

Integrating Dance Dance Revolution to Promote Urban Latino School Children's Physical Health and Academic Achievement: Project GAME

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Background

- Overweight and obesity is disproportionately more prevalent among Latino children than White Americans (Flores et al., 2002)
- Latino children also fare worse on academic performance than their White counterparts (Evans, 2005)
- There is an imperative need to examine new ways of improving the physical and academic wellbeing of this group.
- Urban Latino children represent a model vulnerable population for evaluating effective approaches to improving the health status and academic performance of underserved populations.

Background

- Regular physical activity has been identified as an important contributor to the prevention of and reduction in overweight and obese children (Burton & VanHeest, 2007).
- Research shows that increasing physical activity opportunities either enhances academic performance or does not adversely affect academic performance (e.g., Ahamed et al., 2007).
- The project GAME (Gaming Approaches to proMote Exercise) aimed to improve the physical and academic wellbeing of urban Latino school children.

Dance Dance Revolution



- An interactive video game that combines real physical dancing requiring fast-foot movement with energetic music and visuals
- promoting a healthy lifestyle/fighting childhood obesity
- Stimulates brain activity / timing and pattern reading

Study Aims

- To develop a comprehensive understanding of the impact DDR has on students' daily physical activity levels, health-related physical fitness (e.g., body composition, cardiovascular endurance), and academic (reading and math) performance
- To investigate the relationships among daily physical activity levels, health-related physical fitness, and academic performance

Significance

- The project will make a significant contribution to the effort of the U.S. to achieve the goal of promoting a physically active lifestyle and reducing the prevalence of overweight and obesity. It also echoes the “No Child Left behind Act.”
- The project is very important and practical for the intended end users (school leaders, the local community) to identify and implement appropriate intervention programs to reverse childhood obesity epidemic among urban Latino school children.

Participants

- Participants: 200 3rd-5th graders
- Setting: Rose Park Elementary School, Salt Lake City, UT
- 89 percent come from economically disadvantaged families.
- 73% from Latino immigrant families
- The highest obesity rate (40%) in the state
- 48 percent of proficiency on the Utah Criterion-referenced Test
- Age: 9-14 years



Research Design

- A repeated measures design
- Baseline data: August-September 2009
- The participants were randomly assigned to one of two groups: (a) 60 min. DDR exercise per week (two times); and (b) control group (free play).
- Multiple assessments over 2-year
- 25 participants will be randomly selected for in-depth interviews at the end of each school year



Instrumentation

- 1-week daily physical activity levels: ActiGraph accelerometers (Pensacola, FL)
- Students' health-related physical fitness: FITNESSGRAM (Cooper Institute for Aerobics Research, 1999); 1 mile, curl-up, push up, body mass index [BMI], percent of body fat measured by skinfold
- Students' grades in reading and math for the Utah Criterion-referenced Test (retrieving from the school district),
- Students' gaming experiences: in-depth interviews

Data Analyses

- 1. Hierarchical Linear Modeling (HLM; Bryk & Raudenbush, 1992) will be used to analyze the mean level changes of students' physical activity levels, health-related physical fitness, and academic performance for both groups, respectively.
- 2. Hierarchical multiple regressions will be used to assess the relative contribution of physical activity levels and health-related physical fitness to students' academic performance.
- 3. NVIVO 8.0 will be used to explore the numerous themes emerged from students' responses to the in-depth interviews.

Anticipated Outcomes

- 1. Students in the DDR group will display more increased physical activity levels and more increased scores in health-related physical fitness than those in the control group over time.
- 2. Students in the DDR group will receive have more increased reading and math grades than those in the control group over time.
- 3. Students' daily physical activity levels and health-related physical fitness will positively relate to their reading and math grades over time.
- 4. Students will report positive experiences with DDR.