Effect of Elimination Games on Physical Activity and Psychosocial Responses in Children

Karla E. Foster, Timothy K. Behrens, Abigail L. Jager, and David A. Dzewaltowski

Background: This study evaluated the effect of elimination and nonelimination games on objectively measured physical activity and psychosocial responses in children. Methods: A total of 29 children in grades 4 to 6 (65.5% male; 10.5 ± 1.0 years old) wore an accelerometer while participating in 2 elimination and 2 nonelimination games. Activity counts were collected using a 30-second epoch and converted to METs to determine minutes spent in sedentary behavior and light, moderate, vigorous, and moderate-to-vigorous physical activity. Self-efficacy, enjoyment, and peer-victimization were assessed on 4 occasions (before and after 2 elimination and 2 nonelimination games). Results: Overall, girls spent more time in sedentary behavior compared with boys. Children engaged in significantly more moderate-to-vigorous physical activity during nonelimination games compared with elimination games. Furthermore, children significantly increased self-efficacy after playing both game sessions. A significant interaction between type of game and time of measurement in the prediction of enjoyment showed that enjoyment modestly increased after elimination games and slightly decreased after nonelimination games. There were no differences in peer-victimization. Conclusion: This study provides preliminary evidence that nonelimination games provide more moderate-to-vigorous physical activity compared with elimination games, but elimination games may be more enjoyable.

Keywords: youth, physically active games, self-efficacy, enjoyment, peer-victimization

Current physical activity guidelines recommend that children and adolescents accumulate a minimum of 60 minutes of moderate-to-vigorous physical activity (MVPA) each day. However, according to a recent analysis of NHANES data, a majority of children and adolescents are not meeting these recommendations. The study found that only 42% of children age 6 to 11 years and less than 8.0% of children 12 to 19 years met recommendations. Lack of physical activity in children is a public health concern because there is some evidence that an active lifestyle during childhood may pursue into adolescence and adulthood. Thus, increasing the amount of physical activity during childhood is not only important for short-term health benefits, but also to foster a healthy, life-long behavior.

One effective way to increase physical activity in childhood may be through structured physically active games. One study found that elementary school-aged children were significantly more active playing structured games when compared with free play during a recess period (44.4 vs. 37.9 min). Other studies have consistently reported that physically active games provide a sufficient amount of MVPA.

Although it has been shown that games may successfully increase physical activity in children, the influence of game structure or game rules on physical activity have not been considered. Of particular interest to this study was the structure of elimination, or the removal of participation from a game typically due to defeat. The 2 games evaluated in this study were nonelimination (NEG) and elimination (EG) games. NEG were defined such that 1) winning is not the primary focus, and the game may have no winners or several winners; 2) the game is often goal-directed; and 3) amount of participation is fairly equal among all participants since participants are not eliminated and do not have to wait on the sidelines. Alternatively, EG were defined such that 1) primary focus is winning, and the game usually has only 1 winner; 2) the game is often goal-directed; and 3) amount of participation is fairly equal among all participants since participants are not eliminated and do not have to wait on the sidelines. Alternatively, EG were defined such that 1) primary focus is winning, and the game usually has only 1 winner; 2) the game is often goal-directed; and 3) amount of participation is highly variable depending on the length of time that lapses before a child is eliminated.

In addition to the immediate impact on physical activity, structured games may influence psychosocial variables that mediate behavior change and may determine future participation in physical activity. To develop strategies to increase physical activity, researchers have recommended targeting variables that have been identified to influence physical activity for a specific population. This study examined the psychosocial variables of self-efficacy (SE), enjoyment, and peer-victimization (PV). Rather than test a specific theoretical model of behavior change, we chose SE and enjoyment because

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past research has supported that increases in these 2 variables are consistently associated with increases in physical activity. Moreover, participation in informal physically active games and leisure time structured sport and games have been correlated with enjoyment of physical activity and enjoyment of physical education in children. Finally, we chose to examine PV because it has been shown to be negatively associated with physical activity and a few studies suggest that different social contexts of competitive and cooperative games elicits aggressive behavior among children. Likewise, PV responses of children may differ during NEG and EG.

Overall, we know very little about physical activity levels or psychosocial responses of children during physically active games, especially during NEG and EG. Together, by examining objectively measured physical activity and psychosocial responses of physical activity during NEG and EG, these results may provide evidence-based recommendations for physical education leaders and other professionals leading physical activity sessions in children. The purpose of this study was 2-fold: a) to examine the impact of NEG and EG on physical activity and b) to examine the impact of NEG and EG on psychosocial responses.

Methods

Setting and Participants

A 1-week day camp, organized through a community fitness facility operated by a Midwestern university, was held in August 2007. The camp exposed children in grades 4 to 6 to a variety of physically active and nonphysically active games. Children were recruited for the camp through community organizations and public announcements. All 37 children enrolled in the camp were eligible to participate in this study conducted during the last 2 days of the camp. Parents or guardians of interested participants provided informed consent and completed a brief questionnaire. Children also provided written assent. All children volunteered for the study. One child was excluded due to refusal to participate and 7 children were excluded due to absence or tardiness. A total of 29 children were included in the final sample (Table 1). This study was approved by the Kansas State University institutional review board.

Experimental Design

Figure 1 illustrates that this experiment exposed all children to conditions of NEG and EG. To control for order effects, a crossover design was employed where children were stratified according to gender and weight status and randomly assigned to one of 2 groups. The groups received the experimental conditions of NEG and EG on 2 different days with order counter-balanced. Each NEG and EG experimental condition consisted of playing 2 game sessions each 20 minutes in duration interrupted with a 10 minute break.

<table>
<thead>
<tr>
<th>Table 1 Characteristics of 29 Children Enrolled in the Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic</td>
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<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Gender</td>
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<tr>
<td>Female</td>
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<tr>
<td>Male</td>
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<td>Age</td>
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<tr>
<td>Grade Level</td>
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<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
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<tr>
<td>6</td>
</tr>
<tr>
<td>Ethnicity</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>Non-White</td>
</tr>
<tr>
<td>BMI</td>
</tr>
<tr>
<td>Weight Status</td>
</tr>
<tr>
<td>≥85th percentile</td>
</tr>
<tr>
<td>&lt;85th percentile</td>
</tr>
<tr>
<td>Meet recommendations</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Subsidized lunch</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Mother’s education</td>
</tr>
<tr>
<td>High school</td>
</tr>
<tr>
<td>Some college</td>
</tr>
<tr>
<td>Graduated college</td>
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<tr>
<td>Master’s or above</td>
</tr>
<tr>
<td>Father’s education</td>
</tr>
<tr>
<td>Some college</td>
</tr>
<tr>
<td>Graduated college</td>
</tr>
<tr>
<td>Master’s or above</td>
</tr>
<tr>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Experimental Conditions

NEG and EG were adopted from the evidence-based CATCH study consisting of a modified physical education curriculum. The CATCH physical education objectives include: involvement of at least 30 minutes of daily physical activity, involvement in MVPA for at least 40% of total physical activity time, provide children with many opportunities to participate and practice skills, and provide children with a variety of enjoyable activities. Further, the CATCH games curriculum encourage cooperation by limiting competition, by downplaying the importance of winning, and encouraging children to be
Randomly assigned and stratified according to gender and weight status

Day 1
- Group 1: Pretest → NEG → Posttest
- Group 2: Pretest → EG → Posttest

Day 2
- Pretest → EG → Posttest
- Pretest → NEG → Posttest

Note: EG = Elimination games, NEG = non-elimination games

**Figure 1** — Experimental design.
active at all times (Flaghouse Inc., Hasbrouck Heights, NJ). These CATCH guidelines mirror our definition of NEG. Therefore, the NEG used in this study were evidence-based CATCH games but were modified to incorporate the rule of elimination. See Ya Later Alligator and Foxes, Trees, and Squirrels were the CATCH games used in this study.

All games had similar set-up of 7 squares (approximately 1/2 × 1/2 yards) taped down in various places throughout the 20 × 20 yd playing area. These games were played on a large indoor turf field where each group played games concurrently. One instructor was assigned to each group and led games on both days. Each instructor was familiar with the game rules and had past experience leading physically active games in youth.

### Measures

#### Weight Status

Height and weight measurements of each child were taken in a private location on the first day of the camp. Height was measured to the nearest 0.1 cm using a stadiometer (Invicta Plastics Ltd., Leicester, UK) and weight was measured to the nearest 0.1 kg using an electronic scale (Seca Corp, Model 770, Hamburg, Germany). Body mass index (BMI) was calculated from these height and weight measurements (kg/m²) and plotted on age and gender specific CDC growth charts to determine percentile rank. BMI levels above the 95th percentile, between the 85th to 95th percentile, and below the 85th percentile were classified according to child BMI terminology of obese, overweight, and healthy weight, respectively.

#### Physical Activity

The Actigraph GT1M accelerometer (Shalimar, FL) was used to objectively assess physical activity and sedentary behavior (SED). This accelerometer was attached to an adjustable elastic belt, secured around the waist, and positioned just above the right hip bone. Children wore the accelerometer all day to become accustomed to wearing them and limit the likelihood of the Hawthorne effect, but data were only collected during the game sessions. Accelerometers were initialized each day before data collection. Activity counts were collected using a 30-second epoch and downloaded to a computer for subsequent analysis. Data were processed using a software program developed in SAS by the study authors. Because all children were observed while playing the games, no data were missing due to not wearing the accelerometer. Accelerometer counts were converted to units of relative energy expenditure (METs) using a regression equation taken from Freedson and colleagues to determine time spent in SED (<50 counts), light physical activity (LPA; 50 counts–3.9 METs), moderate physical activity (MPA; 4–6.9 METs), and vigorous physical activity (VPA; ≥7 METs) and MVPA (≥4 METs). These higher MPA and VPA levels more accurately estimate energy expenditure in youth and are comparable to several other studies using accelerometers in children. The cutpoint used to determine sedentary behavior was defined as less than 50 counts per 30 seconds and reflected those cutpoints used in other studies. Therefore, time spent in LPA was determined as the difference between MVPA and SED. This Actigraph accelerometer has been found as a valid and reliable measure of physical activity in youth.

#### Lesson Contexts

Research assistants recorded time spent in different lesson contexts of game play and management during each 20-minute game session. Time spent in management consisted of time used to instruct and guide the game session such as choosing a set of players to be “it” and organizing children to begin a new game. All portable stopwatches used to record time spent in lesson contexts were calibrated to the exact time of accelerometers to ascertain accurate measurements of physical activity and lesson contexts.

#### Child Questionnaire

Children completed a brief 11-item questionnaire before and after each experimental condition. One research assistant read the questionnaire to the children and children selected the appropriate response. Other research assistants were available to answer any of the children’s questions. The questionnaire assessed SE, enjoyment, and PV related to physically active games in general. A physically active game was defined as “any game that gets your body moving, heart beating faster, and breathing harder.” Preceding the study, professionals with extensive experience surveying children of this age reviewed the questionnaire for content validity. These suggestions were discussed and used to modify the child questionnaire.

SE of physical activity assessed a child’s perceived beliefs to successfully engage in physical activity for a specified duration. Measures were developed following Bandura’s recommendations of self-efficacy as well as others. A series of statements adapted from previously developed scales addressed the duration of NEG and EG and was rated by the children using a five-point Likert-type scale of 1 as “not sure” to 5 “very sure.” There were 4 items about SE and the internal consistency of this scale in the current study was 0.85.

Enjoyment of physical activity was measured with questions adapted from the Physical Activity Enjoyment Scale (PACES) which has been shown to be a reliable and valid measurement of physical activity enjoyment in adolescents. Children were asked a series of questions about physically active games on a five-point Likert-type scale with various endpoints such as “I enjoy it/ I feel bored” and “I am having fun/ I would rather be doing something else.” There were 4 items on enjoyment and the internal consistency of this scale in the current study was 0.81.

PV was measured with modified and validated measures of perceived bullying and victimization from peers. Questionnaire items were taken from the Gatehouse Bullying Scale and Peer Relations Questionnaire and modified to relate to physically active games. These questions were presented on a five-point Likert-type scale of 1 as never and 5 as often. Questions pertained to feelings.
of teasing from peers, feelings of threat by kicking and hitting from peers, and feelings of not belonging. There were 3 items on PV and internal consistency of this scale in the current study was 0.68.

Parent Questionnaire. The parent questionnaire provided demographics such as age, gender, socioeconomic status, and ethnicity. Child physical activity was also assessed using the PACE+ physical activity measure. This measure has been found valid and reliable for adolescent self-report of physical activity. To our knowledge, there are no valid and reliable measures of parent-reported child physical activity measures, thus the PACE+ was used to determine if a child was meeting the recommended physical activity guidelines. Socioeconomic status was assessed by whether children were eligible to receive free or reduced priced school meals.

Data Analysis

All data were analyzed using SAS (Statistical Analysis System, version 9.1). Differences in physical activity and psychosocial responses were evaluated for significance using a mixed effects ANCOVA model. A mixed model was designed to use day as a cluster variable that takes into account the order of receiving the experimental manipulation and also the effect of participating in the study as part of a group. For physical activity levels, the model included child and day nested within child as random effects and condition (NEG or EG), weight status, and gender as fixed effects. Two separate analyses were conducted for physical activity measurements. Data were collected from the start of the first game until the end of the second game. The first analysis included data collected on physical activity, sedentary behavior, and management across the 2 games for a total of 40 min. The second analysis excluded data where time was spent managing the children during the 40-minute time period, such that data only included active game play.

The same mixed model was used to evaluate psychosocial responses from the child questionnaire. For psychosocial responses, the model included child and day nested within child as random effects and time of measurement (pretest or posttest), condition (NEG or EG), weight status, and gender as fixed effects. Analysis of psychosocial responses consisted of 4 observations (pretest and posttest each day) while analysis of physical activity consisted of the amount of physical activity each session. Comparisons of ordinary least square means for observations between conditions at pretest and posttest and changes over time were evaluated at $P < .05$, two-tailed tests. Alpha level for significance was set at 0.05.

Results

Physical Activity

Means, standard errors, and the coefficient of variation of physical activity and SED during the NEG and EG with management time are presented in Table 2. Children engaged in 5 minutes more MVPA and spent nearly 13% more time in MVPA during NEG compared with EG (Figure 2). However, when examining MPA and VPA independently, children engaged in significantly more MPA during NEG, but there were no significant differences in VPA. Children also engaged in significantly more SED during EG compared with NEG. There were no differences in LPA. Overall, when examining total activity counts, NEG provided a greater volume of activity compared with EG ($F_{1,25} = 10.69; P = .00$). The coefficient of variation for sedentary behavior and vigorous physical activity was also greater in NEG compared with EG. The only gender difference that existed was that girls spent more time in SED compared with boys ($F_{1,25} = 7.28; P = .01$).

Means, standard errors, and coefficient of variation of physical activity and SED during the NEG and EG excluding management time were similar to those presented in Table 2 (data not shown). Notably, the only significant difference between the analysis including management time and the analysis excluding management time was differences in LPA. When management time was excluded, children spent significantly more time in LPA during NEG compared with EG ($F_{1,25} = 4.38; P = .05$). In addition, more time was spent in management during EG (6 minutes 49 seconds) compared with NEG (4 minutes 8 seconds).

Children engaged in significantly more LPA ($F_{1,25} = 10.35; P < .00$) on the first day and significantly more VPA ($F_{1,25} = 12.46; P < .00$) on the second day, regardless of condition. Furthermore, a significant interaction between day and game condition showed that children who played NEG on the first day engaged in more VPA compared with those children who played NEG on the second day ($F_{1,25} = 5.95; P < .02$).

<table>
<thead>
<tr>
<th>Measure</th>
<th>Elimination games</th>
<th>Non-elimination games</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>8.59 (0.84, 64.78)</td>
<td>3.53 (0.84, 128.05)</td>
<td>23.53</td>
<td>&lt;0.00</td>
</tr>
<tr>
<td>Light PA</td>
<td>16.60 (1.15, 28.57)</td>
<td>16.52 (1.15, 34.74)</td>
<td>0.01</td>
<td>0.94</td>
</tr>
<tr>
<td>Moderate PA</td>
<td>12.24 (1.21, 36.28)</td>
<td>18.08 (1.21, 33.27)</td>
<td>18.97</td>
<td>0.00</td>
</tr>
<tr>
<td>Vigorous PA</td>
<td>2.58 (0.51, 82.75)</td>
<td>1.87 (0.51, 133.21)</td>
<td>1.97</td>
<td>0.17</td>
</tr>
<tr>
<td>MVPA</td>
<td>14.82 (1.42, 36.65)</td>
<td>19.96 (1.42, 35.44)</td>
<td>13.16</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 2 Mean Minutes, Standard Error, and Coefficient of Variation (SE, CV) of Sedentary Behavior and Physical Activity Time
Means and standard errors of SE, enjoyment, and PV by game structure and time of measurement are presented in Table 3. A significant interaction between game condition and time of measurement in the prediction of enjoyment showed that enjoyment increased after EG and decreased after NEG. Simple effect comparisons of observation and condition ordinary least squares means showed a significant difference between conditions in enjoyment ($P = .04$) and SE ($P = .03$) at pretest but not at posttest. Simple effect comparisons also showed a significant change in enjoyment during EG ($P = .02$) but not during NEG. There were no differences in SE or PV by game structure and time of measurement. At pretest, there was a significant difference between the groups on SE ($P = .03$) and at posttest the groups were no longer different ($P = .55$). But, the condition by time interaction was not significantly different ($P = .26$). After participating in both game sessions, children significantly increased SE ($F_{1,56} = 4.93; P < .03$). Overall, there were no differences in PV or gender.

**Discussion**

The results supported our primary hypothesis that children engage in more MVPA during NEG compared with EG. The results showed that children engaged in more than 5 minutes more MVPA and engaged in 5 minutes less SED during NEG compared with EG. Children spent nearly 50% of the time in MVPA during NEG and only 36.5% of the time in MVPA during EG. These results are comparable to other studies that have measured physical activity during game play using accelerometers\(^7,8,11\) and direct observation.\(^9,10\)

One interesting finding was that the coefficient of variation between participants for SED and VPA was greater during NEG compared with EG. These differences in variability are probably due to the fact that unlike EG, NEG allow for a greater range of activity levels. In EG, participants may be very active until they are eliminated at which point they are SED. NEG are more flexible and allow children to walk the perimeter or compensate energy since they are not eliminated from the game. This flexibility in NEG may also explain why children engaged in significantly more LPA during NEG in the analysis of game play excluding management.

The secondary purpose of this study was to examine psychosocial responses before and after game sessions. Contrary to our hypotheses, the only difference found between the structured physically active games and psychosocial assessments was a time of measurement by game condition effect showing that children modestly increased enjoyment after playing EG and slightly decreased enjoyment after playing NEG. There was a difference between groups at pretest but not at posttest. Enjoyment scores were high for both game conditions but there was a difference in the direction of the change in enjoyment. It is possible these results may have been due to a ceiling effect for the enjoyment scale. The mean was approximately 4.5 on a five-point scale. These results suggest a possible difference in enjoyment responses during EG and NEG, but this study should be replicated in a larger sample to further test this finding.

Although this preliminary study suggests that children may enjoy EG more than NEG, no data were collected to examine why children feel this way. A recent qualitative study of children 11 to 12 years found that social recognition of competence, encouragement, excitement, and challenge as the most reported sources of enjoyment.\(^38\) One reason why children enjoy EG more than NEG could be explained by sources of enjoyment. During EG, the recognition of winning and recognition of competence may be viewed as an external reward and a valuable source of enjoyment for some children. In
addition, excitement and challenge are also characteristic of EG due to winning and losing. Therefore, excitement and challenge may also account for some of the differences in enjoyment.

An alternative interpretation why children may favor EG is familiarity of competitive games or games that imitate characteristics of EG. One study has provided evidence that children may enjoy competitive games because of familiarity. Native American children from northern Canada who were raised playing cooperative games found cooperative games much more acceptable than urban children who normally played competitive games. The results of this study may suggest that children are familiar with characteristics of EG and therefore may explain some of the difference in enjoyment.

Although there were no differences in SE between the 2 different structured games, children did significantly increase SE after playing both game sessions. These results support Bandura’s theory of SE and confirm findings of others studies that have found an increase in physical activity is associated with increases in SE in children.

A notable finding existed between day and the amount of physical activity. Children engaged in more LPA on the first day of the study and more VPA on the second day, regardless of which game condition they played. Although it is unclear why this occurred, we speculate that these differences may be explained by excitement of playing a new game, excitement of the approaching weekend, differences in instructor behavior, or differences within the individual. Moreover, there was a significant interaction between day and game condition. Children who played NEG on the first day engaged in more VPA compared with children who played NEG on the second day. This indicates that children may react differently to the order that games are played. Other environmental factors such as peers and group instructors may also influence participation in physical activity.

### Study Strengths and Limitations

A major strength of this study was the objective assessment of physical activity along with measurement of time spent in management and game play lesson contexts. Several studies have measured physical activity during a variety of settings including physical education, recess, and organized sports, but failed to objectively measure physical activity or determine the time spent solely in game play. In this study, we were able to objectively quantify the amount of physical activity provided during the 2 structured games as well as analyze the amount of physical activity during game play and management. Evaluating physical activity during both lesson contexts provided stronger evidence of any differences that occurred between EG and NEG. To our knowledge, this was also the first study to assess SE, enjoyment, and PV before and after a single game session. Assessments both before and after game sessions provided information of the immediate impact that game sessions may have on psychosocial responses. Another important strength of this study was the true experimental study design counter-balanced across 2 days with the use of evidence-based games.

This study is limited to the small sample size and the results may not accurately represent other children of this age. The small sample size also limited analyses of other possible moderating factors such as weight status and physical fitness. Another limitation was the use of the broad term of physically active games to assess psychosocial responses on the child questionnaire. This broad term may be too vague and an inaccurate measure to truly explain differences in psychosocial responses during NEG and EG. A third limitation was the use of a 30-second epoch to determine physical activity levels. This epoch length has been used in other studies, but a shorter epoch interval may have more accurately detected differences in VPA.

### Conclusions

This study was the first to provide scientific evidence of differences between NEG and EG. Participation in NEG during a summer camp contributed approximately 5 more minutes to meeting children’s physical activity recommendation of 60 minutes of MVPA every day. Although 5 minutes may not be a large increase for an individual, because there is a linear dose-response relationships between activity and some health outcomes (eg, obesity) it is likely that any increase in physical activity at a population level will have beneficial public health outcomes. These results may be beneficial to physical education leaders and other professionals leading physical activity sessions such that NEG meet the 2010 Healthy People goal of approximately 50% of physical education class time spent in MVPA and highlight the importance of quality as well as quantity of structured physical activity sessions. This study also found that children reported

### Table 3: Means (SE) of Psychosocial Responses by Game Structure and Time of Measurement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Elimination games</th>
<th>Non-elimination games</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>3.97 (0.23)</td>
<td>4.17 (0.23)</td>
<td>4.20 (0.23)</td>
<td>4.24 (0.23)</td>
</tr>
<tr>
<td>Peer-victimization</td>
<td>1.60 (0.19)</td>
<td>1.63 (0.19)</td>
<td>1.69 (0.19)</td>
<td>1.56 (0.19)</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>4.41 (0.11)</td>
<td>4.54 (0.11)</td>
<td>4.57 (0.11)</td>
<td>4.50 (0.11)</td>
</tr>
</tbody>
</table>

Note. F- and P-values are representative of game structure by time of measurement interaction.
high enjoyment scores for both EG and NEG and there is inconclusive evidence that children may enjoy EG slightly more. Thus, children should be encouraged to participate in NEG to accumulate 60 minutes of MVPA, yet it is also important to monitor enjoyment responses to promote a physically active, but fun environment.

Acknowledgments

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References


