

TACSM Abstract

Effects of Obesity and Physical Fitness on Academic performance in Hispanic High School Students

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Category: Undergraduate

ABSTRACT

Adolescents experience many changes in body structure and psycho-social functioning. Perceived obesity status and lower physical fitness are negatively associated with academic performance and the impact of these variables in academic performance may be different in males and females.

PURPOSE: The purpose of this study was to investigate whether levels of obesity and physical fitness have an influence on academic performance in Hispanic male and female adolescents.

METHODS: Body mass index (BMI), one-mile run and curl-up scores from 1,401 Hispanic adolescents in grades 9-11 were collected (746 males, 655 females). Students were classified into three groups for BMI score using CDC weight status cut point (normal, overweight, and obese) and three groups for aerobic fitness (one mile run) and muscular strength (curl-up) using FITNESSGRAM standards (ES: exceed standard, MS: meet standard, and US: under standard). Reading and Mathematics scores in Texas Assessment of Knowledge and Skills (TAKS) test were obtained from a South Texas school district. Variables were analyzed using two way (gender×group) analysis of variance (ANOVA) with Tukey post hoc test.

RESULTS: Obese male students showed lower scores in both Reading (31.6 ± 1.7 , Mean±SE vs. 36.6 ± 0.6 and 36.9 ± 1.1 for normal and overweight, $P < 0.05$) and Math (29.1 ± 1.7 vs. 34.5 ± 0.7 and 34.6 ± 1.2 , $P < 0.05$). However, there was no relation between the level of obesity and TAKS scores in female students. US males in curl-up (27.5 ± 1.0) received significantly lower score in Math than NS and ES (32.7 ± 0.9 , 37.2 ± 0.8 , $P < 0.01$) and US females in curl-up showed lower scores in both Reading (34.0 ± 0.9 vs. 41.1 ± 0.8 and 41.7 ± 0.8 , $P < 0.01$) and Math (29.1 ± 0.9 vs. 35.5 ± 0.9 and 36.9 ± 1.0 , $P < 0.01$). TAKS scores were not affected by levels of aerobic fitness (one-mile run).

CONCLUSIONS: Results indicate that academic achievement in Hispanic high school students is associated with level of muscular strength, but not affected by aerobic fitness. Gender difference is visible in the relation between obesity levels and academic achievement in Hispanic adolescents. Academic success in male students is more sensitively affected by level of obesity (body shape) than females.