Youth who are Obese Sustain Moderate-to-Vigorous Physical Activity Intensity during Active Video Games

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Nearly one third of American youth are overweight or obese. Many youth who are obese (75%) do not meet the recommended levels for daily physical activity (PA). Based on previous active video game (AVG) research, it is unclear if youth who are obese can achieve moderate to vigorous physical activity (MVPA) for an extended period of time while playing AVG. **Purpose:** To determine if youth who are obese can reach and sustain MVPA while playing a 25-minute conditioning phase of an AVG protocol. **Methods:** Six youth (mean (SD) = 11.3 (0.4) years old; 83% male; 100% African-American) participated in the study. Youth and one parent each completed questionnaires on PA behaviors and health. Anthropometric measurements (height, weight) were collected on youth participants. The AVG protocol included a 5-minute warm-up phase to achieve light to moderate intensity (40-60% of heart rate maximum (HRmax)) and a 25-minute conditioning phase to achieve MVPA (60-80% of HRmax). To cool down participants walked slowly for 5 minutes to return to baseline HR. Lastly, they completed a questionnaire to evaluate how much they enjoyed the video game session. During the AVG protocol, youth wore a portable indirect calorimetry unit (chest harness, heart rate monitor, data unit, face mask, head harness) to measure oxygen consumption (VO_2) and heart rate (HR). **Results:** Table 1 demonstrates that participants achieved and sustained MVPA during the conditioning phase, as, determined by HR, VO_2 , and MET levels. MET levels for youth were calculated using the ratio of active VO_2 to resting VO_2 . **Conclusion:** Youth are able to reach and sustain MVPA using an AVG protocol that is designed for that purpose. AVGs may help youth reach the recommended levels of 60 minutes of MVPA per day.

Table 1: Measuring MVPA during AVG			
Phase	HR mean (SD) (bpm)*	VO_2 Mean (SD) (ml/kg/min)**	METS
Rest	100 (7.9)	3.4 (1.0)	1.0
Warm-up	116 (15.9)	8.6 (3.4)	2.5
Conditioning	148 (24)	13.6 (4.1)	4
Cool-down	129(11)	8.6 (3.2)	2.5

*bpm=beats per minute

** ml/kg/min= milliliters per kilogram per minute