



**WAVE**  
ripples for change

# Promoting Life-Skills, Physical Activity and Healthy Diet In High School Soccer Players: Results from the WAVE~Ripples for Change Childhood Obesity Prevention 2-Year Intervention

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## OBJECTIVE

To evaluate the impact of a 2-year **obesity prevention intervention (WAVE program)** on high school (HS) soccer players' fruits and vegetable (FV) intake, saturated fat, and added sugar intake; and their physical activity (PA) in- vs. out-of-soccer season.

## BACKGROUND

Unhealthy eating pattern were identified in youth athletes from 10 cross sectional study showing their diet: **1) high in fat; 2) low in FV; 3) high in supplement use**.<sup>1,2</sup> However, most (52%) time in youth sport spent **in sedentary or light-intensity** activities. Still, only 24% of sports participants met the MVPA guideline (60 minutes daily).<sup>3,4</sup>

## STUDY DESIGN

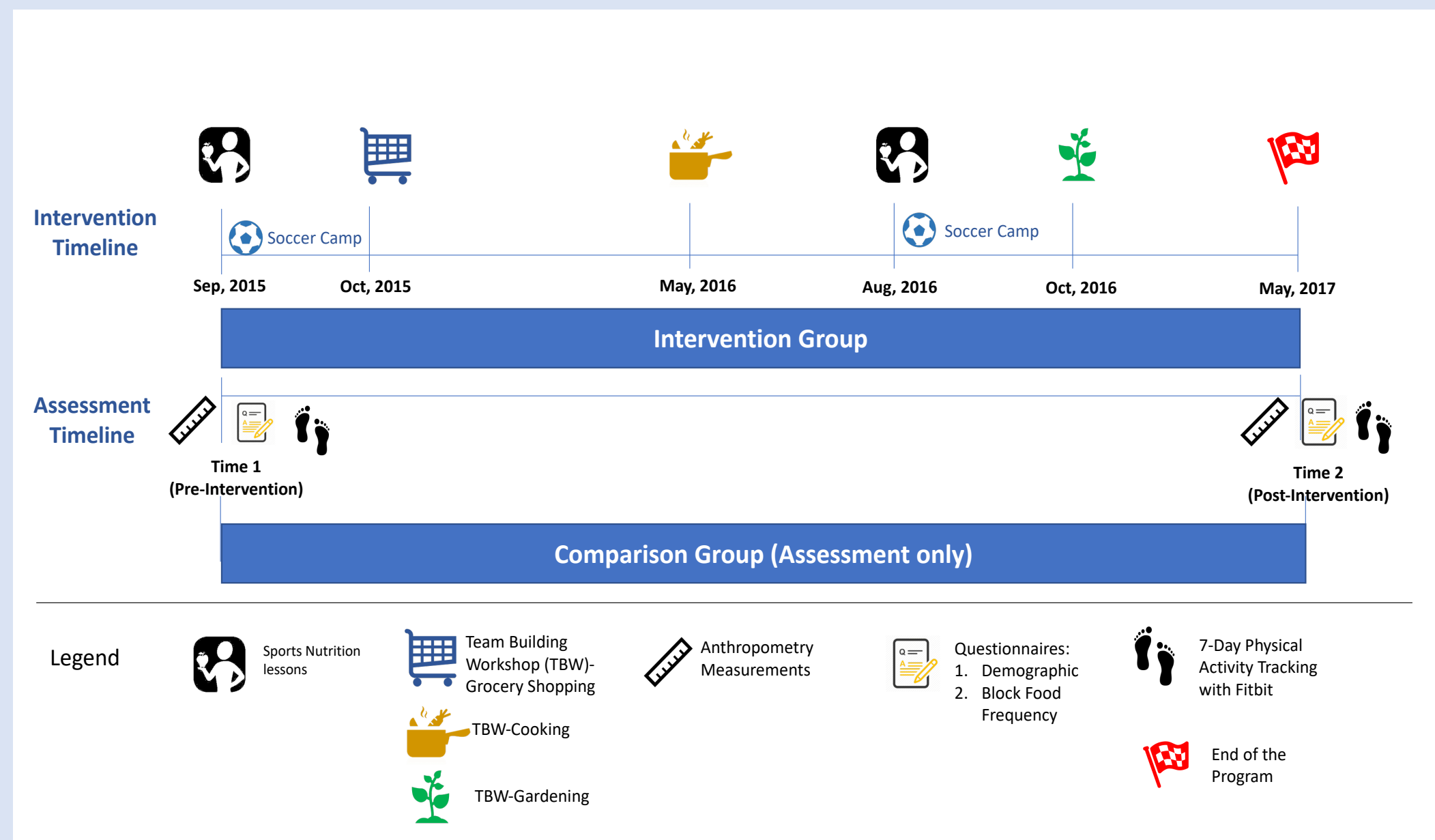


Figure 1. The WAVE program intervention experimental design (2015-17) specific for diet and physical activity data.

## METHODS

Among 388 participants who completed pre-intervention demographic questionnaires, self-reported Block Food Frequency Questionnaire, and measured PA using Fitbit-Zip, 52% completed post-intervention assessments. ANOVA was used to examine pre-/post intervention changes, and ANCOVA models to examine the between-group changes in diet and PA.

Baseline characteristics.	All Participants n=388
Age (y), mean (SD)	15.3 (1.1)
Race, n (%)	
Latino	149 (38.4%)
Non-Latino	239 (61.6%)
NSLP, n (%)	148 (38.1%)
BMI percentile	62.8 (25.0)
Years play soccer	7.6 (3.7)
Prepare meal for themselves, n (%)	229 (59.0%)

## RESULTS & DISCUSSION

Table 1. Impact of WAVE program on diet.

Variable	Sample size (n)	Baseline (in-season) Mean, SD	Post-Intervention (out-of-season) Mean, SD	Within Group changes (post/pre)	Between Group changes (Intervention vs. Comparison)
Fruit/vegetables (cup equivalents/d)	Intervention (n=143)	2.7 (1.5)	2.6 (1.4)	-0.1 (-0.3, 0.1)	0.2 (-0.2, 0.5)
	Comparison (n=59)	2.5 (1.5)	2.3 (1.2)	-0.2 (-0.6, 0.1)	
Saturated fat (g/d)	Intervention (n=143)	21.2 (10.0)	18.7 (9.0)	<b>-2.7 (-4.0, -1.4) *</b>	-0.2 (-2.5, 2.2)
	Comparison (n=59)	22.3 (9.4)	19.4 (9.0)	<b>-2.5 (-4.5, -0.5) *</b>	
Added sugar (g/d)	Intervention (n=143)	43.6 (34.4)	33.7 (28.2)	<b>-12.1 (-16.8, -7.4) *</b>	<b>-10.4 (-19.1, -1.6) *</b>
	Comparison (n=59)	57.6 (37.5)	50.6 (41.5)	-1.7 (-9.0, 5.5)	

Table 2. Impact of WAVE program on physical activity.

Variable	Sample size (n)	Baseline (in-season) Mean, SD	Post-Intervention (out-of-season) Mean, SD	Within Group changes (post/pre)	Between Group changes (Intervention vs. Comparison)
Physical Activity (Averaged steps/d)	Intervention (n=64)	9970 (3145)	7660 (3022)	<b>-2058 (-2770, -1345) *</b>	- 473(-1721, 775)
	Comparison (n=33)	9849 (2977)	8752 (3186)	<b>-1585 (-2587, -582) *</b>	
Moderate/Vigorous PA (min/d)	Intervention (n=64)	34.3 (17.0)	24.3 (15.3)	<b>-8.3 (-12.2, -4.5) *</b>	-1.6 (-8.3, 5.2)
	Comparison (n=33)	30.9 (13.2)	27.2 (16.8)	<b>-6.8 (-12.2, -1.3) *</b>	

For diet, the intervention group significantly **decreased in added sugar (12 g/d) and saturated fat (3 g/d) intakes**. The between-group changes in added sugar intake was significant compared to comparison group. Changes in pre/post FV intake or differential between-group changes in FV was insignificant.

For PA, in soccer season, mean steps/d for all participants was 9,937 (M=10,734; F=9,353), which matched the step threshold consistent with compliance to the 2008 PA Guidelines for Americans. As expected, **PA was 1,800 steps/d lower out-of-soccer season vs. in-season**. Strengths: 1) first obesity prevention study targeting HS soccer players, 2) large sample size with diverse sample. Limitation: timing of FV assessment.

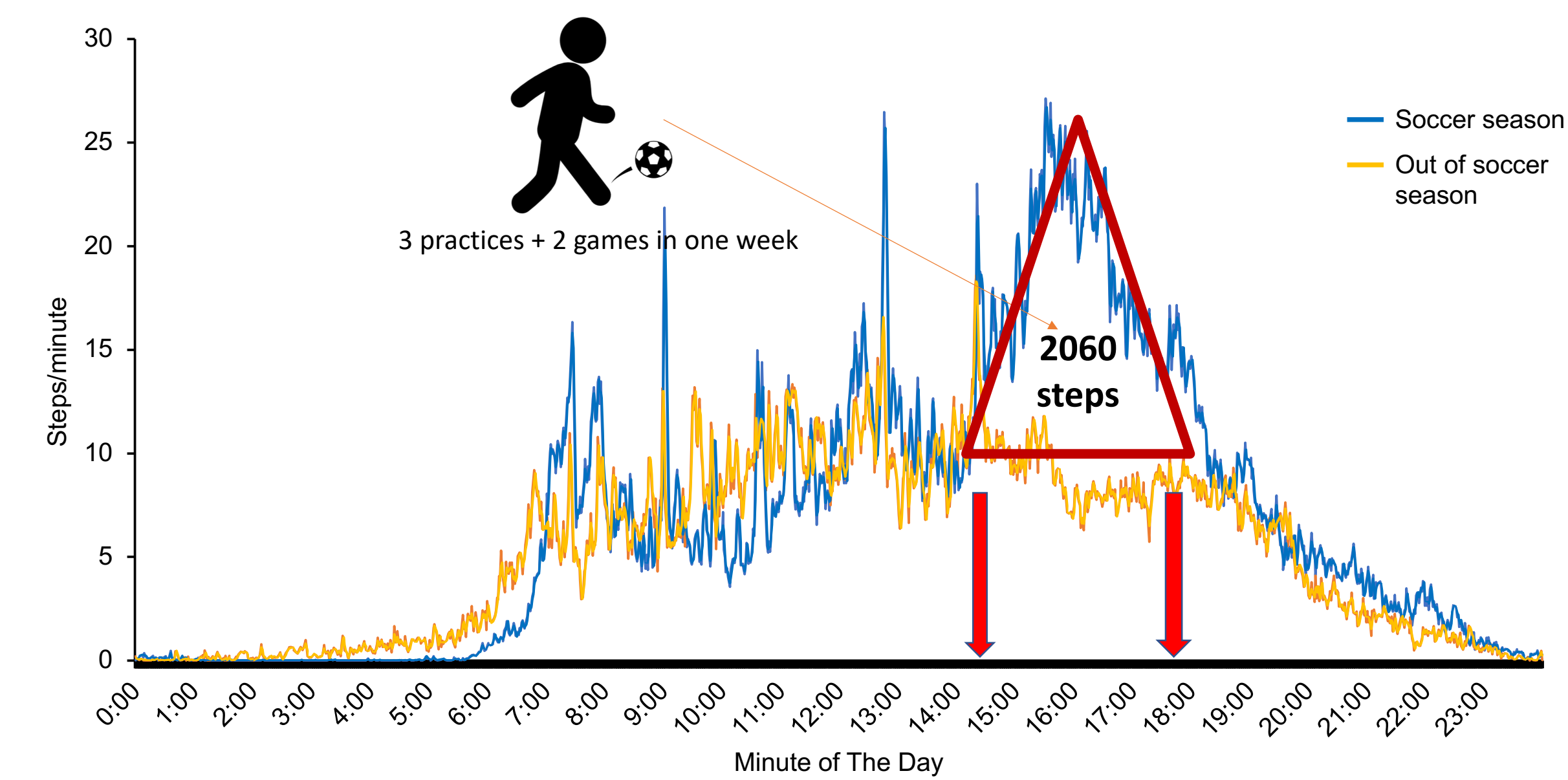


Figure 2. Daily pattern of steps-per-minute for all participants at baseline (in-soccer-season) and post-intervention (out-of-soccer season).

## CONCLUSIONS

Targeting active youth in a diet/PA intervention improves diet, but not PA. Future studies should focus on maintaining PA in youth athletes when they are not engaged in sport, thus, helping them make the transition to being physically active adults.

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