Body composition and physical fitness of students in high school vs. students enrolled in high school sports academia programs

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Introduction: In recent years more and more high schools in Iceland are offering sports academia programs. These programs are intended for teenage athletes in various sports who have the potential of becoming elite athletes. The sports academia programs make it easier for these student athletes to focus on training for their sport while attending high school, and thereby, enable them to get a good education and enhance their athletic potential. These programs also have the potential to reduce drop-out in sports because it is easier for the students to balance athletics and academics. Nevertheless, sports performance is not necessarily linked to better health. The purpose of this study was to compare students enrolled in regular high school tracks to students enrolled in sports academia programs on body composition and physical fitness.
Methods: The participants for the study were 16 years-old (freshmen) and came from two high schools in Reykavik, Iceland. All students enrolled in sports academia programs were offered to participate and a group of students enrolled in regular high school tracks were randomly selected for participation. Eighteen high school sports academia students and 136 regular high school students (16 year olds) elected to participate. They were measured on height, weight, waist and upper arm circumference, skinfold thickness (subscapular, triceps, chest, midaxillary, abdomen, suprailiac, thigh), and the body mass index (BMI) was calculated. Their resting blood pressure was also measured and physical fitness was assessed via maximal cycle ergometer test. The statistical analysis was performed with SPSS 18.0 and the groups of students were compared using univariate ANOVA with gender as covariate since the gender distribution between the groups was unequal. The alpha level was set at 0.05.
Results: No differences were observed between the groups on height, weight, BMI, and waist and upper arm circumference. However, the sport academia students had significantly lower skinfold thickness and body fat percentage calculated from the seven site skinfolds. Their physical fitness was also better as they reached significantly higher work output (W or W/kg bodyweight) and, therefore, estimated maximal oxygen uptake. No differences were observed on maximal heart rate indicating that both groups gave similar effort on the cycle ergometer test. Although there was no difference in systolic blood pressure between the groups, the diastolic blood pressure was significantly lower among the students enrolled in sports academia programs.
Discussion: The results from this study indicate that Icelandic 16 year-old high school students enrolled in sports academia programs have better body composition and physical fitness as well as lower diastolic blood pressure compared to their high school peers enrolled in regular high school tracks. Therefore, these student athletes may have a lower risk of developing lifestyle diseases compared to the regular high school students. However, studies with more students enrolled in sport academia programs are needed. Similarly, only longitudinal studies tracking these students to adulthood will reveal if participation in sport academia programs is protective against developing lifestyle diseases.