

Effect of School-Based Physical Activity Intervention Upon BMI Measurements in Low SES Hispanic Adolescents

Bill Johnson, Ph.D., Tennessee State University,
Matt Barbieri, Katairina Carrasco, Kellee Breaux, Alum Rock Union Elementary School District

Background:

Over the past several decades, the prevalence of overweight and obesity rates in the U.S. has skyrocketed, particularly among the youngest Americans. Since 1980, the U.S. obesity rate has doubled among adults and tripled among children. Hispanic, non-Hispanic Black, and American Indian/Alaska Native children are most at risk to meet the clinical definition of overweight or obese. Research indicates that obese children often grow up to become obese adults, and serious chronic health conditions (such as heart disease and diabetes) have been linked to overweight and obesity, even at a young age.

- ✓ Hispanic children of both sexes are more likely than their non-Hispanic White peers to be overweight or obese at all age groups.
- ✓ Among children ages two to 19, nearly two in five Hispanic (38.2%) and Black (35.9%) children were overweight or obese (with a BMI at or greater than the 85th percentile for age), along with more than one in four (29.3%) White children.
- ✓ About one in five Hispanic (20.9%) and Black (20%) children and about one in seven (15.3%) White children were obese (with a BMI at or greater than the 95th percentile for age).
- ✓ Among children ages two to 19, Hispanic boys were more likely than Hispanic girls to be obese.
- ✓ Overall, Hispanic boys were more than 1.5 times as likely to be overweight and nearly twice as likely as White boys to be obese.

Purpose:

The objective of this study was to determine whether school-based physical activity interventions improve children's body composition, as measured by BMI.

Method:

One hundred and fifty-three 8th grade students were measured for height and weight and BMI's were calculated. Forty-nine students (20 female and 29 male) who's calculated BMI was above 24 were separated by gender and assigned to a specially designed fitness class. Students in the fitness class were given the option of remaining in the class after the initial six-week course or moving to a sport-skill based class. None of the forty-nine students in the fitness class elected to transfer to a sport-skill based class, choosing instead to remain with their fitness cohort for a twenty-two week period.

Students in the fitness class were provided an exciting and educational program that helps teach realistic and achievable ways to maintain a healthy lifestyle. The lesson topics included: the long term effects of obesity and related health implications, nutrition basics, making and enjoying healthier food choices, diet myths, caloric expenditure, calorie content of foods and healthy portion sizes, weight management, how to set, monitor and reinforce personal fitness goals, aerobic and anaerobic training, self esteem/self-image improvement, team building, physical activities that can be done anywhere, and having fun while being active. In addition, throughout the course the students were provided materials that educate both the child and family about healthy eating, including snacking, and eating out.

Results:

There was no significant difference in the week 1 and week 22 measures of BMI. However, dramatic reductions in girth and body weight measures changed the students' physical appearance, resulted in greater positive attitude, improved self-esteem and confidence, and an increase in unsolicited statements of exercise and behavioral adherence.

Discussion:

While our analysis indicated that school-based physical activity intervention did not improve BMI. There were demonstrated positive changes in physique, and mental attitude. Students left the class feeling empowered and committed to continuing on their healthy lifestyle plan. It is possible that school-based physical activity could increase lean muscle mass and decrease fat mass with no overall change in BMI, as such, other measures of body composition such as hip and waist circumference, skinfold thickness, girth measures, and percent body fat, all warrant further investigation. A second possibility is that the increase in targeted physical activity may have relatively little influence on body composition compared with dietary intake.



Zumba dancing	Calisthenics	Recumbent cycling	Relay races
Cha-cha dancing	Bodyweight resistance exercise	Rowing machine	Capture the flag
Salsa dancing	Exercise resistance bands	Dumbbells	Rocks
Bollywood dancing	Partner resistance exercise	Medicine balls	Basketball
Meringue dancing	Core training	Strength training	Flag football
Kick boxing	Power walking	Interval training	Soccer
Taeko-aerobics			
Jump rope	Jogging	Circuit training (no weight machines)	Team building activities

“Latino children are at great risk of overweight and obesity throughout all stages of their childhood and adolescence. With prevalence increasing over time, it is clear that without intervention, a significant share of Hispanic children—and therefore the child population in general—will be overweight or obese as adults.” M.K. Serdula