consumed.

In the face of mounting concerns over childhood obesity it is important to note that the BMI percentile decreased in those students initially classified as overweight or obese. Furthermore, the physical fitness and physical activity of students classified as overweight or obese improved at rates comparable to those of normal weight students. It is also important to note that the program was effective for both male and female students, and for students in different ethnic groups.

The overwhelming majority of teachers found that the SWAP program topics were effective or very effective. Teachers reported that they emphasized physical activity in the form of cardiovascular and strengthening exercises utilizing equipment such as cross-trainers, treadmills and cycles, bar weights and resistance bands. The students who used iPads as part of the program overwhelmingly felt that the iPads helped them learn course material and complete assignments.

Overall, this program was viewed positively by the teachers and was successful in improving physical fitness and increasing physical activity in a very diverse group of high school students.