THE DIFFERENCES BETWEEN BOYS AND GIRLS ON ENJOYMENT OF EXERGAMES AND SEDENTARY BEHAVIOURS

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Abstract
The purpose of this study was to determine the differences between boys and girls on enjoyment of several activities including two sedentary activities (watching TV, playing Strike Force Bowling-PS2 game) and one exergame (Nintendo Wii Tennis). One hundred and sixty-two children, aged 11.2±0.8 years were divided into two groups according to their gender. Participants individually attended three testing sessions during which they performed several physical activities as describe above. Following each activity children completed a Physical Activity Enjoyment Questionnaire. A two-way analysis of variance (ANOVA) with repeated measures was conducted to evaluate the effect of gender on the enjoyment of those activities. Results indicated that TV was the least enjoyable activity whereas the exergame, Wii Tennis, was the most enjoyable activity. No significant differences were found between gender groups. Conclusively, children's enjoyment of exergames could be capitalized on in order to develop interventions to increase physical activity.

Key words: *exergames, enjoyment, physical activity, sedentary behaviour, gender.*

Introduction

Currently, there are a number of children failing to achieve the minimum daily physical activity guidelines (Tzetzis, Avgerinos, Vernadakis & Kioumourtzoglou, 2001). Of equal concern, is that the amount of time children spend in sedentary pursuits is significant (Maitland, Stratton, Foster, Braham & Rosenberg, 2013). For those working in the public health domain this is becoming increasingly disturbing as sedentary behaviour and decreased physical activity are independently associated with chronic health problems including obesity, diabetes and cardiovascular diseases (Beneka, Malliou, Gioftsidou, Tsigganos, Zetou, & Godolias, 2009; Popkin, Adair & Ng, 2012; Zetou, Malliou, Lola, Tsigganos, & Godolias, 2006). One of the most frequently observed sedentary activities that children partake in are screen-based activities including: television viewing and playing video games (Meier, Hager, Vincent, Tucker, & Vincent, 2007). Research suggests that technology and especially video games have become an integral part of life for children and adolescents (Giannousi, Vernadakis, Derri, Antoniou, & Kioumourtzoglou, 2014; Vernadakis, N., Antoniou, P., Zetou, E., & Kioumourtzoglou, 2004; Vernadakis, Zetou, Antoniou, & Kioumourtzoglou, 2002; Vernadakis, Zetou, Avgerinos, Giannousi, & Kioumourtzoglou, 2006). In a recent survey of USA adolescents, 98% of teenagers played video games regularly at least once a week (Lenhart, Kahne, Middaugh, Macgill, Evans, & Vitak 2008). Replacing traditional sedentary screen-time with "active" screen-time may be a useful way to encourage children to increase total daily energy expenditure and reduce the amount of time they are spending being physically inactive. Opportunities to convert traditional sedentary screen-time to active screen-time may exist via the recent entry of revolutionized "active video games or exergames" into the gaming market. These games utilize cameras and motion sensors which allow the gamer to physically perform a variety of actions such as swinging a tennis "racquet", throwing balls and running on the spot. However, research suggests that girls play and enjoy video games, but they do not play as much as their boys' counterparts (Shu-Fung, 2010). The differences between boys' and girls' play habits begin as early as kindergarten (Homer, Hayward, Frye, & Plass, 2012). Researchers have attempted to explain the differences in boys' and girls' play habits by studying cognitive and social factors that might influence these habits. The research on cognitive factors however is inconclusive. Studies suggest that cognitive differences between boys and girls are not a factor if both boys and girls are given the opportunity to play a similar amount of time (Burke, Kandler, Good, 2012; Goulimaris, Koutsouba, & Giosos, 2008). Therefore, compared to traditional sedentary-style games, it seems plausible that there may be benefits in encouraging childrens, especially girls, to play exergames at least in terms of increasing daily energy expenditure. While little is known about the mechanisms by which exergames affect energy expenditure, several psychosocial variables may exert influence. One such psychosocial variable that has been shown to be highly associated with physical activity is enjoyment (Rhodes, Fiala, & Conner, 2009; Bebetsos & Goulimaris, 2014; Goulimaris, 2015; Vernadakis, Antoniou, Giannousi, Zetou, & Kioumourtzoglou, 2011; Vernadakis, Giannousi, Tsitskari, Antoniou, & Kioumourtzoglou, 2012).

Previous studies have found effects of body motion on enjoyment (Limperos, Schmierbach, Kegerise, & Dardis, 2011; Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011; Vernadakis, Zetou, Tsitskari, Giannousi, & Kioumourtzoglou, 2008) and differences in enjoyment across exergames and sedentary game activities (Bailey & McInnis, 2011; L. E. Graves, Ridgers, Williams, Stratton, Atkinson, & Cable, 2010; Lyons, Tate, Ward, Bowling, Ribisl, & Kalyararaman, 2011; Penko & Barkley, 2010). Studies of exergame-enhanced stationary bicycles have found that these bicycles produced higher intensity physical activity than traditional stationary cycles (Rhodes, Warburton, & Bredin, 2009; Warburton et al., 2009), and have also found positive effects of enjoyment on adherence (Rhodes, et al., 2009). Finally, a study conducted by Lyons et. al. (2011) found, when investigating the differences in energy expenditure and enjoyment across four types of videogames games (shooter, band simulation, dance simulation and fitness), that all games except shooter games significantly increased energy expenditure above rest. Fitness and dance games increased energy expenditure greater than that produced by band simulation; however enjoyment was higher in band simulation games than in all other types. Considering the above research effort, it seems worthwhile to determine whether children (boys and girls) enjoy exergames equally or more than, traditional sedentary activities. Therefore, the purpose of this study was to determine the differences between boys and girls on enjoyment of several activities including two sedentary activities (watching TV, playing Strike Force Bowling-PS2 game) and one exergame (Nintendo Wii Tennis). The study looked into the following main research statements: Are there differences in mean enjoyment scores between the boys and the girls' groups? Do children, on average, report differently on the enjoyment scale for the TV, Strike Force Bowling – PS2 and Nintendo Wii Tennis activities? Do the differences in means for the enjoyment between the boys and the girls' groups vary between the TV, Strike Force Bowling – PS2 and Nintendo Wii Tennis activities?

Methods

Participants

One hundred and sixty-two children (85 boys and 77 girls), aged 11.2±0.8 years were recruited for the study through personal contacts, local schools, and community advertisements. Children were classified into two groups, according to their gender. Prior to group assignments, children of parents expressing interest were screened to ensure they were willing to participate after being informed of the full study responsibilities. Exclusion criteria included children who were not healthy (for example, those suffering from coughs and colds), injured, had asthma, or were not able to exercise at moderate to high intensities. Informed consent was obtained from each parent of the young children prior to their voluntary participation in the study.

Enjoyment instrument

A 16-item Physical Activity Enjoyment Scale was used to determine the extent to which the activity was enjoyed by the participants (Motl, Dishman, Saunders, Dowda, Felton, & Pate, 2001). The scale included a series of statements such as: I disliked it, It frustrated me, It felt good, It made me unhappy. Participants were required to indicate how much they identified with the statement by giving a numerical rating on a Likert-type scale anchored by 1 (disagree a lot) to 5 (agree a lot). This instrument has been shown to have construct and internal validity and reliability ($r=0.75$, $p<0.01$) (Davison, Werder, Trost, Baker, &Birch, 2007). Negatively worded items were reverse coded. Total enjoyment was recorded as the mean of the 16 items.

Procedure

Participants individually attended three testing sessions during which they performed different tasks (Table 1). During session 1, participants completed the watching TV sedentary activity. The session 2 began with a 20-minutes familiarisation period to ensure that all children were accustomed to the range of video games. The familiarisation period was followed by 10-minutes playing a sedentary video game (Strike Force Bowling – PS2). During session 3 participants completed the exergame (Nintendo Wii Tennis) which were played for 10-minutes. The exergame included in the study was chosen to represent a range of activity levels which required upper, lower or combined upper and lower body movements. Participants were given a 3-minute break between all activities during which they answered questions relating to their enjoyment of the activity. All of the activities, were carried out in the same standardised environment.

Table 1. Outline of testing sessions.

Session 1	Session 2	Session 3
Sedentary activity (watching TV)	Games familiarisation	Exergame (Nintendo Wii Tennis)
	Sedentary activity (Strike Force Bowling – PS2)	

Data analysis

Normality of distribution was tested with the Kolmogorov-Smirnov test. Homogeneity of variance and Sphericity was verified by the Box's M test, the Levene's test and the Mauchly's test (Green & Salkind, 2013). A two-way analysis of variance (ANOVA) with repeated measures was conducted to evaluate the effect of gender and type of activity on enjoyment. The dependent variable was enjoyment. The within-individuals factors were gender groups with two levels (boys, girls) and type of activity with three levels (TV, PS3, Nintendo Wii). The gender x type of activity interaction effect, as well as the gender and type of activity main effect were tested using the multivariate criterion of Wilks's lambda (Λ). Significant differences between the means scores were tested at the 0.05 alpha level.

An effect size was computed for each analysis using the eta-squared statistic (η2) to access the practical significance of findings. Cohen's guidelines were used to interpret η2 effect size: 0.01=small, 0.06=medium and 0.14=large (Cohen, 1988).

Results

Table 2 shows the means and the standard deviations for the boys' and girls' groups on enjoyment of several activities including two sedentary activities (TV, Strike Force Bowling – PS2 game), and one exergame (Nintendo Wii Tennis).

Table 2. Means and standard deviations for the boys' and girls' groups on enjoyment of several activities.

Activity	Group	N	Mean	S.D.
TV	Boys	81	3.53	1.03
	Girls	81	3,49	1.09
Strike Force Bowling – PS2	Boys	81	3,90	1.12
	Girls	81	3,96	1.25
Nintendo Wii Tennis	Boys	81	4.47	.89
	Girls	81	4.41	.92

Enjoyment comparison

Two-way analysis of variance (ANOVA) with repeated measures was conducted to evaluate the effect of gender and type of activity on enjoyment. The enjoyment comparison showed a significant main effect for the type of activity, Λ=0.309, F(3, 158)=112.07, p<0.001, partial η2=0.679, while the gender x Type of activity interaction effect was not significant, Λ=0.954, F(3, 158)=10.05, p=0.111, partial η2=0.042.

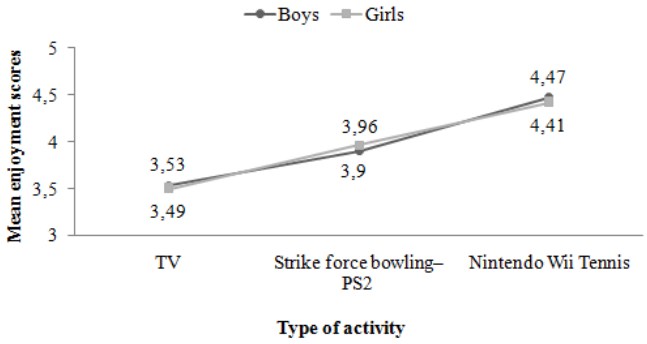

Figure 1. The effect of gender and type of activity on enjoyment.

The univariate test associated with the gender group's main effect was also not significant, F(1, 160)=0.138, p=0.699, partial η2=0.002. Pairwise comparisons using t-test with a Bonferroni adjustment were conducted to follow up the significant type of activity main effect and assess differences across activities on enjoyment. Results revealed significant mean differences in enjoyment scores between the watching TV sedentaryactivity and the other two activities, Strike Force Bowling – PS2 (MD=-0.409; 95% CI: -0.546 to -0.280, p<0.001) and Nintendo Wii Tennis (MD=-0.889; 95% CI: -1.018 to -0.757, p<0.001).

Moreover, significant mean differences in enjoyment scores were found between the Strike Force Bowling – PS2 sedentary activity and the exergame activity of Nintendo Wii Tennis (MD=-0.478; 95% CI: -0.609 to -0.351, p<0.001). As shown in Figure 1, the exergame was consistently ranked the top activity irrespective of the children's gender.

Discussion

Converting sedentary screen-time into active screen-time might provide an effective way to encourage children to accumulate more health-related physical activity. Therefore, the purpose of this study was to determine the differences between boys and girls on enjoyment of several activities including two sedentary activities (watching TV, playing Strike Force Bowling – PS2 game) and one exergame (Nintendo Wii Tennis). Results showed that children enjoyed playing exergame. Children ranked the exergame as the most enjoyable activity irrespective of gender (Figure 1). The most enjoyable activity, Nintendo Wii Tennis, was enjoyed significantly more than all other activities, thus suggesting that there is a strong preference towards this game. The activity least enjoyed by the participants was watching TV. The sedentary video game (Strike Force Bowling – PS2) was ranked as the second most enjoyable activity, after the Nintendo Wii exergame.

This suggests that the children had a strong preference towards the exergame over the traditional video game. This is important to consider, as even if children are given the opportunity to play sedentary video games they may still choose exergames over the traditional video games. Intervention studies are needed to determine which type of games children prefer to play when given an option. Based on the research and the analysis of the data, this study revealed that exergames may provide children with a unique opportunity to increase their amount of daily physical activity. They are enjoyable and conducive to being played within the home environment. As exergames are able to be played indoors they may be a good substitute for sedentary behaviour during times when children are least active e.g. after school, on weekends and during winter (Vernadakis, Derri, Tsitskari, & Antoniou, 2014).

Exergaming has been shown to provide players with an enjoyable exercise experience (Vernadakis, Kouli, Tsitskari, Gioftsidou, & Antoniou, 2014) as they tend to view exergaming more as entertainment rather than exercise (Vernadakis, Papastergiou, Zetou, Antoniou, 2015). It is possible that the entertainment element of exergaming may have played a role in influencing participants' attitudes toward physical activity. A possible reason why the exergames may be considered more enjoyable than watching TV and playing Strike Force Bowling – PS2 video game irrespective of gender is because they may provide more mental stimulation and challenge for participants.

Due to the nature of the exergames they may also be considered to be unstructured physical activity. In addition, the specificity and the frequency of the feedback provided to the childrens by the exergame regarding both the knowledge of their performance and the knowledge of their actions, could have contributed to their enjoyment.

Augmented feedback in the form of either knowledge of performance or knowledge of results is crucial for the learning and the pleasure of the physical activity (Giatsis, Zetou, & Tzetzis, 2015; Zetou, Amprasi, Michalopoulou, & Aggelousis, 2011; Zetou, Vernadakis, & Bebetsos, 2014; Zetou, Vernadakis, Bebetsos, & Makraki, 2012). Therefore, the children may have not perceived themselves to be participating in physical activity when they were playing the exergames.

Conclusion

In conclusion, exergames are more enjoyable than watching TV and playing Strike Force Bowling – PS2 video game. Enjoyment of exergames was clearly evident irrespective of gender. Children's apparent enjoyment of exergames and electronic media should be capitalized on by those designing interventions to reduce sedentary behaviour. However, future studies are needed to track children's long term enjoyment of exergames.

References

Bailey, B.W., & McInnis, K. (2011). Energy cost of exergaming: A comparison of the energy cost of 6 forms of exergaming. *Archives of Pediatrics & Adolescent Medicine, 165*, 597– 602.

Bebetsos, E., & Goulimaris D. (2014). Personal outcome and leadership as defining factors of satisfaction in the context of the course "Arts II: Overview of Greek Music and Dance" of the Hellenic Open University. *Turkish Online Journal of Distance Education, 15*(2), 12-24.

Beneka, A., Malliou, P., Gioftsidou, A., Tsigganos, G., Zetou, H., Godolias, G. (2009). Injury incidence rate, severity and diagnosis in male volleyball players. *Sport Sciences for Health, 5*(3), 93-99.

Burke, A., Kandler, A., & Good, D. (2012). Women Who Know Their Place. *Human Nature, 23*(2), 133-148.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum.

Davison, K.K., Werder, J.L., Trost, S.G., Baker, B.L., & Birch, L.L. (2007). Why are early maturing girls less active? Links between pubertal development, psychological well-being, and physical activity among girls at ages 11 and 13. *Social Science & Medicine, 64*(12), 2391–2404.

Giannousi, M., Vernadakis, N., Derri, V., Antoniou, P., & Kioumourtzoglou, E. (2014). A comparison of student knowledge between traditional and blended instruction in a physical education in early childhood course. *Turkish Online Journal of Distance Education, 15*(1), 99-113.

Giatsis, G., Zetou, E., & Tzetzis, G. (2005). The effect of rule changes for the scoring system on the duration of the beach volleyball game. *Journal of Human Movement Studies, 48*(1), 15-23.

Goulimaris, D. (2015). The relation between distance education students' motivation and satisfaction. *Turkish Online Journal of Distance Education, 16*(2), 13-27.

Goulimaris, D., Koutsouba, M., & Giosos, Y. (2008). The organization of a distance postgraduate dance program and the participation of students specializing in dance. *Turkish Online Journal of Distance Education, 9*(3), 59-73.

Graves, L.E., Ridgers, N.D., Williams, K., Stratton, G., Atkinson, G., & Cable, N. T. (2010). The physiological cost and enjoyment of Wii Fit in adolescents, young adults, and older adults. *Journal of Physical Activity & Health, 7*, 393–401.

Green, B.S., & Salkind, J.N. (2013). *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. New Jersey: Prentice Hall.

Homer, B., Hayward, E., Frye, J., & Plass, J. (2012). Gender and player characteristics in video game play of preadolescents. *Computers in Human Behavior, 28*(5), 1782-1789.

*** Lenhart, A., Kahne, J., Middaugh, E., Macgill, A.R., Evans, C., &Vitak, J. (2008). Teens, video games and civics. Pew internet and life project. http://www.pewinternet.org/2008/09/16/teens-video-games-and-civics/

Limperos, A.M., Schmierbach, M.G., Kegerise, A.D., & Dardis, F. E. (2011). Gaming across different consoles: Exploring the influence of control scheme on gameplayer enjoyment. *Cyberpsychology, Behavior, and Social Networking, 14*, 345–350.

Lyons, E., Tate, D., Ward, D., Bowling, J., Ribisl, K., & Kalyararaman, S. (2011). Energy expenditure and enjoyment during video game play: Differences by game type. *Medicine & Science in Sports & Exercise, 43*(10), 1987-1993.

Maitland, C., Stratton, G., Foster, S., Braham, R., & Rosenberg, M. (2013). A place for play? The influence of the home physical environment on children's physical activity and sedentary. *International Journal of Behavioral Nutrition and Physical Activity, 10*, 99.

Meier, M., Hager, R., Vincent, S.D., Tucker, L., & Vincent, W. (2007). The effects of leisure based screen time. *American Journal of Health Education, 38*(3), 139–146.

Motl, R.W., Dishman, R.K., Saunders, R., Dowda, M., Felton, G., & Pate, R.R. (2001). Measuring enjoyment of physical activity in adolescent girls. *American Journal of Preventive Medicine, 21*(2), 110–117.

Penko, A.L., & Barkley, J.E. (2010). Motivation and physiologic responses of playing a physically interactive video game relative to a sedentary alternative in children. *Annals of Behavioral Medicine, 39*, 162–169.

Popkin, B.M., Adair, L.S., & Ng, S.W. (2012). Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition Reviews, 70*(1), 3–21.

Rhodes, R.E., Fiala, B., & Conner, M. (2009). A review and meta-analysis of affective judgments and physical activity in adult populations. *Annals of Behavioral Medicine, 38*, 180–204.

Rhodes, R.E., Warburton, D.E.R., & Bredin, S.S.D. (2009). Predicting the effect of interactive video bikes on exercise adherence: *An efficacy trial. Psychology, Health & Medicine, 14*, 631– 640.

Skalski, P., Tamborini, R., Shelton, A., Buncher, M., & Lindmark, P. (2011). Mapping the road to fun: Natural video game controllers, presence, and game enjoyment. *New Media & Society, 13*, 224–242.

Shu-Fang, L. (2010). Gender Differences and the Effect of Contextual Features on Game Enjoyment and Responses. *Cyberpsychology, Behavior & Social Networking, 13*(5), 533-537.

Tzetzis, G., Avgerinos, A., Vernadakis, N., & Kioumourtzoglou, E. (2001). Differences in self-reported perceived and objective measures of duration and intensity of physical activity for adults in skiing. *European Journal of Epidemiology, 17*(3), 217–222.

Vernadakis, N., Antoniou, P., Giannousi, M., Zetou, E., & Kioumourtzoglou, E. (2011). The effect of information literacy on physical education students' perception of a course management system. *Learning, Media and Technology, 36*(4), 419-435.

Vernadakis, N., Antoniou, P., Zetou, E., & Kioumourtzoglou, E. (2004). Comparison of Three Different Instructional Methods on Teaching the Skill of Shooting in Basketball. *Journal of Human Movement studies, 46*, 421-440.

Vernadakis, N., Derri, V., Tsitskari, E. & Antoniou, P. (2014). The effect of Xbox Kinect intervention on balance ability for previous injured young competitive male athletes: a preliminary study. *Physical Therapy in Sport, 15*, 148-155.

Vernadakis, N., Giannousi, M., Tsitskari, E., Antoniou, P., & Kioumourtzoglou, E. (2012). A comparison of student satisfaction between traditional and blended technology course offerings in physical education. *Turkish Online Journal of Distance Education, 13*(1), 137-147.

Vernadakis, N., Kouli, O., Tsitskari, E., Gioftsidou, A., & Antoniou, P. (2014). University students' ability-expectancy beliefs and subjective task values for exergames. *Computers and Education, 75*, 149-161.

Vernadakis, N., Papastergiou, M., Zetou, E., & Antoniou, P. (2015). The impact of an exergame-based intervention on children's fundamental motor skills. *Computers and Education, 83*, 90–102.

Vernadakis, N., Zetou, E., Antoniou, P., & Kioumourtzoglou, E. (2002). The effectiveness of computer-assisted instruction on teaching the skill of setting in volleyball. *Journal of Human Movement Studies, 43*(2), 151-164.

Vernadakis, N., Zetou, E., Avgerinos, A., Giannousi, M., & Kioumourtzoglou, E. (2006). The effects of multimedia computer-assisted instruction on middle school students' volleyball performance. *The Engineering of Sport 6*(3), 221-226.

Vernadakis, N., Zetou, E., Tsitskari, E., Giannousi, M., & Kioumourtzoglou, E. (2008). Student attitude and learning outcomes of multimedia computer-assisted versus traditional instruction in basketball. *Education and Information Technologies, 13*(3), 167-183.

Warburton, D.E., Sarkany, D., Johnson, M., Rhodes, R.E., Whitford, W., Esch, B.T., . . . Bredin, S.S. (2009). Metabolic requirements of interactive video game cycling. *Medicine and Science in Sports and Exercise, 41*, 920–926.

Zetou, E., Amprasi, E., Michalopoulou, M., & Aggelousis, N. (2011). Volleyball coaches behavior assessment through systematic observation. *Journal of Human Sport & Exercise, 6*(4) 585-593.

Zetou, E., Malliou, P., Lola, A., Tsigganos, G., & Godolias, G. (2006). Factors related to the incidence of injuries' appearance to volleyball players. *J of Back and Musculoskeletal Rehabilitation, 19*(4), 129–134.

Zetou, E.,Vernadakis, N., & Bebetsos, E. (2014). The effect of instructional self-talk on performance and learning the backstroke of young swimmers and on the perceived functions of it. *Journal of Physical Education and Sport, 14*(1), 27-35.

Zetou, E., Vernadakis, N., Bebetsos, E., & Makraki, E. (2012). The effect of self-talk in learning the volleyball skill and self-efficacy improvement. *Journal of Human Sport & Exercise, 7*(4), 794-805.

RAZLIKE IZMEĐU DJEČAKA I DJEVOJČICA U ZADOVOLJSTVU U EXERGAMES-u I SEDENTARNIH PONAŠANJA

Sažetak

Svrha ove studije bila je utvrđivanje razlika između dječaka i djevojčica u uživanju u nekoliko aktivnosti, uključujući dvije sjedeće aktivnosti (gledanje televizije, igranje Strike Force Bowling-PS2 igre) i jedne exergame (Nintendo Wii Tennis). Stotinu šezdeset i dvoje djece, u dobi od 11,2 ± 0,8 godina, podijeljene su u dvije skupine prema spolu. Sudionici su pojedinačno pohađali tri testiranja tijekom kojih su obavili nekoliko tjelesnih aktivnosti kao što je gore opisano. Nakon svake aktivnosti djeca su ispunila Upitnik o zadovoljstvu tjelesnih aktivnosti. Provedena je dvosmjerna analiza varijance (ANOVA) s ponovljenim mjerenjima kako bi se procijenio učinak spola na uživanje u tim aktivnostima. Rezultati su pokazali da je TV bila najmanje ugodna aktivnost, dok je exergame, Wii tenis, bila najugodnija aktivnost. Nije bilo značajnih razlika između rodnih skupina. Konačno, dječji užitak exergames mogao bi se kapitalizirati kako bi se razvile intervencije za povećanje tjelesne aktivnosti.

Ključne riječi*: exergames, uživanje, tjelesna aktivnost, sjedeće ponašanje, spol.*

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