

Physical fitness and alcohol use among middle school students in Georgia

Kiran Thapa¹, Justin Ingels¹, Janani Rajbhandari-Thapa¹

¹College of Public Health, University of Georgia, Athens, GA 30605

Introduction

While there are several studies assessing the relationship between physical activity and alcohol consumption, only a few have focused on the fitness level and alcohol consumption among adolescents.

Objective

This study examines the school-level association between physical fitness and alcohol use among middle school students attending public schools in Georgia.

Methods

Three years of cross-sectional data (2015-2017) obtained from two sources:

1. Georgia Student Health Survey 2.0 (GSHS), an annual survey of all public school students administered by the Georgia Department of Education. The GSHS contains middle school (grade 6-8) students' self-reported measure of alcohol use.
2. FitnessGram data, which contains school-reported measures of the percentage of students meeting the Healthy Fitness Zone (HFZ) for aerobic capacity (AC) and body mass index (BMI)

The two datasets were matched at the school level by grade and gender. Mean alcohol consumption was dichotomized as 'No use' (0 days) and 'Any use' (1-30 days). Two models were fit: (1) percentage of students meeting HFZ for AC was regressed on the alcohol use category, and (2) percentage of students meeting HFZ for BMI was regressed on the alcohol use category. Both models were controlled for potential confounders including the year of survey administration.

Data analyses were performed in R Version 1.1.447.

Results

Table 1: Descriptive statistics by variables of interest

	Mean of percentage of students meeting HFZ for BMI	Mean of percentage of students meeting HFZ for aerobic capacity	Proportion of any alcohol use
Year			
2015 (N=574)	57.6	50.9	81.7%
2016 (N=578)	58.4**	50.1	81.5%
2017 (N=580)	59.2**	50.7	80.4%
Gender			
Female (N=591)	57.5	42.3	79.0%
Male (N=600)	59.2***	58.7***	83.3%
Grade			
6 (N=575)	57.4	55.5	67.2%
7 (N=554)	58.4**	51.0***	84.0%
8 (N=555)	59.3**	44.9***	92.8%
Alcohol use			
None (0 days)	57.8	53.5	-
Any (1-30 days)	58.4	50.0***	-

Note: N represents the number of unique schools; ***significant change at 0.001 level of significance; **significant change at 0.05 level of significance

Table 2: Multiple linear regression showing the association between fitness measures and alcohol use

	Model 1 (Aerobic Capacity)		Model 2 (Body Mass Index)	
	β (SE)	95% CI	β (SE)	95% CI
Alcohol use (None) (ref: any use)	3.30 (0.89)	1.56, 5.04	0.63 (0.48)	-0.30, 1.56

Note: Both models were controlled for grade, gender (and its interaction with alcohol use), education about alcohol, and year.

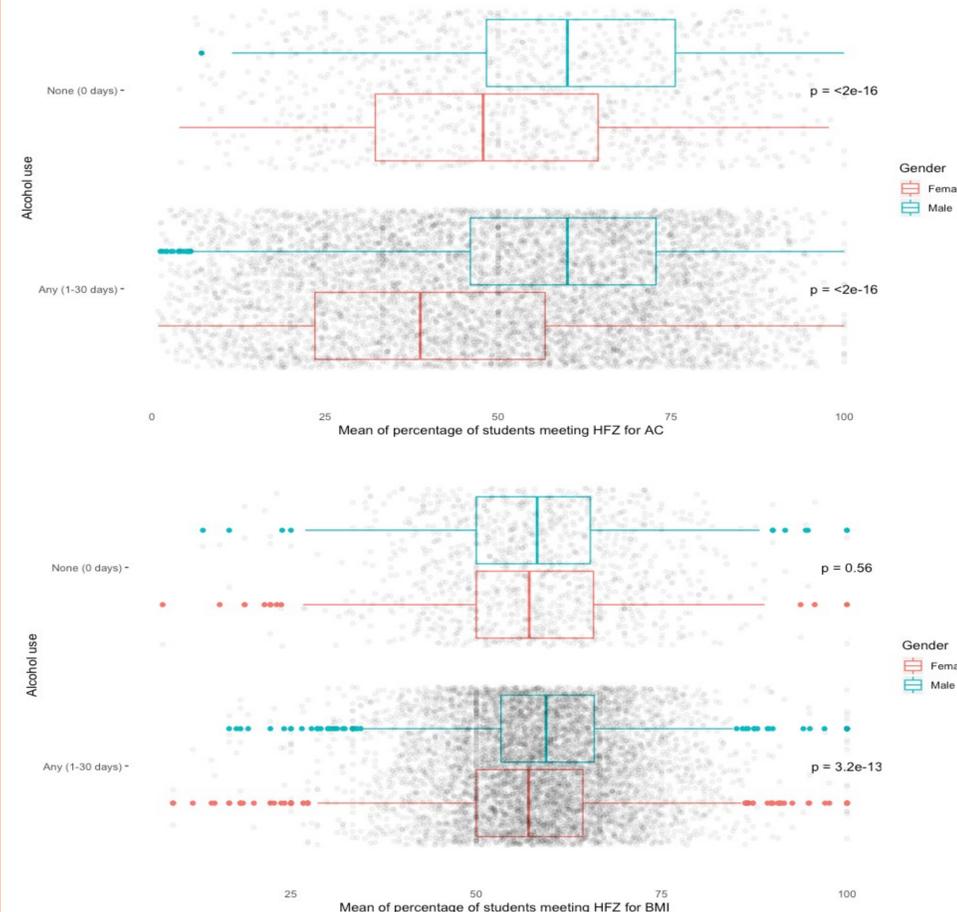
Compared to schools where students reported any use of alcohol, those where students reported no use of alcohol had 3.30 percentage points greater proportion of students in healthy fitness zone for aerobic capacity. Body mass index showed no association with alcohol use.

Additional Information

HFZ

"Standards established by The Cooper Institute that represent levels of fitness that offer some degree of protection against diseases that can result from sedentary living." (California Department of Education)

FitnessGram classifies fitness levels into two discrete zones: Healthy Fitness Zone and Needs Improvement Zone. (The Cooper Institute)



Full model results

	Model 1 (AC)			Model 2 (BMI)		
	b (SE)	t	p	b (SE)	t	p
Intercept	23.75 (2.08)	11.43	<0.001	47.31 (1.11)	42.60	<0.001
Alcohol use (None)	3.30 (0.89)	3.71	<0.001	0.63 (0.48)	1.32	0.19
Grade 7	-4.76 (0.58)	-8.26	<0.001	0.82 (0.31)	2.64	<0.05
Grade 8	-10.73 (0.59)	-18.20	<0.001	1.70 (0.32)	5.35	<0.001
Male	17.66 (0.51)	34.91	<0.001	2.17 (0.27)	7.96	<0.001
Education about alcohol	27.50 (2.39)	11.50	<0.001	9.96 (1.28)	7.79	<0.001
Year 2016	-0.26 (0.56)	-0.47	0.64	0.97 (0.30)	3.21	<0.05
Year 2017	0.75 (0.57)	1.32	0.19	1.96 (0.31)	6.34	<0.001
No alcohol use*Male	-4.01 (1.29)	-3.11	<0.05	-1.46 (0.69)	-2.11	<0.05