Recess Physical Activity Packs in Elementary Schools: A Qualitative Investigation

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Abstract

To supplement the present weekly allotment of 30 minutes of physical education, a school district in southeastern North Carolina identified recess time as part of the state mandated (HSP-S-000) 150 minutes of physical activity (PA) per week and have purchased fitness equipment (recess packs) for the children to use. Twelve participants were selected from four elementary schools that had recently received the recess packs equipment and training. The participants were; (a) four principals, (b) four teachers, and (c) four students. They were selected by a purposeful sampling technique.

Qualitative data analysis procedures were used to explore participants' views on how the recess packs had impacted PA levels during recess. Several themes emerged during the interviews including: (a) gender differences in the types of activities performed during recess before and after the introduction of the recess packs, (b) how the type and the developmentally appropriateness of activities had been affected by the recess packs, (c) how the recess packs initiative had changed the teacher's role during recess, (d) the importance of addressing nutritional concerns in addition to encouraging more physical activity during recess, and (e) the training that principals and teachers had received.

Overall, the study demonstrates the PA benefits in providing equipment during school recess periods. Also, it stresses the importance of training principals and teachers to effectively plan and deliver developmentally appropriate activities resulting in more intense bouts of PA.

Numerous reports have identified significant health benefits from regular participation in physical activity (PA) during childhood. Actually, inactivity is associated with the tripling of childhood obesity since 1970, and accompanied increases in health problems such as high blood pressure, high cholesterol, and Type II diabetes (Biddle, Gorely, & Stensel, 2004). Schools are key to promoting PA, specifically because they have the potential to reach a large number of young people, and these young people spend between 40 to 45% of their waking hours at school (Fox, Cooper, & McKenna, 2004). Based on the proven benefits of PA and an alarming increase of unhealthy children, it has been recommended that children should accumulate at least 60 minutes of moderate-to-vigorous physical activity (MVPA) every day (Corbin & Pangrazi, 2003). While most elementary schools have physical education classes, currently the duration and frequency of these classes fall significantly short of the recommended MVPA. The National Association for Sport and Physical Education (NASPE, 2006), developed a Position Paper urging schools to supplement physical education with daily recess which allows students to be physically active while accumulating the recommended minutes of MVPA. According to NASPE, recess is a time during the school day that could provide children with an opportunity to engage in structured, developmentally-appropriate PA.

There has been a dearth of research examining the activity levels of children during recess. Johns and Ha (1999) found that students chose to be more physically active during free play when provided encouragement. A more recent study conducted by Ridgers

and Stratton (2005) found less than 45% of children observed during recess were physically active, suggesting that children needed prompts and equipment to be physically active. When comparing the percentage of time boys and girls spend engaged in PA, researchers reported that boys are more active than girls, regardless of the environment (Sallis, Prochaska, & Taylor, 2000; Faucette, et al., 1995; Aaron et al., 1993). A study conducted by Scruggs, Beveridge, and Watson (2003) suggested that structuring the recess environment can enhance children's PA levels regardless of gender, especially if appropriate equipment is provided.

Given a recent trend in which school systems seem to focus primarily on end of grade testing, "extra" activities such as recess have been seriously compromised during the school day. According to the American Association for the Child's Right to Play (IPA/USA), since 1989, many school systems have abolished recess. Fear that recess will disrupt work patterns has been cited by principals and teachers for the decision to not schedule recess time (Pellegrini, 1995).

School administrators making unilateral decisions, such as scheduling or not scheduling recess, has given a renewed interest in researching how and why decisions like this are being made (Jarrett & Maxwell, 2000). Jarrett (2002) identified several studies that support the value of providing daily recess for school children. With respect to recess and learning, Pellegrini, Huberty, and Jones (1995) found school children became progressively inattentive when recess was delayed. Bishop and Curtis (2001) suggested that recess may be the only opportunity for some children to engage socially with other children. Jarrett (2002) concluded that recess plays an important role in learning, social development, and health and must be considered when administrators decide whether to schedule recess during the school day.

The state of North Carolina passed a policy (HSP-S-000) that mandates all students in grades K-5 receive 150 minutes of PA per week. This policy specifically addresses the rising obesity levels among school aged children. To supplement the present weekly allotment of 30 minutes of physical education, one school system in southeastern North Carolina identified recess time as part of the required 150 minutes of PA and purchased Recess/Energizer packs (fitness equipment) to use during the allotted time. The packs included jump ropes, sport balls, and boundary cones. Monies acquired through the Healthy Carolinians Community Obesity Prevention Collaborative – funded by Kate B. Reynolds Charitable Trust provided the funds for the recess packs. The purpose of this study was to determine the perception of the introduction of the recess packs and the impact on student activity during recess time.

Methods

Description of Participants

The 12 participants were selected from four of nine elementary schools that participated in the recess pack program. These four schools were randomly selected, asked if they would be willing to participate in the study, and affirmed interest in the outcome. The principals from the four schools were all female with an average of ten years serving in an administrative capacity. The make up of the four elementary teachers interviewed was three females and one male, with an average of eight years teaching. Two female students (grade 1 and 3) and two male students (grade 2 and 4) represented the student population. Principals, teachers, and students were interviewed to enable the triangulation of data sources. All participants were selected by a purposeful sampling technique. Purposeful sampling seeks information rich cases, which can be studied in depth (Patton, 2002). In or-

der to collect data for this study, the protocol was reviewed and approved by the Researcher's University Institutional Review Board (IRB) and by the participating school district. Consent and assent forms were collected from all of the participants.

Data Collection

The purpose of the data collection phase was to collect in-depth descriptive information from the 12 participants on their perceptions of the recess packs initiative. Information was collected through interviewing each participant separately for an average of 60 minutes each. Certain guidelines were followed when compiling the interview questions. Specifically, the questions were open-ended, nonthreatening, and followed by probes, not leading (Bogden & Biklen, 2006) and arranged in a logical order (Patton, 2002). The interviews were recorded to allow for complete transcriptions to be made. The researcher also took notes during the interviews. The following techniques were used in the interviews and were based on recommendations from Patton:

1. The interviews were conducted in a comfortable environment so that the participants were at ease and able to speak freely about his or her point of view. Typically this was in the principal's or teacher's office, or in a private space within the school.
2. The participants were assured that the researchers were the only people who would listen to the interview audiotapes and read the verbatim transcriptions. They were also assured that their identity would remain strictly confidential.
3. The researchers prepared for the interviews by creating an interview guide (list of questions) to ask the participants.
4. The interview began with small talk between the researcher and the participant. The purpose of the small talk was to develop a rapport with the teacher and to establish a relationship.
5. Probes that encouraged the participants to elaborate on their answers followed the open-ended questions.
6. Silence was tolerated to allow the participant to organize his or her thoughts.
7. The use of leading questions was avoided.
8. The participants were asked to provide specific examples or details of the situations being shared.

Following the interview, member checking occurred by asking each participant to read his or her transcribed interview. Participants were invited to clarify, elaborate, or suggest changes to their original responses (Lincoln & Guba, 1985). A second researcher, trained and experienced in qualitative research techniques, served as a peer debriefer in this study. A debriefing session took place after each interview. Discussions between the researcher and the peer debriefer focused on methodological issues, the analytical process, the nature of the questions asked of the participants, and the interpretations of the data. Using two analysts helped reduce the potential bias that comes from a single person doing all the data collection and provided means to assess the reliability and validity of the data obtained (Patton, 2002).

Method of Analysis

Qualitative data analysis procedures were used to explore participants' perceptions of the recess packs initiative. The constant comparative method of analysis (Glaser & Strauss, 1967) was applied to the individual transcripts as a method of coding and categorizing the data and to summarize the findings in meaningful ways. This process involved multiple and careful examinations of the data to identify key linkages, themes, and patterns which were used to analyze and interpret the qualitative data (Lincoln & Guba, 1985).

The analysis of the interview data began with an individual case analysis of each of the principals, followed by a within-group

case analysis of all of the principals. This involved inducing categories from the answers of one principal and comparing them to the answers from the other principals. Themes and patterns drawn from the four individual cases were compared and contrasted for similarities and differences. The synthesis of the within-group cross-case analyses represented a descriptive and interpretive framework of the four principal's perception of the impact of the recess packs in their schools. The same process was repeated for the four teachers in the study and finally for the four students in the study. The next step involved comparing the themes and patterns found in the principal's answers to those found in the teacher's and student's answers.

Analysis

Qualitative research examines life experiences in an effort to understand and give them meaning. This usually is done by systematically collecting and analyzing narrative materials using methods that ensure credibility of both the data and the results (Byrn, 2001). The researchers followed an organized approach to answering their research question regarding the perception of the impact of the recess packs initiative. Following the tradition of the phenomenological perspective, the researchers attempted to present the major themes regarding the perception or the actual experience each participant felt with the introduction of recess packs. Each individual expressed varying viewpoints and the myriad of topics discussed were featured as their stories. After extensive studying of the participants stories, each case was synthesized and inserted into a table format. This preliminary analysis was done so that topics of conversation could be scanned from each person's interview. The first researcher approached the task of categorization with this question in mind: "What major categories do I see here?" The first researcher was able to discern six major categories which he believed depicted the essence of what was reflected in the principal's interviews, eight major categories which he believed depicted the essence of what was reflected in the teacher's interviews, and five major categories which he believed depicted the essence of what was reflected in the students' interviews.

The second researcher completed the same tasks as the first researcher during the analysis phase of these qualitative data. Specifically, the second researcher selected her own categories for both sets of participants. The second researcher was able to discern seven major categories which she believed depicted the essence of what was reflected in the principal's interviews, nine major categories which she believed depicted the essence of what was reflected in the teacher's interviews, and seven major categories which she believed depicted the essence of what was reflected in the student's interviews.

In general, the categories that the two researchers selected were similar to each other. The differences between the categories identified by the two researchers were discussed and the final categories were selected. The selected categories are presented in Table 1 (principals), Table 2 (teachers) and Table 3 (students). The final step in the analysis process involved comparing and contrasting the categories from the three sets of participants which resulted in 5 final categories (Table 4). These final categories, in no particular order, are described in the following section.

Results

1. Gender differences in the types of activities performed during recess before and after the introduction of the recess packs.

A clear theme that emerged from the interviews was the gender differences in the types of activities participated in during recess. Prior to the introduction of the recess packs, it

Table 1

Selection of Categories–Principals

First Researcher	Second Researcher	Final Categories
Gender differences in choice of activities during recess How girls were doing some different activities	What girls and boys do during recess New equipment meant new choices for the boys and girls	Gender differences in the types of activities performed during recess before and after the introduction of the packs
Activity levels of students	How have recess packs been utilized What activities/difference of activities since acquiring recess packs	Activity levels of students during recess and how it had changed
Purpose of recess / what teachers now have to do	Should teachers have to teach during recess	Teacher's role during recess – A change!
Training – some ways to make it more relevant to the teachers	Workshops provided by the County	How to train the teachers how to use the recess packs more effectively
The mandate from the State	Acceptance of mandate Teacher resistance	The State mandate
Need healthier cafeteria food as well as more PA opportunities	Cafeteria What the children eat at home	Need healthier cafeteria food as well as more PA opportunities

was reported by one principal that "the girls would stand around and do a little gossip, you know, maybe a little bit of swinging, but were not as active as the boys and just wanted to chit-chat." The other principals and teachers also talked about how the boys appeared to be more active than the girls during recess prior to the intervention of the recess packs. A teacher commented that "boys can make up games but the girls just didn't want to run around and exercise." The gender differences in the types and amount of PA performed by students during recess before the introduction of the recess packs was also discussed by three of the four children interviewed. One student noted that "before we got the equipment the girls really just hung out and talked," while another said that "the boys played tag and bulldog but the girls sat on the benches."

The gender differences discussed by the principals and the teachers were confirmed by the students who were interviewed. A male first grader stated that before the recess packs the "girls were lazy" but after the recess packs they "were doing lots of jump rope." When asked why the girls and boys

Table 2

Selection of Categories–Teachers

First Researcher	Second Researcher	Final Categories
Boys vs. girls activities	Gender separation	Gender differences in the types of activities performed during recess before and after the introduction of the packs
Games played with the new equipment	Changes in behaviors and games because of packs	Types and developmentally appropriateness of activities played during recess
	Inappropriate activities	
	Fun new equipment	
Recess vs. academics	Does recess take away time from other subject areas	Recess and academic performance
Pressure from standardized testing		
Teacher in-services	Training received	Training
How recess is different from P.E.	Children need more physical activity	Recess and physical education
	Current P.E requirements not enough	
Other things the school can do to help kids get fitter	School cafeteria food choices	Nutrition
Miscellaneous		

still play different games the male first grader added that "girls like to try and be careful and don't want to hurt themselves but boys like to be tough and like to play football." A female third grader added her perspective on the gender differences and said that "boys play basketball and girls jump rope but there are not many jump ropes so we have to take turns." The interviews with some of the teachers revealed gender differences were sometimes the result of self-selection by the students and other times the activities were chosen by the teacher. One teacher told the researchers that "it is easier to tell the boys to go and play basketball and the girls to go and play jump rope as that will lead to less trouble." Interestingly, one student commented that sometimes she liked to play the games that typically were played by the boys, stating "sometimes I like to play basketball against the boys."

Table 3

Selection of Categories–Students

First Researcher	Second Researcher	Final Categories
Games played during recess	What children like to do during recess	Activities during recess
Why exercise is important	Why working out is good for our bodies	A new emphasis on the importance of physical activity
Games played at home	After school activities and games	Activity levels outside of school hours
What the cafeteria cooks is not good food	Food Lunch menu	Unhealthy food at the cafeteria
Recess and physical education are different	Why teach during recess? Recess and P.E	What teachers do during recess

2. How the type and the developmentally appropriateness of activities had been affected by the recess packs.

The principals, teachers, and students concurred with each other with regard to the level of PA and the types of activities the children played during recess breaks. In general the teachers were excited about the recess packs as they allowed more students to be physically active. One teacher noted, "they are more engaged because they have something to manipulate, before it wasn't as many active groups of children doing things, it was just a lot of standing around and maybe some walking. Now children are playing games with the equipment from the recess packs."

The children interviewed suggested that recess packs enabled them to be more active during recess. One second grader said "we never used to have stuff so we went outside with nothing and we just had to play with some friends and it was boring but now we have basketballs and footballs and jump ropes and frisbees and other stuff so we can play more." The perceived increase in levels of PA was also discussed by three of the teachers who made the connection between increased activity levels and fewer behavioral problems. For example, one teacher stated, "before the packs it was stop fighting! Stop yelling! You know that kind of stuff, but now they are playing more so we don't have to fuss at them as much."

All of the principals and teachers discussed that on most days the children were allowed "free play" with the recess pack equipment but occasionally the teachers organized games and activities. Prior to the recess packs intervention the teachers rarely, if ever, organized games during recess. The teachers, principals, and students all talked about the types of games the teachers organized as part of the recess packs initiative. They described large group games such as kickball, dodgeball, and relays. The teachers helped the children organize these games and the principals appeared

Table 4

Selection of Final Categories

Principals	Teachers	Students	Final Categories
Gender differences in the types of activities performed during recess before and after the introduction of the recess packs	Gender differences in the types of activities performed during recess before and after the introduction of the recess packs	Activities during recess	Gender differences in the types of activities performed during recess before and after the introduction of the recess packs
Activity levels of students during recess and how it had changed	Types and developmentally appropriateness of activities played during recess	A new emphasis on the importance of physical activity	How the type and the developmentally appropriateness of activities had been affected by the recess packs
Teacher's role during recess – A change!	Recess and academic performance	Activity levels outside of school hours	Role change of teachers during recess
The State mandate	Recess and physical education	What teachers do during recess	
Need healthier cafeteria food as well as more PA opportunities	Nutrition	Nutrition	The importance of addressing nutritional concerns in addition to encouraging more physical activity during recess
How to train the teachers how to use the recess packs more effectively	Training	Unhealthy food at the cafeteria	Principal/teacher preparation for implementing the recess packs

to be aware and supportive of these games. In fact, one principal encouraged her teachers to play class versus class games of kickball. When asked whether this type of game encouraged PA the principal responded, "sure, they get to run around the bases and they have lots of fun."

3. Role change of teachers during recess.

The recess packs initiative was a result of a State mandate requiring children in grades k-5 receive 150 minutes of PA per week. The school district involved in this study attempted to adhere to this mandate by including recess time as PA time. Prior to the State mandate, the teachers were not held accountable for any type of instruction during recess breaks. The mandate had an impact on what was expected of the teachers during recess. All four of the principals discussed the State mandate with their teachers and told them to provide more PA opportunities for their students during recess. There was a noticeable difference between the principals in terms of how much planning they expected their teachers to do to prepare for recess activities. One principal said, "I've told the teachers that I look for it in their lesson plans. They have to turn in weekly lesson plans, and I make sure there are recess activities planned." In contrast, another principal told her teachers to make sure their students are being active and not just sitting around, but did not require any planning or organizing of activities.

The teachers expressed varying levels of comfort at being asked to plan and supervise physical activities during recess. Two teachers were excited about participating in physical activities with their students, while two teachers were somewhat resistant at having to plan and supervise students during a time that previously was a break for them. The amount of preparation the teachers received in their teacher training programs appeared to be related to the attitude of the teachers toward his or her new recess responsibilities. One teacher told us she had taken two physical education classes for early education majors in her program of study and felt comfortable teaching games focused on increasing levels of PA, saying, "I took P.E. classes in my education experience and he required us to do actual methods hours in the classroom so I went out to schools while getting my degree and did two or three P.E. lessons."

Another teacher did not receive preservice physical education training for classroom teachers and expressed her concern at having to plan and supervise physical activities, saying, "I really don't know what to do with them other than pick teams and let them play." In complete contrast to the comfort level of this teacher, her principal assumed that all of his teachers were prepared to plan and teach physical activities, stating, "It's just P.E! It's not like they are being asked to teach a science lab."

4. The importance of addressing nutritional concerns in addition to encouraging more physical activity during recess.

A fourth theme that emerged from the interviews was the need to address the issue of nutrition. This theme was not necessarily related to the recess packs but it was mentioned several times by the principals, teachers, and the students in their interviews. The majority of the principals and the teachers thought that a poor diet was as much to blame for current childhood obesity levels as a lack of PA. All four principals discussed their awareness of the unhealthy foods students eat in the cafeteria. One principal talked how healthy options were offered but students do not select these items. She stated, "The big thing is what they serve in the cafeteria. The children nowadays do not come with healthy eating habits. We serve salad every day! They can always get fresh salad. Most avoid the salad, avoid the fruits and vegetables, and go for the processed patties and hamburger."

Another principal was taking steps to help students make better choices in the cafeteria by setting up programs to educate parents about good nutrition for their child, stating, "Parents need to take responsibility, but if they are not educated themselves…we could offer parents nights and we do offer parents nights here; we don't always get a lot of participation, but I think any kind of information that we can provide the parents with is important because they educate their children what to eat and do the grocery shopping at home."

The problem of the children choosing unhealthy food items instead of the healthy options in the school cafeteria was also confirmed by the teachers. Every teacher told us that the students pick food like pizza and hot dogs over healthier options like salads and vegetables. One teacher commented, "They need to do something with the food in the cafeteria…the foods are high in fat. They also give the kids the option of whether they want a vegetable whereas, you know, if it was my daughter at home at dinner, I don't give her the choice, you've got to eat it."

5. Principal/teacher preparation for implementing recess pack programs.

The State mandate and the recess packs intervention incorporated a training component whereby the teachers were required to attend a workshop. The reactions to this workshop were mixed. A third grade teacher described what the workshop consisted of, "We had two ladies that came out and gave us ideas about how we could use the recess packs. They also gave us lots of ideas on how we could get the students more active in the classroom." However, two of the principals and three of the teachers commented on the need for further training and the provision of more resources. One teacher felt the recess packs initiative was an "attempted quick fix to a big problem" and stated that "if they really want us to do more with the students, then they need to provide more training. I want ready-to-use activities demonstrated to me and I don't want to have to look through a folder to figure things out. I'm just too busy." A principal suggested, "a folder with lots of different ideas in it…sometimes teachers get stuck doing the same thing over and over because they don't have other ideas. Perhaps the P.E teacher can teach the teachers how to do different games."

Another suggestion came from a third grade teacher who proposed a training program that involved physical education faculty from a local university conducting a workshop to share some pedagogical tips and ideas for activities to promote PA. This teacher said, "To be perfectly honest, I don't think some of the activities we saw were that great…not very creative…maybe someone from the university could do a workshop on games that are both fun and educational." This sentiment was echoed by a principal who felt the people in charge of implementing the training program could have used more creativity in their training and possibly utilized University faculty experienced in teacher training methods.

Discussion

The purpose of this study was to investigate the perceptions of the impact of the recess packs initiative through interviews with children, teachers, and principals. Several themes emerged during the interviews including: (a) gender differences in the types of activities performed during recess before and after the introduction of the recess packs, (b) how the type and the developmentally appropriateness of activities had been affected by the recess packs, (c) how the recess packs initiative had changed the teacher's role during recess, (d) the importance of addressing nutritional concerns in addition to encouraging more physical activity during recess, and (e) the training that principals and teachers had received.

The finding that there were gender differences on the types of activities performed during recess supported the research conducted

by Sallis, Prochaska, and Taylor (2000) who found that boys are more active than girls during recess. Sarkin, McKensie, and Sallis (1997) hypothesized that gender differences in the choices of PA may be a result of gender-based expectations and norms. This explanation was supported by some of the teachers' statements in the present study. For example, one teacher told the boys to play basketball and football and instructed the girls to play the less physically demanding games such as jump rope. Research suggests that in order to equalize boys' and girls' PA, structured interventions are needed to provide girls with adequate levels of PA, especially at recess when compared to boys (Sarkin, McKinzie, & Sallis). One strategy to equalize the PA levels of boys and girls is to make all activities available to all and let the student select which activity they want to participate in.

Although the interviews revealed clear gender differences before and after the introduction of the recess packs, it was interesting to hear how these differences changed over time. Prior to the intervention, the boys made up their own games that required little or no equipment, while the girls were physically inactive. After the students received the recess packs equipment, the boys played traditional team sports such as football and basketball, while the girls engaged in activities such as jumping rope. Although the recess packs did not eradicate the gender differences, the participants revealed that the recess packs had resulted in both sexes being more physically active but just performing different activities.

Several of the participants discussed the prevalence of games such as dodgeball, kickball, and relays. These games have been identified as being developmentally inappropriate and have even been placed into the physical education hall of shame (Williams, 1992). According to the Council on Physical Education for Children, activities such as relay races, dodgeball, and elimination tag provide limited opportunities for everyone in the class, especially the slower, less agile students who need the activity the most (COPEC, 2000). Three out of four of the principals revealed that they considered dodgeball and kickball appropriate games for increasing student activity levels. This suggests a need for a training program to educate administrators about what types of activities are considered developmentally appropriate and inappropriate by experts in physical education (i.e., NASPE).

All the teachers and principals were aware the school district was using recess time to meet the state mandate of providing students with 150 minutes of PA per week. Some of the principals were requiring their teachers to build recess activities into their lessons plans while other principals discussed the issue with their teachers and simply asked them to encourage physical activity. This inconsistent approach between principals was also evident amongst the interviewed teachers with some taking the mandate much more seriously than others. When combined with the previously discussed problem of the principals supporting the playing of inappropriate games, it became apparent that a more thorough training program was needed to educate the principals and the teachers about effective teaching strategies for promoting PA.

A study by Martin, Hodges Kulinna, Ekulund, & Reed (2001) identified that in order to enhance the PA level of children, teachers must have planned, specific objectives. These objectives must reflect the intention of the activity time. Arguably, planning to teach "active recess" is the key ingredient to engaging students in moderate to vigorous PA. Merely arranging 30 minutes of recess per day does not guarantee suitable levels of PA. In addition to being given a list of simple games, the principals and the teachers need to be provided with a workshop that describes teaching strategies such as: (a) how to increase student practice time and opportunities, (b) how to individualize activities so that every child can experience success, (c) how to provide feed-

back, and (d) how to design activities that focus on the components of health related physical fitness. Such a training program may lead to increased levels of appropriate PA which would allow the school district to confidently say that they are providing children with the mandated 150 minutes of PA per week.

One surprising theme that emerged throughout the interviews was how disappointed the principals and teachers were with the food that the children were eating in the school cafeteria. It became apparent that although there were healthy choices offered, the majority of the children chose the high fat items. Some of the schools were attempting to address this issue through parent education evenings but had achieved little success due to low participation rates.

While the results of this study suggest that the recess packs may have led to increased amounts of PA, there are serious concerns about whether the type of PA the participants discussed will result in any health benefits. Standing in a field during a game of kickball or sitting on the bench waiting for your turn to kick probably burns fewer calories than walking around talking to friends. Further investigations need to compare the PA levels of children at schools with the recess packs against those at schools without any recess packs using quantifiable measures such as steps per day or by measuring how long the students' heart rates were in certain zones. There were other limitations to the results. One limitation to this study was the small sample size and possible bias in selection. Studying larger number of participants from more schools might provide more information on the impact of the recess packs.

Overall, the study demonstrates the PA benefits in providing equipment during school recess periods. Also, it stresses the importance of training principals and teachers to effectively plan and deliver developmentally appropriate activities resulting in more intense bouts of PA. Additionally, if schools are going to help address the rising rates of childhood obesity they also need to offer healthier foods in their cafeteria and look at innovative ways at encouraging students to choose healthier options.

Finally, the use of recess time to meet the state mandate seems like a quick fix to a serious problem. The interviews clearly highlighted the need for students to be provided with PA opportunities by a trained professional. More resources should be made available so that schools can provide students with more than one physical education class a week from a trained professional. Until that occurs, students may be left on the bench for the whole of recess waiting for a chance to kick a ball in a class versus class kickball game.

References

Aaron, D. J., Kriska, A. M., Dearwater, S. R., Anderson, R. L., Olsen, T. I., Cauley, J. A., & Laporte, R. E. (1993). The epidemiology of leisure PA in an adolescent population. *Medicine and Science in Sport and Exercise, 25*, 847-853.

Biddle, S. J. H, Gorely, T., & Stensel, D. J. (2004). Health-enhancing PA and sedentary behaviour in children and adolescents. *Journal of Sports Sciences, 22*, 679-701.

Bishop, J. C., & Curtis, M. (Eds.). (2001). *Play today in the primary school playground.* Philadelphia: Open University Press.

Bogdan, R. C., & Biklen, S. K. (2006). *Qualitative research for education* (5th ed.). Boston, MA: Allyn & Bacon.

Byrne, M. (2001). Understanding life experiences through a phenomenological approachto research. Retrieved 12th July, 2009, from AORN Journal Website: http://findarticles.com/p/articles/mi_m0FSL/is_4_73/ai_73308177

Council on Physical Education for Children. (2000). *Developmentally appropriate*

physical education practices for children. Reston, VA: AAHPERD.

Corbin, C. B., & Pangrazi, R. P. (2003). *Guidelines for appropriate PA for elementary school children: 2003 update.* Reston, VA: NASPE Publications.

Faucette, N., Salliss, J. F., McKenzie, T. L., Alcaraz, J., Kolody, B., & Nugent, P. (1995). Comparison of fourth grade students' out-of-school PA and choices by gender: Project SPARK. *Journal of Health Education, 26*, S82-S90.

Fox, K., Cooper, A., & McKenna, J. (2004). The school and promotion of children's health-enhancing physical activity: Perspectives from the United Kingdom. *Journal of Teaching in Physical Education, 23*, 336-355.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory.* Chicago, IL: Aldine Publishing Company.

Jarrett, O. (2002). *Recess in elementary school: What does the research say?* ERIC / EECE Publications, EDO-PS-0205.

Jarrett, O., & Maxwell, D. M. (2000). What research says about the need for recess. In R. Clements (Ed.), *Elementary school recess: Selected readings, games, and activities for teachers and paren*ts (pp. 12-23). Boston, MA: American Press.

Johns, D. P., & Ha, A. S. (1999). Home and recess PA of Hong Kong children. *Research Quarterly of Exercise and Sport, 70*(3), 319-323.

Lincoln, Y. S., & *Guba, E. G. (1985)*. Naturalistic inquiry. Beverly Hills, CA: Sage.

Martin, J. J., Hodges Kulinna, P. H., Edlund, R. C., & Reed, B. (2001). Determinants of teachers' intentions to teach physically active physical education classes. *Journal of Teaching in Physical Education, 20*, 129-143.

National Association for Sport and Physical Education. (2006). *Recess for elementary school students* [Position paper] Reston, VA: Author.

Patton, M. Q. (2002). *Qualitative research and evaluation Methods* (3rd ed.). Thousand Oaks, CA: Sage Publication.

Pellegrini, A. D. (1995). *School recess and playground behavior.* Albany: State University of New York. ED 379 095.

Pellegrini, A. D., Huberty, P. D., & Jones, I. (1995). The effects of recess timing on children's playground and classroom behaviors. *American Educational Research Journal, 32*(4), 845-864. EJ 520 960.

Ridgers, N. D., & Stratton, G. (2005). PA during school recess: the Liverpool Sporting Playground Project. *Pediatric Exercise Science, 17*, 281-290.

Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medical Science of Sports and Exercise, 32*(5), 963-975.

Sarkin, J. A., McKenzie, T. L, & Sallis, J.F. (1997). Gender differences in physical activity during fifth-grade physical education and recess periods. *Journal of Teaching in Physical Education, 17*, 99-106.

Scruggs, P. W., Beveridge, S. K., & Watson, D. L. (2003). Increasing children's school PA using structured fitness breaks. *Pediatric Exercise Science, 15*, 156-169.

Williams, N. (1992). The physical education hall of shame. *Journal of Physical Education, Recreation and Dance, 63* (6), 57-60.

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