Examination of Children’s Recess Physical Activity Patterns Using the Activities for Daily Living-Playground Participation (ADL-PP) Instrument

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Thorough assessment of children’s physical activity is essential to efficacious interventions to reduce childhood obesity prevalence. The purpose of this study was to examine children’s recess physical activity (RPA) patterns of behavior using the Activities of Daily Living –Playground Participation (ADL-PP: Watkinson et al., 2001) instrument. ADL-PP-based RPA data from 3rd-5th grade schoolchildren (N = 444: 51% male, 23.6% overweight/obese) were analyzed to determine the number and specific activity patterns overall as well as according to gender and weight-status. Patterns of RPA findings showed girls participated in a higher number of activities compared with boys who participated in more sport-related activities. A wide variety in the specific activities in which children engaged was found according to gender and weight-status. Examination of RPA, with the ADL-PP, extends the literature by providing new data relative to the variety and specific types of activities in which children choose to engage during discretionary times, such as recess.

Keywords: children’s physical activity, recess, physical activity patterns, ADL-PP

Lack of physical activity is a well-substantiated obesogenic behavior. The childhood obesity epidemic is a health issue that clearly garners considerable attention. It is common knowledge that overweight and obesity result from too much energy in and not enough energy out. The latest Physical Activity Guidelines for Americans, issued by the U.S. Department of Health and Human Services, recommend that children accumulate at least 60 minutes of moderate to vigorous physical activity (MVPA) each day (2008a). However, low levels of physical activity and poor dietary habits have led to a level of worldwide childhood obesity that the World Health Organization (WHO)
calls one of the most serious public health challenges in the 21st century (2004). For
many researchers and practitioners involved in both understanding and intervening
to decrease this epidemic, the focus is on children’s physical activity promotion.

Nearly 56 million American youth are in schools for nearly half of their
weekday waking hours and therefore this context can play a critical role in helping
children experience positive health benefits associated with regular physical activity
(Pate et al., 2006; Strong et al., 2005). School-based physical activity opportunities
can contribute to healthy musculoskeletal tissues, a healthy cardiovascular system,
reduced risk for developing disease risk factors, and improved self-esteem (U.S.
Department of Health and Human Services, 2008b). More specifically, school
recess alone can help children accumulate 40% of the recommended 60 minutes of
daily MVPA as a means to achieve such known benefits of regular physical activity
(Robert Wood Johnson Foundation, 2012). According to the National Association
for Sport Physical Education (NASPE), “recess is an essential component of a com-
prehensive school physical activity program and of the total education experience
for elementary school students” because, in addition to physical benefits, recess also
“allows children the opportunity to practice life skills such as cooperation, taking
turns, following rules, sharing, communication, negotiation, problem solving, and
conflict resolution” (NASPE, 2006, p.1).

Contentions within Self-Determination Theory (SDT: Deci & Ryan, 1985,
2000) suggest that individuals are most likely to be intrinsically-motivated toward
behaviors within contexts that satisfy their basic needs for autonomy, competence
and relatedness. Opportunities to fulfill desired needs for choice, demonstration of
ability and feelings of belonging are at the core of this framework for understanding
human nature and what sustains optimal goal pursuit and psychological function-
ing. Spontaneous, intrinsically-motivated behaviors and the factors associated with
enhancing or debilitating these endeavors are at the core of SDT (Ryan & Deci, 2007).
In other words, the extent to which individuals are self-determined, or intrinsically
motivated, to engage in behavior in a context depends on whether they perceive their
needs to be satisfied. When individuals do not feel that choices are available, their
capabilities are low, and/or they are not connected with others in that context, their
motivations are likely to be externally regulated and reflective of extrinsic motivation.

Recess, by its very essence as a discretionary time period, serves as an impor-
tant context where children can self-regulate regarding why, when, how, what and
with whom they are going to be physically active. According to the tenets of SDT
(Deci & Ryan, 1985, 2000), children theoretically have an opportunity to meet
their needs for autonomy, competence and relatedness for recess physical activity
when choices of activities in which they feel capable are available and supported
by others. As a result, the school recess time period offers a unique opportunity to
examine psychosocial and environmental predictors of children’s physical activity.

Research studies have focused on examination of environmental factors related
to children’s frequency, intensity, and duration of recess physical activity (RPA). A
line of inquiry examining such variables includes a body of intervention research
designed to change the recess environment to positively influence children’s physical
activity levels. Environmental alterations such as the availability of basic equipment
(i.e., jump ropes, balls, hula hoops, flying discs) (Verstraete, Cardon, De Clercq, &
De Bourdeaudhuíj, 2006), painting the playground surface with markings (i.e., four
square, hopscotch, animals, clock face, fitness trails) (Stratton & Leonard, 2002;
the use of activity zones, recess activities of the week, as well as game play intervention (Babkes Stellino, Sinclair, Partridge, & King, 2010; Connolly & McKenzie, 1995; Ridgers, Fairclough, Stratton, & Twisk, 2007) have all been studied. One of the most recent approaches by Loucaides, Jago, and Charalambous (2009) combined all of these interventions as a means to increase RPA. Each of these studies revealed that such interventions increased children’s moderate-to-vigorous physical activity (MVPA).

Additional lines of inquiry have studied people who influence children’s RPA, social preferences, children’s patterns of physical activity as well as psychological predictors of RPA (Babkes Stellino & Sinclair, 2013; Huberty et al., 2011; McKenzie et al., 1997; Woods, Graber, & Daum, 2012). Huberty and colleagues (2011) found that implementation of the Ready for Recess program that included staff training on management of Activity Zones for children at recess and how to motivate children for physical activity also led to increased MVPA and vigorous physical activity (VPA) among 3rd- 5th grade children during recess. Woods and colleagues (2012) found boys and girls wanted to spend time with friends at recess but boys preferred sport activities in large groups whereas girls preferred locomotor, sedentary activities and smaller social groups. This knowledge is clearly beneficial for understanding physical activity behavior; however, there are other aspects of children’s physical activity that have yet to be thoroughly explored.

There is limited existing research that has explored the variety and specificity of physical activities children choose to engage in during discretionary times, such as recess. This oversight could be due in part to the limited availability of instruments for measuring the varieties and specific types of children’s physical activity at recess. While one portion of the System of Observing Children’s Activity and Relationships during Play (SOCARP) instrument used in recent research on RPA (Ridgers, Fairclough, & Stratton, 2010; Ridgers, Stratton, & McKenzie, 2010; Woods et al., 2012) does allow researchers to broadly code type of activity, the system only allows for recess behavior to align with one of four categories (i.e., sports, games, locomotion, or sedentary). Therefore, current information relative to a wider range of specific types of activities children engage in during recess is limited. A need exists to further expand the literature in this area as a means to better understand the patterns of activities children choose to engage in during recess.

**Purpose**

The purpose of this study was to examine children’s recess physical activity (RPA) through the use of the ADL-PP (Watkinson et al., 2001). The number and specific types of activities children engaged in during recess according to gender and weight-status was investigated to understand patterns of RPA gathered through use of the ADL-PP.

**Method**

**Participants**

Participants were children in 3rd-5th grades ($N = 444$; 49% females; 23.6% overweight/obese). All children were from one elementary school in a suburb of
a metropolitan city in the Rocky Mountain region of the United States. Fifty-one percent of participants were non-Caucasian including 10.1% African American, 9.9% Hispanic, 9.2% Asian American (including Hawaiian Native/Pacific Islander), 2.9% American Indian, 12.7% Bi- or multiracial, and 6.2% “Other”. This specific school reported 18.3% of students were eligible for free and reduced lunch during the year of data collection.

Measures

Recess Activity. Daily self-reported recess activity was measured with the ADL-PP (See Figure 1; Watkinson et al., 2001). The ADL-PP is a 39-item pictorial self-report protocol for elementary school-age children to indicate what activities they did at recess or during other playground accessible time periods. The instrument is a single-page document that includes 38 squares with labeled illustrations (i.e., the word “run” with a drawn picture of a child running) of playground-based activities (e.g., jump, throw a ball, quiet/sit down game) that children typically engage in, on and around a playground, with the prompt “circle what you did at recess today” in the middle. An additional open square (Box 39) with no illustration and the phrase “play a different game” was included so children could report an activity that was not included elsewhere on the instrument, but was played during recess. Children were prompted each day to circle all of the activities on the ADL-PP in which they participated in during the recess period.

The ADL-PP is considered to have sound ecological validity and be appropriate for use with children older than seven years in self-report of recess activity (Steadward, Wheeler, & Watkinson, 2003; Watkinson, Dwyer, & Nielsen, 2005). Use of the ADL-PP for the purpose of children’s self-reported recess activities was pilot tested with six children in grades 3–5 and carefully examined by the researchers before the current study data collection. Face validity was evident as children easily understood how to complete the instrument and interpret the prompt, illustrations and wording. Content validity was supported by the availability of the majority (36 out of 38) of specific activities contained on the ADL-PP within the specific recess environment where data were collected. The instrument was also considered reliable for use in the current study as child pilot test participants were observed during two 30-minute recess periods and their activities were recorded on the ADL-PP by researchers and compared with their self-report on the ADL-PP. The reliability between the researchers’ observation reports and children’s self-reports was .96. Measurement error was minimized with the establishment of a protocol for children to complete the ADL-PP no more than five minutes after recess.

Demographics. Each child reported his/her first name, last initial, gender, and birth date on the cover page of his/her individual “recess journal”. The “recess journal” contained six separate pages of the ADL-PP, as described above, which corresponded to the six lunch recesses for which data were collected. The online Centers for Disease Control (CDC) Body Mass Index (BMI) Percentile Calculator for Children (2011) was used to calculate BMI based on children’s height and weight measurements obtained from the school nurse, date of these anthropometric measurements, gender and birth date. Weight status was coded into two categories of healthy weight or overweight/obese for the purposes of subsequent analyses. Healthy weight included children < 85th percentile and overweight/obese included children ≥ 85th percentile.
Figure 1 — Activities of Daily Living—Playground Participation (ADL-PP). Immediately following daily lunch recess children used this pictorial journal (the children knew this as their “recess journal”) to circle the pictures of the activities they performed that day at recess.
Procedures

After receipt of approval to conduct this study from the University Institutional Review Board, permission from the school district, school principal, and classroom teachers was obtained. Parental signed informed consent and assent from children in 19 classrooms at the one elementary school was then acquired. Thirteen children from across these classrooms did not participate in the data collection. Participating children completed the cover page of their “recess journal” to provide demographic data and were instructed on how to complete the ADL-PP each day, and retrieve and return the booklet to researchers two days before when data collection commenced. Data were collected from August through the end of October when weather was consistently conducive to outdoor playground-based recess activity. Children completed the recess physical activity journal for six consecutive days of 30-minute midday recess that immediately followed lunch between 12:15pm (3rd grade) and 1:15pm (5th grade) depending on grade level. Children from only one grade level (i.e., 4th grade) were at recess at the same time, which typically consisted of approximately 75 students. The ADL-PP was called a “recess journal” and was opened to a new page and placed on each child’s classroom desk each day. Children were prompted to circle “everything that they did at recess that day” upon arrival back at their classroom desk immediately after recess ended to complete the “recess journal.” Daily log of children’s self-reported physical activity during recess on the ADL-PP was recorded on a separate page of the “recess journal.” Children returned “recess journals” to storage boxes after daily completion and researchers collected the boxes for distribution the next day. Numeric identifiers were used to link each child’s recess journal, BMI, and demographic data.

All activities included on the ADL-PP, except “hockey” and “play in the snow”, were available for children to choose to engage within the recess environment. The recess environment consisted of one large hard-top area with two basketball hoops, one tether-ball, one large backboard, two four-square game marked courts, and ample concrete/paved space for children to jump rope or engage in other activities. The environment also consisted of a large open grass area and a standard age-appropriate playground with various sorts of slides, swings, monkey bars, and climbing apparatus. Additional equipment available for use during each recess period when data were collected were balls, jump ropes, and hula hoops.

Data Analysis

Children’s recess activity patterns were analyzed according to number and specific type of activities. Cross tabulations of the total number of activities each day (e.g., how many activities children reported on day 4) and number of children who reported each specific activity type each day (e.g., how many children reported swinging on day 1) were initially calculated. The mean number of activities children reported participation in each day and across all six days was then computed, followed by ANOVAs to determine if any differences existed on any single day or across all 6 days according to gender and weight-status.

For the specific type of activities patterns analyses, the number and percent of children who reported participation in each of the 38 activities during the 6 days of data collection were calculated and more and less popular specific activity types were determined with a criterion of more than 50% or less than 10% respectively.
These criteria were determined by the researchers to create a simple basis of comparison of activity popularity, or lack thereof, among children across the available activities. ANOVAs were again conducted according to gender and weight-status to examine demographic differences in activity type preferences. Analyses of the information children provided in Box 39 or the open ended question of the ADL-PP were not conducted for the purposes of this study.

**Results**

**Patterns of Recess Activity**

*Number of Activities Patterns.* Results from the analyses of the number of activities children reported participation in during recesses indicated that most children reported involvement in at least one activity per day. While some children did report days of zero activities because they did not go out to the playground during recess, the range of the number of activities reported during any one recess did reach 30, but only by one child, making such a high number of activities an outlier. The average number of activities children participated in during a single 30-minute recess was 4.02 ($SD = .32$) different activities across the six days.

**Demographic Differences in Number of Activities Patterns.** See Table 1 for the mean number of activities by gender and weight-status. Female children reported participation in a higher mean number of activities each day as compared with their male peers. This difference was significant on Day 4 of data collection ($F(2,441)=6.18$, $p = .002$). There was consistency across days in the patterns for boys and girls with respect to the number of activities they reported involvement in during recess and in comparison with each other. Results indicated that girls reported a greater variety of activities as compared with boys. Although healthy weight children consistently reported a slightly higher number of activities each day, there were no significant differences in relation to the number of activities reported by overweight/obese children.

**Table 1**  **Mean Number of Activities Patterns by Gender and Weight Status ± SD**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Across all 6 days</th>
</tr>
</thead>
</table>
| Males  
($n = 206$)          | 3.84 ± 4.2 | 3.63 ± 3.5 | 3.71 ± 3.7 | 3.67 ± 3.7 | 3.47 ± 3.5 | 3.55 ± 3.8 | 3.64 ± 2.9       |
| Females  
($n = 210$)        | 4.04 ± 5.1  | 4.45 ± 5.2  | 4.50 ± 5.6  | 5.29 ± 5.8  | 4.19 ± 5.2  | 4.06 ± 4.5  | 4.42 ± 4.2       |
| Healthy Weight  
($n = 314$)          | 3.96 ± 4.6  | 4.07 ± 4.4  | 4.09 ± 4.8  | 4.52 ± 5.0  | 3.96 ± 5.0  | 3.86 ± 4.5  | 4.06 ± 3.8       |
| Overweight/Obese  
($n = 100$)           | 3.93 ± 4.9  | 4.07 ± 4.5  | 4.07 ± 4.5  | 4.43 ± 4.6  | 3.21 ± 3.9  | 3.54 ± 3.4  | 3.89 ± 3.1       |

Note. $SD =$ Standard deviation.
Specific Type of Activities Patterns. Results from the analyses of type of recess activities patterns revealed that children only participated in two activities more than the 50% criterion. Those activities were “run” (79.5%) and “talk” (60.8%). Many activities were reported by between 40% and 50% of the participants, such as “watch other kids”, “swing”, “curly slide”, “monkey bars”, “jump”, “tag”, “throw a ball” and “kick a ball”. Nine activities included on the ADL-PP were rarely reported (<10%) by children overall, including “hopscotch”, “big tire”, “tire swing”, “tube slide”, “play in sand”, “baseball” and “soccer baseball”. The ranking from highest to lowest of total number and percentage of children that reported each activity during the six days is reported in Table 2.

Demographic Differences in Specific Type of Activities Patterns. See Table 3 for patterns of the specific types of activities children reported most and least often according to gender and weight-status. The specific activity most commonly reported participation in, according to the criterion of greater than 50% of the subgroup reported participation, was “run” (76.9% for males; 82% for females; 77.7% for healthy weight; 83.8% for overweight/obese). Other popular specific activities for males were “kick” (56%) and “throw” (55.6%), whereas for females “talk” (71%) and “swinging” (55%) were reported most often. Children in the weight-status categories of healthy and overweight/obese also reported participation in “talk” (58.6% and 67.6% respectively) at levels that exceeded the popular activity criterion. Examination of gender differences revealed that females reported significantly ($p < .001$) more participation in the following specific types of activities as compared with males: “swing”, “watch other kids”, “monkey bars”, “bar”, “big tire”, “pole”, “balance”, “talk”, “dance”, “gymnastics”, “skip” and “quiet/sit down game”. Males reported significantly ($p < .001$) more participation in different specific types of activities as compared with their female peers, including “football”, “catch a ball”, “throw a ball”, “soccer” and “kick a ball”. The only weight-status difference in specific type of activity pattern participation that emerged was healthy weight children reported “monkey bars” significantly ($p < .001$) more often than overweight/obese children.

Discussion

The main objective of this study was to employ the ADL-PP (Watkinson et al., 2001) in the form of a self-report recess journal to gather information on children’s recess activity patterns. The aim was to examine the ADL-PP as a useful instrument to explore the number and specific types of children’s RPA patterns. Findings provide support for the ADL-PP as a useful method to obtain information about the nature of children’s patterns of recess activity. Results also provide critical information about the nature of recess activity behavior that needs to be considered when creating optimal recess environments and experiences for children.

The current study supports Beighle, Morgan, Le Masurier, and Pangrazi’s (2006) conclusion that when given the opportunity to be active during recess most children will willingly engage in physical activity. As a result, the current study analyses of the number of activities children reported participation in during recesses indicated that most reported involvement in at least one activity per recess period. Like other previous research, this study also revealed that gender was an important factor related to children’s RPA (Ridgers, Saint-Maurice, Welk, Siahpush, &
<table>
<thead>
<tr>
<th>ADL-PP Box #</th>
<th>Activity Label</th>
<th>Total n (%) of children reported participation during 6 days of data collection (N = 444)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Run</td>
<td>353(79.5%)</td>
</tr>
<tr>
<td>15</td>
<td>Talk w friends</td>
<td>270(60.8%)</td>
</tr>
<tr>
<td>29</td>
<td>Kick a Ball</td>
<td>218 (49.1%)</td>
</tr>
<tr>
<td>19</td>
<td>Jump</td>
<td>213(48.0%)</td>
</tr>
<tr>
<td>23</td>
<td>Tag</td>
<td>207(46.6%)</td>
</tr>
<tr>
<td>27</td>
<td>Throw a Ball</td>
<td>203(45.7%)</td>
</tr>
<tr>
<td>6</td>
<td>Curly Slide</td>
<td>201(45.3%)</td>
</tr>
<tr>
<td>1</td>
<td>Swing</td>
<td>195(43.9%)</td>
</tr>
<tr>
<td>38</td>
<td>An Active Game</td>
<td>194(43.7%)</td>
</tr>
<tr>
<td>8</td>
<td>Monkey Bars</td>
<td>180(40.5%)</td>
</tr>
<tr>
<td>3</td>
<td>Watch Other Kids</td>
<td>178(40.1%)</td>
</tr>
<tr>
<td>32</td>
<td>Bounce a Ball</td>
<td>163(36.7%)</td>
</tr>
<tr>
<td>26</td>
<td>Catch</td>
<td>161 (36.3%)</td>
</tr>
<tr>
<td>12</td>
<td>Pole</td>
<td>141 (31.8%)</td>
</tr>
<tr>
<td>11</td>
<td>Climbing Equipment</td>
<td>140 (31.5%)</td>
</tr>
<tr>
<td>4</td>
<td>Straight Slide</td>
<td>131 (29.5%)</td>
</tr>
<tr>
<td>22</td>
<td>Skip</td>
<td>126 (28.4%)</td>
</tr>
<tr>
<td>31</td>
<td>Basketball</td>
<td>106 (23.9%)</td>
</tr>
<tr>
<td>36</td>
<td>Spend time by Myself</td>
<td>102(23.%)</td>
</tr>
<tr>
<td>18</td>
<td>Wrestle</td>
<td>104(23.4%)</td>
</tr>
<tr>
<td>16</td>
<td>Dance</td>
<td>89(20.0%)</td>
</tr>
<tr>
<td>28</td>
<td>Play Soccer</td>
<td>82(18.5%)</td>
</tr>
<tr>
<td>24</td>
<td>Football</td>
<td>80(18.0%)</td>
</tr>
<tr>
<td>37</td>
<td>Quiet Sit Down Game</td>
<td>77(17.3%)</td>
</tr>
<tr>
<td>13</td>
<td>Zipline</td>
<td>77(17.3%)</td>
</tr>
<tr>
<td>10</td>
<td>Cargo Net</td>
<td>76(17.1%)</td>
</tr>
<tr>
<td>17</td>
<td>Gymnastics</td>
<td>70(15.8%)</td>
</tr>
<tr>
<td>14</td>
<td>Balance</td>
<td>64(14.4%)</td>
</tr>
<tr>
<td>7</td>
<td>Bar</td>
<td>45(10.1%)</td>
</tr>
<tr>
<td>30</td>
<td>Soccerbaseball</td>
<td>35(7.9%)</td>
</tr>
<tr>
<td>5</td>
<td>Tube Slide</td>
<td>26(5.9%)</td>
</tr>
<tr>
<td>9</td>
<td>Big Tire</td>
<td>25(5.6%)</td>
</tr>
<tr>
<td>20</td>
<td>Hopscotch</td>
<td>22(5.0%)</td>
</tr>
<tr>
<td>34</td>
<td>Play in Sand</td>
<td>14(3.2%)</td>
</tr>
<tr>
<td>25</td>
<td>Baseball</td>
<td>13(2.9%)</td>
</tr>
<tr>
<td>2</td>
<td>Tire Swing</td>
<td>7(1.6%)</td>
</tr>
<tr>
<td>33</td>
<td>Hockey</td>
<td>0(0.0%)</td>
</tr>
<tr>
<td>5</td>
<td>Play in the Snow</td>
<td>0(0.0%)</td>
</tr>
</tbody>
</table>

*Note.* The first number in the third column represents the total number of children who circled that activity. The second number is the percentage of those who reported participating in the activity across all data collection days.
Examining Recess Physical Activity

Huberty, 2011; Saint-Maurice, Welk, Silva, Siahpush, & Huberty, 2011; Woods et al., 2012). Findings on the number of activity patterns reported during recess were unique to the current investigation and clearly reveal that girls reported engagement in more or a higher number of activities on a given day of recess. In other words, girls reported more variety in their choices of daily recess activity. Comparatively, boys reported less variety, and maybe more importantly, consistency in selecting fewer activities in any given recess period. This finding has implications for how the availability of various activities might differentially impact girls’ and boys’ RPA. Fewer available activities might not negatively impact boys’ RPA, but could be potentially detrimental to girls’ RPA given that they seem to prefer engaging in more activities.

From a SDT (Deci & Ryan, 1985, 2000) perspective, gender differences on the number of activity patterns suggest that girls’ need for autonomy are met with a wider range of activities, such that many activities might need to be available for them to choose from to be intrinsically motivated in the recess context. In contrast, boys may theoretically need fewer choices of activities to engage in during recess to be satisfied and self-determined in their behavior during this time period. These results support and extend work by Babkes Stellino and Sinclair (2013) who suggested that not only do psychological factors seem to influence RPA, but they also appear to differ for boys and girls and should therefore be considered when creating RPA opportunities for all children. As a result, continued use of a theoretical perspective grounded in the contentions of SDT to better understand children’s RPA seems warranted.

In response to a call by Huberty et al. (2011) for additional research examining RPA across a broader spectrum of demographic variables, the current study also examined children’s RPA patterns of behavior using the ADL-PP according to

### Table 3  Specific Types of Activities Patterns by Gender and Weight Status

<table>
<thead>
<tr>
<th>Total (N = 444)</th>
<th>Most Popular (% participated &gt; 50%)</th>
<th>Least Popular (% participated &lt; 10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males (n = 225)</td>
<td>run (77%), throw (56%), kick (56%)</td>
<td>tire swing (9%), big tire (2.7%), sand (3.6%), gymnastics (5.8%), tube slide (6.2%), bar (5.8%), balance (7.1%)</td>
</tr>
<tr>
<td>Females (n = 219)</td>
<td>run (82%), talk (71%), swing (55%), jump (52%), monkey bars (50%)</td>
<td>tire swing (2.3%), sand (2.8%), tube slide (5.5%)</td>
</tr>
<tr>
<td>Healthy weight (n = 336)</td>
<td>run (78%), talk (59%)</td>
<td>tire swing (9%), tube slide (5.4%), big tire (4.8%), bar (9.8%)</td>
</tr>
<tr>
<td>Overweight/Obese (n = 105)</td>
<td>run (84%), talk (68%), swing (51%), curly slide (51%)</td>
<td>tire swing (3.8%), big tire (7.6%), tube slide (7.6%)</td>
</tr>
</tbody>
</table>

Note. Activities were considered popular if greater than 50% of children reported participating in the activity. Activities were considered least popular if less than 10% of children reported participating in the activity.
weight-status. In terms of weight status and number of activities patterns that children in this sample reported, it appears that it makes no difference whether a child is overweight/obese or in the healthy weight category. Based on these findings, children of all weight-statuses make similar choices with regard to the quantity of activities within a particular discretionary time frame, such as recess. So, the point may be that the exact nature of what activity choices consist of is more important rather than simply being concerned with the number, or variety of activities. Overweight/obese children may be choosing activities that are less moderate-to-vigorous or vigorous physical activity- oriented as compared with healthy weight children, thus accounting for differences in prediction of ultimate weight-status from patterns of recess physical activity. Healthy weight children reported the choice to do more activities on more days than overweight/obese children. Similar to the gender based trend, healthy weight children tended to note a greater variety of activities on any given day than overweight/obese children and therefore, the same implications of limited activity availability are relevant. This finding supports the notion that differences exist in RPA by body composition (Huberty et al., 2011). While Huberty et al. found that children with high BMI engaged in less moderate physical activity, findings from the current study add to our understanding of the nature of the activity choices being made by children according to weight status. Clearly continued investigation of PRA by variables such as weight status or body composition is warranted and ripe for further investigation.

With regard to findings on the specific types of activities children reported participation in during recess, the gender differences found may reflect gendered socialization associated with appropriate masculine and feminine activities or gender stereotyped patterns. Although a high percentage of both boys and girls reported running, it is worth highlighting that boys reported significantly more participation in football, catch a ball, throw a ball, soccer, and kick a ball as compared with girls who reported swinging, watch other kids, monkey bars, bar, big tire, pole, balance, talk, dance, gymnastics, skip, and quiet/sit down game significantly more than boys. Examination of these differences suggests that boys choose, and report, participation in playground activities connected to sports more than their female counterparts. Boys’ choices to engage in more sport-based activities provides evidence of the potential link to competence need satisfaction tenets within SDT (Deci & Ryan, 1985, 2000), which suggest that opportunity to fulfill ones desire to demonstrate ability in a context will lead to more self-determined, or intrinsic, engagement in behaviors. These findings from the current study, based on the ADL-PP, self-report pictorial recess journal are also consistent with the recent work of Ridgers et al. (2010) as well as Saint-Maurice et al. (2011) and Woods et al. (2012); all of whom used direct observation to measure physical activity patterns coded into one of four broad activity categories and found that boys participated in sport-related activities whereas girls most often participated in locomotor and sedentary type activities.

Although assessment to determine how much time children participated in any one particular activity versus another was not conducted, it can be inferred through the results that girls engaged in activities for short bouts of time and then moved on to another activity whereas boys seemed to stick with any one activity for longer than girls. Given that no significant differences were found in type of activity participation reported according to weight-status, it is enticing to consider that perhaps social expectations play a role in the patterns that overweight children
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report as compared with their normal weight peers. In other words, the assumption might be children who are overweight/obese would participate significantly more, or less, in particular activities such as not running as much or playing a sit down game more as compared with their healthy weight peers. The present findings do not indicate that pattern. Therefore, perhaps children who are overweight/obese believe they are expected to move their bodies more during a discretionary time such as recess and therefore either do, or at least report that they engaged in, more physically active activities. Another possible hypothesis worth exploration based on these findings is that perhaps there is a difference based on weight-status in the amount of time children spend engaged in any one activity that they report involvement. In other words, all children may engage in some running during recess and therefore report it on the ADL-PP but healthy weight children may spend more time running during recess as compared with overweight/obese children, thus translating into variations in their weight-status.

Investigation of children’s RPA is a growing line of inquiry that logically initially used purely objective measures of children’s physical activity behavior, such as the frequency and duration obtained through pedometers and accelerometers, because they are invaluable for a variety of assessment purposes. As this line of inquiry continues to mature, researchers are increasingly utilizing a multimethod approach to investigate children’s RPA (Ridgers et al., 2011; Saint-Maurice et al., 2011; Woods et al., 2012) that includes direct observation of children’s RPA as well as interviews about physical activity in the recess context. Methods for measuring the patterns, or variety of choices regarding specific types of activity, such as that which can be obtained with the ADL-PP, ultimately serve to further the breadth and depth of our understanding of physical activity endeavors among children during playground-based discretionary time periods.

Limitations

These findings add to the extant knowledge on children’s recess physical activity as well as to the repertoire of instruments that can be used to illuminate the nature of that behavior. There are, however, some limitations that warrant consideration in the interpretation of the results. First, although a relatively large sample was obtained for the current study, all participants were from one school from one US state. This state has consistently had one of the lowest rates of obesity in the US (CDC, 2012) and, therefore, the location of data collection may limit the generalizability of the findings. Second, despite the short amount of time between the end of recess and children’s self-report of activity on the journal (ADL-PP: < 5 minutes), some caution should be heeded with regard to potential limitations in their developmental ability to recall exactly and entirely what they did at recess each day, which could present some error in reporting. While novel and informative, the methods used did not allow for assessment of the amount of time spent in each specific activity children reported involvement. However, conclusions can be drawn based on differences in the patterns reported even though actual physical activity assessment was not conducted. Finally, the playground, space, and equipment available during recesses when data were collected for this sample did not include all possible activities on the ADL-PP and, therefore, some activities were accurately not reported. Those activities did include some that would require MVPA (e.g., hockey) as well as those
that would create opportunity for very low intensity PA (e.g., play in snow). The full range of opportunity that corresponds with the journal/ADL-PP would provide more breadth to children’s specific type of activity selection and preference during recess and other discretionary times.

**Implications and Conclusion**

Regardless of the underlying reasons for the patterns of recess activity that emerged in the current study, a greater understanding of the patterns of children’s activities during the highly relevant discretionary-time of recess among one relatively large sample of elementary school age children has been gained. The creation of recess environments conducive to children making physically active choices is critical (Huberty et al., 2011); therefore results from the current study are important for the design of future interventions to increase children’s recess, and other discretionary playground-based time, physical activity. These findings also provide some initial evidence for the practical use of the ADL-PP as a tool for the examination and promotion of children’s physical activity during playground-based recess and discretionary-time. Overall, the ADL-PP is an assessment choice worth considering as researchers and practitioners alike following Telford, Salmon, Jolley, and Crawford’s (2004) recommendation to use a combination of proxy report, self-report, and objective measures (e.g., accelerometry or pedometry) for examination of children’s physical activity behavior. For researchers, when used along with other measures, the ADL-PP may potentially help uncover new details related to the patterns of children’s activities, especially according to demographic variables such as gender, ethnicity, and weight status. Simultaneously, for practitioners, the ADL-PP is a user friendly, low cost, time efficient way for children to become cognitively engaged in monitoring their own physical activity. Research findings by Kulinna, Brusseau, Cothran, and Tudor-Locke (2010) suggest key factors to successful school physical activity programs are the creation of opportunities for teachers to collaborate and the inclusion of classroom teachers. Using the ADL-PP as suggested in the current investigation creates an opportunity for the ADL-PP to serve as a platform for collaboration among classroom and physical education teachers closing the gap between what goes on at recess and the classroom while resultantly contributing to the success of school-based physical activity programs.

**References**


