

“I Need to Move and So Do the Children”

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Abstract

It is generally known that preschool teachers express positive attitudes toward physical activity (PA) for young children inasmuch as teachers consider it important to children’s well-being and overall development and learning. Less clear is the relationship between teachers’ positive attitudes in this regard and their backgrounds and classroom practices. A total of 149 preschool teachers completed questionnaires about physical activity practices in their classrooms. The results indicate that the majority of the teachers supported PA in preschool years. However, they have limited knowledge of and little competence in regard to teaching PA. Sixty-one percent of the teachers indicated their awareness of their limitations on this point and thus requested professional development opportunities relating to early-childhood PA. This study supports the case for concerted programming in an important yet neglected area of early-childhood education.

Keywords: physical activity, preschoolers, in-service teachers, professional development

1. Introduction

In recent years, schools have tended to focus on the academic subjects tested in examinations and required by the *No Child Left Behind Act of 2002*. Although three developmental domains—i.e., cognitive, social-emotional, and physical—are equally important in regard to the children’s development, the cognitive domain undoubtedly receives the most attention in schools and the physical domain receives the least (Ignico 1994; Stork & Sanders 2008). In their research with elementary school principles in Virginia, Graham et al. (2002) investigated the relationship between the amount of time allocated to art, music, and physical education (AMPE) and scores on Standards of Learning (SOL), a standardized test program in Virginia used to assess student achievement in English, Mathematics, Science, and History/Social Science. The study results showed that reducing the time spent on AMPE to concentrate more on the subjects tested on the SOL did not have an impact on test scores. Furthermore, a number of other studies have even found a positive correlation between the amount of children’s physical activity and their cognitive performance (e.g., Carlson et al., 2008; Center for Disease Control, 2010; Donnelly & Lambourne, 2011).

Instead of reducing the time children spend on physical activity in order to have them concentrate on academic subjects, physical activity should be incorporated into the daily school curriculum to stimulate children’s thinking in a physical and enjoyable way. According to Henniger (2009), integrated curriculum provides remarkable opportunities for children to engage in physical activities. For example, Trost, Fees, and Dzewaltowski (2008) examined the feasibility and efficacy of a “move and learn (M&L)” physical-activity curriculum for preschool children. Movement experiences, e.g., hopping, marching, skipping, running, and galloping, were integrated into all aspects of the daily preschool curriculum including math, science, and art. For example, in one activity, the children counted the number of balloons they kicked in a 1-minute session; in another, they marched around a circle of letters as music played, and each named the letter she/he was standing on when the music stopped. After 8 weeks, a significant improvement was observed in the children’s physical-activity levels. Moreover, teachers reported that the M&L curriculum had not disrupted the learning environment; instead, it had helped to improve the children’s ability to attend to their lessons and their ability to both physically and verbally self-regulate.

Moreover, physical-activity opportunities during preschool years help children to become competent in regard to moving their bodies and to develop a positive attitude toward themselves (Goodway et al., 2009). Physical activity is important in developing and maintaining, good health in children, which bodies has a significant

influence on the quality of their lives in later years. More strictly speaking, adults who participated in various physical activities as young children are more likely to be active and participate in sports activities as compared to those who did not participate in this way (e.g., Gallahue & Ozmun, 1998; Haywood & Getchell, 2009; Robinson & Goodway, 2009).

Although schools have not considered physical activity to be a major element of the curriculum, national guidelines clearly indicate that they should encourage young children to be more active. National bodies have issued policy statements about physical activity requirements in early years, and they also offer practical advice to educators regarding how to integrate physical activity into the daily curriculum. For example, the National Association for Sport and Physical Education (NASPE) developed five specific guidelines designed to inform educators, caregivers, and parents in regard about the physical-activity requirements of children from birth to age 5. According to the position statement, “all children from birth to age five should engage daily in physical activity that promotes movement skillfulness and foundations of health-related fitness” (2009). The five guidelines for preschoolers are as follows:

Guideline 1. Preschoolers should accumulate at least 60 minutes of structured physical activity each day.

Guideline 2. Preschoolers should engage in at least 60 minutes and up to several hours of unstructured physical activity each day, and should not be sedentary for more than 60 minutes at a time, except when sleeping.

Guideline 3. Preschoolers should be encouraged to develop competence in fundamental motor skills that will serve as the building blocks for future motor skillfulness and physical activity.

Guideline 4. Preschoolers should have access to indoor and outdoor areas that meet or exceed recommended safety standards for performing large-muscle activities.

Guideline 5. Caregivers and parents in charge of preschoolers’ health and well-being are responsible for understanding the importance of physical activity and for promoting movement skills by providing opportunities for structured and unstructured physical activity.

These guidelines are designed to help teachers and practitioners to ensure that the daily physical activity needs of preschoolers are met. However, researchers have found that many preschool-age children do not engage in the 60 minutes of structured and the 60 minutes of unstructured physical activity as recommended by the NASPE. McWilliams et al. (2009) examined the physical activity and playtime practices and policies of 96 centers in North Carolina (US). The Nutrition and Physical Activity Self Assessment for Child Care (NAPSACC) was developed to assess the environment, policies, and practices thought to influence the nutrition and physical-activity behaviors of children. The results of the study indicate that the majority of North Carolina childcare centers that participated in the study offered very little programming that met NASPE guidelines. That is, only 13.7% of childcare centers in North Carolina offered 120 minutes of active playtime during the school day.

In addition to the school policies on physical-activity guidelines, support and encouragement from teachers and caregivers do seem to have a strong and prolonged effect on children’s participation in physical activity (Brady et al., 2008). Compared to teachers who did not value physical activity, those who did value it were more likely to encourage children to go outside and more likely to engage with them in active play (Brady et al. 2008; Cashmore & Sandra, 2008). Recently, Copeland et al. (2011) investigated the perceptions of teachers’ in child-care centers in regard to the benefits of and barriers to children’s physical activity. Nine focus group interviews with forty-nine teachers were conducted for the study. The teachers noted the physical and social-emotional benefits of physical activity particular to preschoolers (e.g., gross motor skill development, self-confidence, improved mood, and attention). They also mentioned several barriers including their own personal attitudes (e.g., low self-efficacy) and their own preferences in regard to avoiding going outdoors (e.g., a dislike of hot or cold weather, of getting dirty, and of chaos in the playground). According to the researchers, children can have very different gross motor and outdoor play experiences even within the same facility based on the beliefs, creativity, level of engagement, and health status of their teachers (Copeland et al., 2011).

As stated in the research, several factors may have an influence on how likely teachers are to participate in physical activity. Building on Bronfenbrenner’s Ecological Systems Theory, Stokols (1996) explains behavioral, social, and physical-environmental factors on the promotion of health. According to Stokols, to be able to successfully adopt improved health practices, a person should be motivated. However, he adds, that motivation per se is not sufficient for an individual to enact the desired behavior. Social and physical-environmental factors also have an impact on participation in physical activity. Stokols also posits that each of these three factors has

an impact on how likely a teacher is to support children's participation in physical activity. For a teacher to incorporate physical activity into teaching, he/she must be both knowledgeable enough about basic movement skills and capable of performing necessary skills. These characteristics are important in enabling a teacher to (a) believe in his/her own ability, (b) build a positive attitude, and (c) boost self-efficacy and the belief that participating in such activities will result in the desired outcomes (Bandura, 1977).

In the present study, the influence of teachers is emphasized as one of the most influential factors in preschool education to directly impact physical-activity practices. Therefore, the central concern of the study is to examine teachers' attitudes toward preschool physical activity. Secondly, this study investigates these attitudes in relation to teachers' backgrounds. And, thirdly, the study relates the above two sets of information to the teachers' reports of their practices in regard to physical activity for children. Special attention is given to determining and understanding the relationship between physical activity and classroom practices. Implications for program development and evaluative research in this area are also considered.

2. Methodology

2.1 Participants

The sample population comprises 149 teachers working in the central region of Pennsylvania (US) who taught children aged from 3 to 5 years old. Eleven percent of the teachers were between 18 and 25 years old, 7% were between 26 and 30, 38% were between 31 and 40, 25% were between 41 and 50, and 19% were older than 50 years. In regard to highest educational level achieved, the teachers held high school degrees (5.4%), child development associate's degrees (11.6%), bachelor's degrees (57.2%), master's degrees (23.1%), and doctoral degrees (2.7%). Teachers from a variety of early-education programs participated in the study, i.e., Community Pre-K (52.1%), Public Pre-K (33.1%), Head Start (12.0%), and Family Child Care (2.8%).

2.2 Procedures

After approval from the Institutional Review Board (IRB) of the Pennsylvania State University had been obtained, an email with consent forms explaining the rationale of the study and an electronic link to the questionnaire was e-mailed to 250 preschool teachers in the central region of Pennsylvania (US). A total of 149 teachers completed the questionnaire, yielding a response rate of 59.6%.

2.3 Instrument

The study instrument was a modified version of the questionnaire developed by Rodriguez (2005). The modified version was evaluated by two professors of Early Childhood Education and piloted with fifteen teachers. The questionnaire comprised three sections: (1) the teacher's demographic information (gender, age, years of experience, type of school in which the participant was employed, educational level, and area of specialization), (2) a four-item Likert scale to elicit the teacher's attitudes regarding teaching physical activities, and (3) closed and open-ended questions designed to shed light on the teacher's physical-activity practices in the classroom settings.

2.4 Analysis

The data obtained from the responses to the questionnaire were analyzed through descriptive statistics and content analysis. The data in the first section of the questionnaire were grouped in terms of percentages. Next, the scaled responses in the second section were analyzed through computing the mean rating, the percentages and the number of responses for each scale, and the total number of responses. Lastly, the responses to the closed-ended questions in the third section were analyzed through calculating the respective percentages of participants responding "Yes" or "No." On the other hand, the open-ended questions were assessed through a content analysis of the participants' transcriptions.

3. Results

3.1 Participants' Background Information

Approximately three quarters of the participating teachers (75.1%) reported being physically active during elementary, secondary, high school, and college years. They participated in some sort of organized sports or recreational activities such as softball (21.4%), soccer (18.1%), running (13.4%), volleyball (12.0%), swimming (11.4%), basketball (10.7%), cheerleading (8%), Pilates (6%), and cycling (5.3%). However, for several reasons, such as not having enough time or being overweight, very few of the participants (12.4%) were still participating in these activities at the time of the study.

The results also indicate that 64.4% of the participating teachers had not taken any courses related to physical education in their pre-service programs. Almost 36% reported that they had taken a course mainly focused on

music, dance, and movement. Of 149 participants, only 28.8% had attended an in-service training in the area of physical education or movement. Choosey Kids, I'm Moving I'm Learning, Keystone Color Me Healthy were commonly affirmed examples of in-service trainings.

3.2 Attitudes toward Implementing Physical Activity

Table 1 summarizes the results obtained in regard to the participating teachers' attitudes toward implementing physical activity in preschool settings. The majority of them (91.8%) held themselves responsible for the physical activity of young children. In addition, all the participants considered school to be important in promoting physical activity for young children. More than half of the teachers either strongly agreed (21.9%) or agreed (33.6%) that children need 60 minutes of structured activity daily. Almost three quarters (73.7%) of the teachers agreed that the time allocated for daily recess or free play is insufficient. Moreover, 55.1% agreed and 33.3% strongly agreed that teachers should take an in-service training in this area. Lastly, 61.2% of the teachers agreed and 18.4% strongly agreed that there is a need for a curriculum guide in PA.

Table 1. Participants' Attitudes toward Implementing Physical Activity

Questions	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean (<i>sd</i>)
Do you feel that you should have responsibility for the physical activities for the children in your classroom?	31.5% (46)	60.3% (88)	6.8% (10)	1.4% (2)	3.22 (0.62)
Do you feel that schools should play an important role in promoting physical activity for children?	68.7% (101)	31.3% (46)	0.0% (0)	0.0% (0)	3.69 (0.46)
Do you feel that your children need a daily 60-minute period of structured physical activity?	21.9% (32)	33.6% (49)	36.3% (53)	8.2% (12)	2.69 (0.89)
Do you feel that daily recess or period of free play is enough for your children?	5.5% (8)	20.7% (30)	50.3% (73)	23.4% (34)	2.07 (0.81)
Do you feel that there is a need for some kind of curriculum guide for physical activity?	18.4% (27)	61.2% (90)	19.0% (28)	1.4% (2)	2.96 (0.65)
Do you think it is important to take in-service training in this area?	33.3% (49)	55.1% (81)	10.2% (15)	1.4% (2)	3.20 (0.67)

To examine attitudes more specifically, the participating teachers were asked additional open and close-ended questions on their PA experiences and the influence of these experiences on their use of physical activity in the classroom. It is apparent from the responses that their experiences with PA had led to positive attitudes toward implementation. Below are three representative excerpts from transcripts:

Absolutely, I think that being involved in sports, I enjoyed teaching these sports to my kids, and therefore when we are on playground, I am not sedentary but rather running with them and getting my own exercise. (t-92)

If you grew up with an active lifestyle, you know the importance of PE. At the same time, if you did not grow up with an active lifestyle, you also know the importance because you might not be as physically healthy. (t-47)

Yet, PA experience was not enough for teachers to feel competent to teach it. Approximately two thirds of the participating teachers (66.4%) felt that they did not have the competence to teach PA:

I do not feel I know everything I would need to know to actually teach PE. I feel I can facilitate activities and come up with ideas to encourage children's movement but do not feel that I am an expert in this area. (t-53)

I would feel competent but would need more training on physical development, such as muscle development ... how they grow and change. (t-59)

A minority of the participating teachers considered themselves to be competent (21.4%) or somehow competent (12.8%), and these teachers made reference to their pre-service or in-service training:

I feel confident to teach it, since I know the importance of it and took a course related with music and movement. I know how to get children involved in activities that will promote fine and gross motor skills. (t-35)

I grew up as a very active child and believe that this is very important for young children. Also, Head Start initiation in this area has furthered my knowledge and understanding about the importance of proper movement. (t-61)

3.3 Benefits of PA: Daily Indoor and Outdoor Physical Activity

The participating teachers uniformly acknowledged the value of physical activity to a number of processes such as obesity prevention (60.4%), cognitive development (18.7%), physical development (12.7%), and social development (8.1%), as the following excerpt indicate:

I felt that Phys. Ed. is very much needed. It teaches them to work as a team player; helps keep them in shape and learn the importance of staying fit. We have far too many obese non-fit people in our country, necessary for this age group especially for fighting obesity. (t-36)

On the other hand, a small number of responses (11.6%) reflect a common dilemma in regard to whether to emphasize structured or unstructured physical activity for young children:

I think it is very important to provide children with many opportunities to run, play, and participate in fun movement activities. I do not agree with a large amount of highly structured phys. ed. activities, 4- to 5-yr-olds being pushed to play soccer, basketball, baseball, and eliminating time for free, unstructured creative play. I believe that the whole movement to push youth sports on younger and younger children has not made children more fit but has actually had the opposite effect, causing children to dislike sports after being pushed into structured competitive sports too soon. I would LOVE to see someone do research on this! (t-61)

Furthermore, the participating teachers listed indoor and outdoor physical activities that they had incorporated into the daily curriculum. Seventy-five percent indicated a lack of space as one of the factors limiting their activity selection:

With limited space, we are limited to activities like duck duck goose, crab walking, Simon says, or red light, green light (t-56)

Usually, because of limited space, it is not cardio as much as small muscle development. We move a lot, hide and seek, musical chairs, or Simon says. (t-69)

Table 2 represents the reported frequencies and percentages of indoor physical activities incorporated into the daily curriculum. The questionnaire was designed so that multiple activities could be selected. Games with rules (79.1%), dance and music (55.7%), and balance activities (53.0%) were the most frequently listed indoor activities. In addition, 26.1% of the participants reported using obstacle course activities as a way to overcome space limitations indoors and to keep children active using desks and chairs in the class. As can be seen in Table 2, physical activities performed indoors were mostly teacher-directed at a low level of intensity.

Table 2. Indoor Physical Activities (n=149)

Activity	Frequency (%)
Games with rules	118 (79.1)
Dance and music	83 (55.7)
Balance activities	79 (53.0)
Obstacle course	39 (26.1)
Other	17 (11.4)

The participating teachers indicated that the outdoor activities were less structured than the indoor activities, that the outdoor activities tended to be the free choice of the children, and that the outdoor activities were performed at a moderate level of intensity (Table 3). The most frequently listed activities were ball games (57.7%), running (56.3%), riding bicycles/tricycles (48.3%), climbing (47.6%), obstacle course (38.2%), games with rules (24.1%), jumping (22.1%), hopping (18.1%), and nature walk (13.4%). The questionnaire was designed so that multiple activities could be selected.

Table 3. Outdoor Physical Activities (n=149)

Activity	Frequency (%)
Ball games	86 (57.7%)
Running	84 (56.3%)
Riding bicycles/tricycles	72 (48.3%)
Climbing	71 (47.6%)
Obstacle course	57 (38.2%)
Games with rules	36 (24.1%)
Jumping	33 (22.1%)
Hopping	27 (18.1%)
Nature walk	20 (13.4%)

3.4 Concerns and Barriers

With regard to outdoor activities, school neighborhood safety was a concern for some participating teachers:

Proper safe play space is necessary for outdoor activities, especially in an urban setting [such] as we are in. Many of our students do not have the opportunity to play outside due to dangerous living areas. (t-124)

My role as a teacher make[s] me aware of the importance of physical movement especially since many of these children have little opportunity for any outdoor motor activities since they live in unsafe areas or they don't have access to sport facilities.

Additionally, some of the respondents (17.6%) reported the weather (too hot or too cold) as a barrier to engaging children in outdoor activities. They specifically pointed out the need for shaded areas in hot weather and expressed concern regarding children wearing inappropriate clothing such as slippers and dresses during the winter months.

3.5 Additional Participant Comments

At the end of the questionnaire, the participating teachers were asked to write additional comments about the topic. A total of 61.2% of them pointed out the need for teachers to receive in-service training focused on preparing physical activities appropriate for both specific age groups and mixed-age groups. Participating teachers also indicated a wish to become better informed about the motor development of young children. In particular, they wished to become knowledgeable about specific muscle groups needed for large, small, or manipulative skills:

I have a little 4-year-old girl who now weighs in at 85 lbs and continues to gain almost weekly. We're always trying to come up with new ways to help her moving. Because of this girl, I would love to get more informed in ways to get kids to understand the importance of physical activities and how movement affects their life. (t-72)

It's hard to plan a physical activity at times when we have mixed-ages. Sometimes we have 3- to 6-year-olds, skill levels are different. I support more trainings and possibly a physical education specialist to assist with physical education in early childhood settings. (t-16)

Some of the participating teachers (30.6%) also stated the need to educate parents in regard to keeping their children active outside school hours and including more nutritious foods in their children's diets:

This topic is as important as other subjects, and teachers should be well educated so they can be confident to teach it. Parents need education about this topic since children are inactive at home and always video playing. (t-11)

Finally, the participating teachers noted the need for a physical education specialist (38.8%), a unified curriculum (15.7%), and appropriate infrastructure (12.3%) for implementing physical activities:

It needs to be stressed to early-care educators how important this topic is and make it mandatory to include it in their curriculum. Also, teach parents about getting involved in physical activities with their children. (t-59)

With the focus on child obesity in the US being newsworthy almost daily, it is important to be sure that a unified program of PE is initiated in preschool programs and continued throughout every child's school career. (t-38)

4. Discussion

The participating teachers in this study had positive attitudes toward preschoolers' participation in physical activities. The vast majority of them noted the benefits of PA in terms of obesity prevention and in regard to physical, social, and cognitive development. Likewise, many teachers also commented on the importance of physical activity which was in agreement with the results of various studies (e.g., Copeland et al., 2011; Obeng, 2010). The participating teachers also noted difficulties in regard to implementing PA: lack of knowledge and training, inadequate infrastructure, limited parental support, and weather, also consistent with the literature pointing to avoidance of physical activities due to the same barriers (Copeland et al., 2009).

The results also suggest the positive effect of teachers' own background experiences—either through participating in sports activities or taking in-service/pre-service training—on the implementation of PA in preschool settings. The participating teachers who had undergone in-service training in PA stated that they felt confident in their ability to teach it. The opposite is true for the participants who had no training: they stated concerns both in regard to their ability to design age-appropriate physical activities and their ability to conduct them on a daily basis. Copeland et al. (2011) suggested that teachers receive training on age-appropriate structured games to increase their self-confidence and efficacy in regard to engaging children in physical activities.

Clearly, the participating teachers in this study supported professional development as important in regard to ensuring that teachers are adequately prepared to integrate physical activities into their teaching practice. A considerable body of literature exists concerning professional development and its impact on teachers' classroom practices and students' academic achievements. For instance, Darling-Hammond et al. (2009) argued for an alignment between “what teachers are urged to do in professional development activity and what they are required to do according to local curriculum guidelines, texts, and assessment practices”. Without such alignment, professional development can be expected to have very little impact on teachers' classroom practices. Teachers need to be able to return to their classrooms to try out new techniques with children; set up research processes to obtain data; receive feedback from students, coaches, and mentors; and reflect on what they are learning; confer with others about what is being learned; modify what they are doing and repeat those processes; and plan next steps (Easton, 2008). In this way, professional development activities would become embedded in day-to-day teaching practices, thus reducing confusion and uncertainty about what to teach and how to teach it (Archibald et al., 2011).

Adequately prepared teachers who have received high-quality professional development will ensure that children have sufficient opportunities to practice physical skills and learn other skills necessary to living a healthy life. Munch and Move, a key initiative of the New South Wales Government's Plan Preventing Overweight and Obesity, was designed as a professional development program for early-childhood teachers to improve the nutrition and increase the physical-activity levels of children aged 3 to 5. The program provides teachers with workshops, resources (e.g., manual, fact sheets, and games), and contact with health-promotion professionals in order to give additional advice to preschools at which the program is being delivered. Overall, teachers who participated in the workshop have rated it as “very useful.” After attending a Munch and Move program, they reported improvements in their attitudes, confidence, and knowledge relating to physical activity and healthy eating (Hardy et al., 2010).

The present study also helps to further clarify the need for pre-service teacher training in this area. It is imperative for pre-service teachers to be trained in terms of the knowledge and skills needed to deliver quality physical activity and movement programs. Most research exemplifying strategies to increase physical activity

among preschoolers has focused on education for in-service teachers. Few have considered pre-service teacher education, which is an integral stage in the development of the beliefs, attitudes, skills, and motivation necessary to the competent teaching of physical activities. Therefore, special attention should also be given to teacher preparation within a curriculum framework involving body management, locomotor, non-locomotor, and manipulative activities through hands-on experiences in actual preschool settings.

In recent years, there has been considerable interest in studying pre-service teachers' confidence and competence in regard to teaching academic subjects like math, science, and language arts. From a constructivist stance with an emphasis on inquiry and active learning, some of those studies reported changes in pre-service teachers' content knowledge for teaching academic subjects. For instance, after taking a 10-week training module, first-year pre-service teachers in Sherman and MacDonald's (2007) study demonstrated a strengthened belief in promoting the teaching of science with their elementary students. Through this module, prospective teachers also described ways to teach science with a strengthened content knowledge and confidence. Such innovative teaching methods would be helpful in efforts to improve prospective teachers' content and pedagogical knowledge.

However, as the majority of the research studies on effective teaching have been concentrated in traditional academic subject areas, less information has been gathered in the area of physical education and movement. Carson (1994) pointed to the need to expand the role of teacher-preparation institutions in terms of physical education coursework and clinical experience. According to Carson, physical education specialists can provide developmentally appropriate practices through teaching courses in early-childhood majors. During the delivery of PA-enriched education to ECE pre-service teachers, however, some difficulties might occur in terms of differing among opinions regarding how physical and movement education should be taught during the early years. Although physical education and kinesiology departments at universities have tremendous resources dedicated to preparing pre-service teachers (Carson, 1994) in regard to understanding early physical development. Instead, such departments may sometimes overlook the developmental appropriateness and playful aspects of this age group and focus on structured health- or performance-related physical activities that are not at the core of the ECE curriculum. On the other hand, most of the ECE educators are profoundly supportive of the idea of unstructured physical activities, which should go hand in hand with the structured activities as stated in the NASPE guidelines. According to Copeland et al. (2011), differences in teachers' viewpoints can have a considerable effect on the types of activities in which children engage. Besides personal attitudes, physical-environmental factors can either support or discourage children's participation in physical activities (Stokols, 1996).

A lack of indoor/outdoor spaces that are both safe and otherwise appropriate for physical activities was commonly reported as a disabling factor. When safety was a concern, the teachers' practices ranged from monitoring to facilitating play, but rarely included participation into children's activities. Consistent with other studies, teachers in the current study reported their role in regard to outdoor play as focused on caring and supervising and indicated that their lack of participation decreased the quality of the children's playtime (Sandberg & Pramling-Samuelsson, 2005). As also clearly seen in this study's results, lack of space constituted a barrier to teachers in regard to implementing gross motor activities inside the classroom, as such circumstances meant that only low-energy expenditure activities could be undertaken, e.g., games with rules, dance and music, balancing, and obstacle courses. During inclement weather—which often means children stay inside—children do not have an opportunity to get rid of surplus energy through gross motor activities. This point is in accord with the findings of a study by Brady et al. (2008), which indicated that children are more physically active while they are outside performing high-energy expenditure activities such as cycling, climbing, and running than when they are inside the classroom.

Similarly, a well-known study by Fjortoft (2001) demonstrated the impact of outdoor play activities on children's motor abilities. The children, in her study, used trees for climbing; shrubs for hide and seek; shelters for role-playing and fantasy play; cliffs for sliding and crawling; and dense snow for rolling and other acrobatics. The results showed a significant relationship between the landscape diversity and the affordance of play. A significant improvement was also found in the motor skills of children who used the forest to play. According to Filer (2008), certain physical activities that children perform during outdoor play help to the increase body's natural motivators, and make the children feel good about themselves.

Despite the numerous benefits of the outdoors, however, the results of the present study indicated weather as a barrier to spending time outside especially during the winter. In response to this excuse, a Swedish proverb offers this sentiment: "There is no such thing as bad weather, only bad clothing." In addition to proper clothing, providing proper shelters and shade would improve the quality of children's outdoor playtime. Additionally, we

should not overlook the significance of school and home collaborations to increasing the physical-activity opportunities of children. For a child to become a life-long participant in physical activities requires parents to become physically active role models. Recently, Zecevic et al. (2010) explored parental influence on children's physical activity. The results indicated that children who received greater parental support for physical activity were six times more likely to be highly active. The study suggested that parents can promote the physical activity of preschoolers not only by limiting TV time but also by being highly supportive of their children's play.

Overall, it appears from the collected data that teacher training in this area is essential to the provision of quality physical activity in the early years. The collaboration of early-childhood educators with professionals in other departments such as kinesiology or architecture is likely to prove helpful in sharing contemporary challenges relating to physical activity, etc., and finding ways to address them. Through collaboration, early-childhood educators may overcome challenges such as limited content knowledge, low self-confidence in terms of their ability to teach physical activities, limited space, and so succeed in implementing and promoting better-quality programs for preschoolers and families. For example, in the long-term, in collaboration with departments of architecture, environmental barriers could be reduced through the promotion of movement-friendly classrooms or school play-spaces. Similarly, physical and fitness knowledge, and the self-efficacy of teachers and parents would be improved through in-service/pre-service training and community sports or recreation programs offered by kinesiology departments. Possible collaborations among various departments should contribute to programs that positively influence children's participation in physical activity.

In conclusion, implementing appropriate programs to increase preschoolers' physical activity mainly depends on understanding how they develop physically, having a proper infrastructure, and having teachers who are competent to implement and maintain a PA program. To increase the physical activity of preschoolers, further interventions are needed: (1) improve teachers' knowledge through both pre-service and in-service training, (2) create classrooms, schools, and play-spaces that allow children to move and play safely, (3) develop teachers' self-efficacy through health-related fitness activities, (4) encourage parental involvement by educating parents about their role in regard to children's physical-activity behaviors, and (5) collaborate and cooperate with colleagues in other departments in order to share ideas, resources, and methods in regard to PA implementation in children's early years.

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