Imagine you are working on a research paper about the effects of playing video games. Read the three information sources that follow this page and keep the CAARP model in mind as you review each source.

**Remember:**
C = Currency
A = Authority
A = Accuracy
R = Relevance
P = Purpose

For the third and final source you will see the address (URL) of a website. Click on that link to be taken to a website. Please review the website as a whole for your third and final source.

To complete your assignment, go to: [http://library.un cw.edu/instruction/UNI_library_assignment](http://library.uncw.edu/instruction/UNI_library_assignment). Login at the bottom of the page and follow the directions to answer questions about each information source.
Abstract

One possible method to engage youth with visual impairments in physical activity may be exergaming. The purpose of this study was to measure differences in the enjoyment levels of youths with visual impairments playing three commercially available exergames. Participants (n = 12) ages 9 to 16 years old with a visual impairment were randomly assigned one of three games on three separate nights and played each game for 10 minutes. Games played were Dance Dance Revolution Extreme 2 (DDR), EyeToy Kinetic, and Wii Boxing. After each game participants filled out the Physical Activity Enjoyment Scale. The scores were summed for final analysis with a highest attainable score of 144. A Friedman's ANOVA was used to analyze the data. Players of the three different games showed no significant difference in their enjoyment between games. The consistently high mean scores attained by all three of the exergames (DDR = 129 [20.9], EyeToy = 127 [23.4], Wii = 137.67 [9.4]) indicate that the participants enjoyed playing these games. This result suggests that youth with visual impairments can enjoy being physically active through use of the exergames.

Keywords: physical activity, exergames, physical education, Physical Activity Enjoyment Scale

Introduction

The U.S. Department of Health and Human Services (2008) has released the most recent physical activity guidelines for both adults and children. These
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guidelines are based on an extensive review of the scientific literature and determined that children benefit from an hour or more of physical activity a day. A positive relationship between physical activity and cardiorespiratory fitness in youth has been suggested (Shephard, 1992; Payne & Morrow, 1993). Moderate physical activity has been shown to improve children’s self-esteem and body image as well as reduce depression and anxiety levels (Bryant et al., 2010). Getting children active is critical since studies have shown that obesity in childhood may be a precursor to obesity in adulthood, and children who are physically active are more likely to become active adults who will benefit from exercise throughout their lives.

Wankel (1985) has suggested that enjoyment plays an important role in exercise and sport participation. A direct influence on behavior, enjoyment can provide an immediate reward for being physically active (Dishman et al., 2005). Therefore, it can be assumed that an increase in enjoyment could lead to an increase in physical activity. Enjoyment of an activity serves as a key determinant when one decides whether or not to allocate time toward that activity (Graves et al., 2010). In response to declining rates of physical activity among adolescents, more opportunities for physical activity that children enjoy must be discovered.

The increasingly sedentary lifestyles of children are setting them up for negative health outcomes including diabetes, hypertension, and cardiovascular disease (Stephens, 2002). Little has been done to successfully combat the lack of physical activity seen in adolescents. Nader and colleagues (2008, 2009) indicate that the average moderate–vigorous physical activity (MVPA) rate of children decreases between the ages of 9 and 15 years of age during both the weekday and weekend. While approximately 99 percent of 9-year-olds were engaged in at least 60 minutes of MVPA during the weekday, less than 32 percent of the 15-year-olds were engaged in 60 minutes of MVPA during the weekday. This ultimately brings children below the recommended amount of 60 minutes of MVPA. This is consistent with other data that suggest that two-thirds of adolescents did not reach the recommendation of at least 60 minutes of moderate physical activity, 5 days a week (Kerr, 2007).

While disparities in MVPA exist between youth with and without disabilities, they also exist between types of disabilities. Research by Longmuir and Bar-Or (2000) suggested that individuals with visual impairments tend to have lower physical activity levels than their peers with physical and chronic disabilities. Further, they concluded that only 27 percent of children with some visual impairment are habitually active. Hence, the greatest risk of a sedentary lifestyle is by youths with visual impairment. It is clear that more opportunities for physical activity for those individuals are needed.

Boone, Gordon-Larsen, Adair, & Popkin (2007) point to the growth in home technology for the increased sedentary behavior of youth today. Clocksin, Watson, and Ransdell (2002) have argued that sedentary leisure-time activities are gaining popularity among children and adolescents, and that these activities are linked to decreased physical activity and increased body mass index (BMI). It is believed that leisure-time sedentary behaviors can be addressed by reducing media use including television, nonacademic computer use, and inactive video game playing. Conversely, there has been research done that provides evidence that video games may be beneficial to both those with visual impairments and those without (Wang & Perry, 2006; Morelli, Foley, Lieberman, & Folmer, 2011). Certain video games can increase both visual field and reaction time of the participants (Green & Bavelier, 2003). Yang & Foley (2011) recommend exergames as a way to improve motor skills and increase physical activity levels of youth with disabilities.

Gasperetti et al. (2010) suggests that youth with visual impairments may receive health benefits by participating in exergames. Research by Morelli and colleagues (2010, 2011) provided evidence that youth with visual impairments can reach MVPA levels that provide health benefits while playing exergames specifically designed with a tactical interface. However, little information exists on whether youth with visual impairments actually enjoy playing exergames, specifically those with a graphic user interface. The purpose of this study was to investigate if youths with visual impairments experience different enjoyment levels after playing three commercially available exergames.

Methods
Participants

The youths attended a 1-week overnight sports camp in upstate New York for youth with visual
imperfections. Prior to their arrival at camp, 15 youths were identified as being qualified to participate in this study. To limit confounding variables, inclusion criteria were the following: no orthopedic impairment, no intellectual disability, and a United States Association for Blind Athletes (2009) classification of B2 or B3. Athletes with a B2 classification have the ability to recognize the shape of a hand up to visual acuity of 20/600, and athletes with a B3 have a visual acuity between 20/600 and 20/200. Of those identified, seven males and five females volunteered to participate in the study. Parents signed consent forms and the participants signed an assent document that was offered in both large print and braille. Descriptive data of the participants can be found in Table 1.

### Procedure

The participants were randomly assigned to play three exergames previously modified for use in this study and others (Gasperetti et al., 2010). Games were projected on a large screen from a projector positioned overhead; this allowed the participants to stand approximately 6 feet from the screen. The interactive games used in the study were *Dance Dance Revolution Extreme 2* (DDR), *EyeToy Kinetic*, and *Wii Boxing*. All of the games provide the user with both visual and auditory feedback.

All of the campers had one-on-one counselors who were responsible for getting their athlete to the gaming area when the study was taking place. The participants played one of the three interactive games a night for 10 minutes. When playing DDR, participants were asked to choose five songs and were also allowed to pick the difficulty level at which they played. The *EyeToy Kinetic* game called *Breakspeed* runs for about 3 minutes at a time so the participants played the game three times. During *Wii Boxing* the participants were allowed to play as many rounds as they could within the allotted 10 minutes.

After playing each of the interactive games, which were played on separate nights, the camp counselor would ask the participant the questions that make up the Physical Activity Enjoyment Scale (PACES), which was developed by Kendzierski and DeCarlo (1991). The questions in the survey are meant to measure the enjoyment levels of physical activity in a given area or event. In this case, it measures the enjoyment levels of players who participated in the physically active video games. The 18 questions that make up the PACES are answered on a 1 (lowest) to 8 (highest) Likert scale. The scale was modified from a 7-point to an 8-point scale to force a positive or negative response.

In the original work by Kendzierski and DeCarlo (1991), they studied the construct validity as well as the internal consistency of the PACES with undergraduate students. Their results found a high internal consistency ($\alpha = .93$) and item correlations ranging from $r = .35$ to $r = .89$. Similar results were reported by Crocker, Bouffard, & Gessaroli (1995) with youth at a sports camp; they reported high internal consistency ($\alpha = .90$) and item correlations ranging from $r = .38$ to $r = .79$. The inductive nature of this study can shed some light on what types of physical activity opportunities youth with visual impairments enjoy or not enjoy physical activity, as we can draw from the experiences of the participants.

### Analysis

Data were analyzed using SPSS for Windows v.16 (SPSS Inc., Chicago, IL). Data from the surveys were entered into an Excel (Microsoft, Bellevue, WA) spreadsheet and converted to SPSS with STATTransfer (Circle Systems Inc., Seattle, WA). Scores were totaled by adding up the values from each question on the PACES. Each question can be answered on a score of 1 to 8, with 1 representing the least enjoyment and 8 representing the most enjoyment. The highest score a game could achieve was 144 and the lowest score a game could achieve was 18.

A visual check of histograms and boxplots of the data revealed a nonparametric distribution. Therefore to investigate the differences between groups, a Friedman’s ANOVA was employed. Alpha was set at .05.
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Figure 1. Mean PACES scores for 1 each game played.

Results

The findings indicated that there was no significant difference in the enjoyment levels between DDR ($M = 129$, $SD = 20.99$), EyeToy ($M = 127$, $SD = 23.47$), and Wii ($M = 137.67$, $SD = 9.40$), $\chi^2(2) = 3.41$, ns. It is interesting to note that the least variability in scores, as measured by standard deviation, was found after playing Wii Boxing ($SD = 9.40$). That is half as much as the 20.99 in DDR and 23.47 in EyeToy. Overall, the results of this study, as seen in Figure 1, suggest that youths with visual impairments enjoyed being physically active through the use of exergames.

Discussion

The purpose of this study was to measure differences in the physical activity enjoyment levels of youths with visual impairments after playing DDR on Playstation 2, EyeToy Kinetic on Playstation 2, and Wii Boxing on Nintendo Wii. The results showed that there was no significant difference in enjoyment levels of the participants after playing the three different exergames. While Wii Boxing had the highest mean score, although not significant, it also had the least amount of variability of enjoyment amongst the participants. High mean scores expressed for all three games indicate a high level of enjoyment for most, if not all participants. A score of 144 is the highest score attainable on the PACES.

Among youth with disabilities, youth with visual impairments are at greatest risk for a sedentary lifestyle (Longmuir & Bar-Or, 2000). Therefore, studies like this are important in furthering the understanding of potential opportunities for physical activity. Taking the enjoyment level of the participants into consideration is essential since it serves as a large motivating factor for children deciding to participate in physical activity and sports (Gill, Gross, & Huddleston, 1983). While there are issues surrounding the dynamic state of enjoyment, the PACES provides researchers with a way to measure the subjective feature. It is important to utilize the PACES in an effort to provide more enjoyable opportunities for physical activity for youths with visual impairments.

Studies have provided evidence that supports the idea that youth without visual impairments enjoy interactive games or exergames (Epstein, Beecher, Graf, & Roemmich, 2007). Epstein's study describes interactive gaming as combining exercise and entertainment and has coined the term "exertainment." The study was able to conclude that children may be motivated to be active if they are given the opportunity to play an interactive video game.

One of the limitations in this study was the small sample size of 12, which may have decreased our ability to detect a significant difference between games if one exists. Also, the participants played these games only at night and only for 10 minutes at a time. It would be interesting to see if enjoyment levels
decrease over time. There also was the fact that the participants spent all day being active at a sports camp so they may have already been tired when playing the games. Judging by the scores, we do not think this fatigue played a factor. Regarding the PACES, sometimes the language was not understood by the younger participants and had to be explained by the coaches, this may have affected the validity. Future research in this area should include more participants and research should be conducted over a longer period of time.

This study and others have provided evidence that exergames are enjoyable to the participant playing them (Epstein et al., 2007). Another study using a modified PACES found an enjoyment percentage ranging from 60 to 65 percent among adolescents who played an inactive video game, walked briskly on a treadmill, or jogged on a treadmill (Graves et al., 2010). The enjoyment percentages for the exergames used in this study ranged from 88 to 96 percent among adolescents. The importance of enjoyment in an effort to increase physical activity among children cannot be overlooked. Limited research has been done concerning whether or not exergames, which have a graphic user interface, are enjoyed by youth with visual impairments. However, the consistently high mean scores and the fact that there was no significant difference in the enjoyment levels expressed after playing these three exergames suggests that youth with visual impairments see exergames as an enjoyable way to be physically active.

References


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Video games, whether violent or not, are a lightning rod for speculation and fear regarding their impact on children and adults alike. Yet, we don’t have to go far back in time when almost identical expressions of concern were made regarding comic books, fiction novels and various genres of music - from rock to punk. While it would be foolish to suggest that every instance of a particular type of media is appropriate to all age groups (clearly Grand Theft Auto and A Clockwork Orange were not made to be consumed by children), it is also essential that we take a balanced approach.

Our research has shown several benefits associated with playing video games, whatever their content. We have shown improvements in mood as well as feelings of competence and autonomy resulting from playing video games. Our studies of play with others have revealed benefits for young people in terms of social wellbeing and feelings of relatedness. We have also found co-operative video game play to be associated with increased brain activity for younger people. More broadly, using a well validated measure of mental health and wellbeing, we have found that for adult players, a positive impact on wellbeing resulted from playing video games with others.

Looking to studies in other countries, support for the positive impacts of video game play abounds. In a randomised controlled trial with a sample of clinically depressed adults, the positive influences of video games have been shown to include a reduction in tension, anger, depression and fatigue and increase in vigour. These improvements were supported by associated changes in brain activity and heart rate variability.

Research focusing on video game play among children has suggested that the best outcomes are associated with moderate video game play as opposed to no play or excessive play. These benefits have extended to greater positive emotions, having less risky friendship networks, better self-esteem and higher levels of family closeness.

Of course, dysfunctional patterns of play can occur. Researchers at the University of Rochester, New York, have shown that whether people engage with video games in a healthy way is a consequence of whether certain basic needs (for example, feelings of competence, autonomy and relatedness) are being met in their lives. If your needs are not being met and you are less satisfied in your everyday life, you are more likely to engage unhealthily with video games and for play to result in less enjoyment and more tension.

In contrast, if you’re broadly happy and satisfied, you are more likely to engage with video games in a balanced and healthy way and your engagement is likely to lead to feelings of enjoyment and increased energy following play.

There is a range of evidence that suggests video games can impact a young player’s wellbeing positively. Translating this research into practical guidelines about gaming and wellbeing that can be used by parents and professionals is critical.

Importantly, there are also clear opportunities to use video games as a way to empower young people to manage their own mental health and wellbeing, and perhaps circumvent psychological distress.

One of the most important things is that players (and their parents) engage thoughtfully with what they are playing. Games like Minecraft and Portal 2 are appropriate for a wide age range and encourage creativity and co-operation. Even more adult-themed and violent video games can have a positive influence on the player - but who the player is and the nature of their engagement will influence the impact of such games.

Dr Daniel Johnson is director of the Queensland University of Technology’s games research lab and leads the gaming research group at the Young and Well Co-operative Research Centre.
Click on the link below. Examine the website and answer the questions for “Source 3.”

http://www.psychologyofgames.com/