

# Generating Rural Options for Weight-Healthy Kids and Communities: Examining the School Environment

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## Introduction

Rural children and adults experience a greater obesity prevalence compared to children and adults living in more urban places. The goal of Generating Rural Options for Weight-Healthy Kids & Communities (GROW HKC) is to prevent childhood obesity and promote healthy weight among children and families living in rural places. GROW HKC focuses efforts in rural communities, schools, and families. The data presented here focus on the school environment.

**Purpose:** To examine physical activity (PA) patterns of rural children during the school day. In particular, we examined differences in PA behaviors across grades 1-6 and between boys and girls. We hypothesized that older children would be less active than younger children and that girls would be less active than boys at every grade.

## Methods

We measured PA behaviors and overweight and obesity prevalence among elementary aged children during the school day in six rural schools. Children (N=1616) were assessed over four consecutive school days. Students were measured in fall 2013 using Walk4Life MVP pedometers. Children donned the devices just prior to the first morning bell and took them off at the end of each school day. Data presented are the Total Activity (TA; total minutes of light, moderate, and vigorous PA) and Moderate to Vigorous Physical Activity (MVPA; total minutes above 120 steps/minute) of the 1,555 students throughout grades 1-6 with complete data. We examined PA patterns across grade levels and between boys and girls.

## Results

Figure 1: Minutes of Total PA and MVPA by Grade and Sex

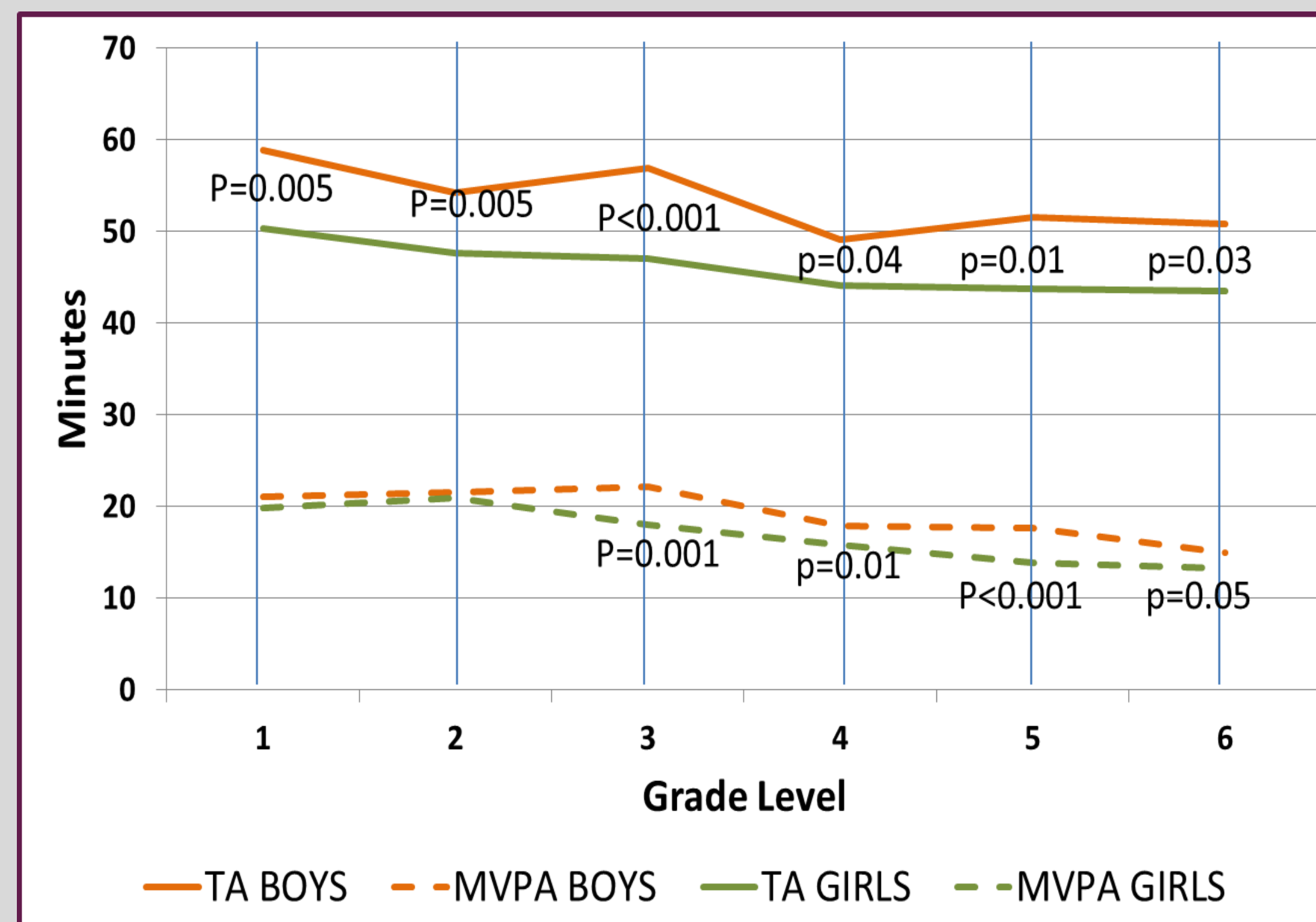


Figure 1. P-values on graph reflect significant gender differences at specified grade level; Grade level comparisons not depicted on graph.

### RESULTS: TA and MVPA Gender Comparisons

- Boys performed more TA overall ( $55.2 \pm 20$  minutes vs.  $50.9 \pm 18$  minutes;  $p=0.01$ ); and more TA at each grade level vs. girls (Figure 1).
- Boys did more MVPA overall ( $19.4 \pm 8.5$  minutes vs.  $16.7 \pm 9.5$  minutes;  $p<0.001$ ); attributable to differences observed in grades 3-6 (Figure 1).

### RESULTS: TA and MVPA Grade Comparisons

- TA and MVPA declines with increasing grade. Boys and girls grades 4-6 had lower TA and MVPA compared to grade 1 ( $p<0.05$ ; Not displayed on graph).
- Mean pedometer wear time was 5.9 hours each day.



### RESULTS: Prevalence of Overweight and Obesity

- Combined prevalence of overweight & obesity was similar for boys & girls ( $p>0.05$ ; Figure 2).
- 4th grade girls had lower obesity (11% vs. 26%;  $p=0.002$ ) and overweight (29% vs. 40%;  $p=0.05$ ) compared to 4th grade boys (Figure 2).
- Prevalence of overweight and obesity among girls was more stable while boys had higher rates as grade level increased compared to 1st graders ( $p<0.03$ ) (Figure 2).

Figure 2: % Overweight and Obese by Grade and Sex

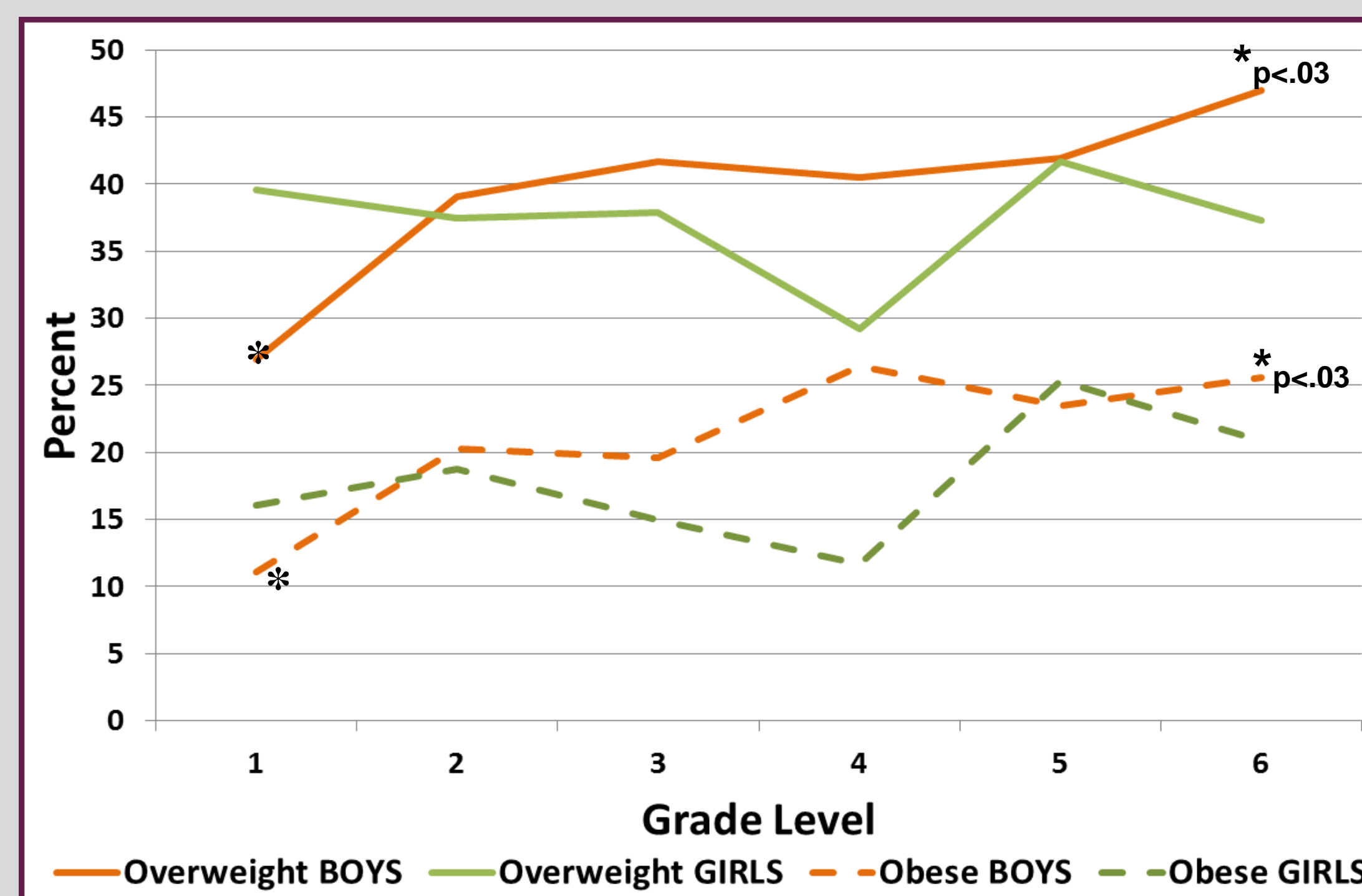


Figure 2. P-values on graph depict significantly higher overweight and obesity prevalence among 2-6<sup>th</sup> grade boys compared to 1<sup>st</sup> grade boys.

## Discussion

Mean pedometer wear-time of participants was 357.2 (+ 26.3) minutes (~ 6 hrs) during the school day. In general, younger children exhibited more TA and MVPA compared to older children, boys performed more TA than girls at every grade ( $P<0.04$ ), and boys engaged in more MVPA than girls in grades 3, 4, 5, and 6 ( $P<0.05$ ).

Mean TA and MVPA were significantly lower than recommended for boys and girls at every grade. In fact, given the Physical Activity Guidelines for Americans recommends that all children get at least 60 minutes of predominately MVPA each day, our results suggest that rural children get less than 5% of the recommended PA dose while at school.

Boys had higher BMI compared to girls, and a significantly increasing BMI from 1st through 6th grade ( $p<0.03$ ), whereas BMI remained stable across grades for girls.

## Conclusions

Overall, the data also show that overweight and obesity prevalence is increasing (particularly among rural boys), while at the same time as TA and MVPA is decreasing – among both boys and girls.

This highlights the critical need to increase physical activity opportunities at school, or provide adequate opportunities outside of school to ensure rural children meet the national physical activity recommendations.

