

PHYSICAL ACTIVITY AND PRESCHOOL CHILDREN: PRESCHOOL TEACHERS' PERCEPTIONS

Fatma Betul Senol^{1*}

¹Preschool Education Department, Faculty of Education, Afyon Kocatepe University Afyon, Turkey

fatmabetulsenol@gmail.com¹

***Corresponding Author**

Received: 07 July 2021; **Accepted:** 11 September 2021; **Published:** 23 November 2021

To cite this article (APA): Senol, F. B. (2021). Physical activity and preschool children: Preschool teachers' perceptions. *Southeast Asia Early Childhood Journal, 10(2)*, 132-146. <https://doi.org/10.37134/saecj.vol10.2.9.2021>

To link to this article: <https://doi.org/10.37134/saecj.vol10.2.9.2021>

ABSTRACT

In this study, it is aimed to understand the perceptions of preschool teachers around the physical activity levels of children in preschool period and the factors that increase or limit their physical activity. The case study design, one of the qualitative research methods, was used in the study. In addition to maximum variation sampling from purposeful sampling types was used in the selection of the study group. A total of 102 teachers, out of 296 teachers, working in 85 schools were reached. The semi-structured interview form prepared by the researcher was used as the data collection tool. As a result of this study, it was seen that most of preschool teachers had positive opinions about physical activity, they gave importance to physical activity in their classroom activities, and they applied physical activity regularly and in a systematic plan. Preschool teachers are aware of the contribution and importance of physical activity to children, and it is thought that if arrangements are made in line with their suggestions to perform physical activity, children will be more physically active. Teachers made suggestions to improve physical conditions, to have regular PA, to direct them to sports, to ensure that children exercise at home with family education, and to plan the plans interesting so that they can include more PA and make children more physically active. Policy makers, healthcare providers, and teachers should take into account these recommendations and provide various supports to increase children's PA levels.

Keywords: physical activity, preschool children, preschool teacher

INTRODUCTION

Early childhood has a key role in the development of individuals (Burger, 2010). Physical activity (PA) is of great importance for the optimal health development of children in this period (Carson et al., 2017; Pate et al., 2019). PA is the use of skeleton and muscles to expend energy and it's also an essential critical component of children's development. It ensures healthy growth of organ systems, development of cognitive ability, and social and emotional well-being (Ward et al., 2020). More importantly, it provides healthy development of bones and muscles, cardiometabolic health (blood pressure, dyslipidemia, glucose and insulin resistance), improvement of body coordination, having a healthy body weight and a decrease in anxiety and depression levels (World Health Organization [WHO], 2011) and a high level of health indicators (Poitras et al., 2016).

Observing the positive effect of PA on the health and development of children is possible with regular practice from the first years of life (Physical Activity Guidelines Advisory Committee, 2008). It is also important to determine the dose of PA (such as frequency, intensity, time, duration), which has such an important role in the healthy development of children (Carson et al., 2017). It is stated that children between the ages of 1-4 should do at least 180 minutes a day, and children between the ages of 5-11 should do at least 60 minutes of increasing intensity PA. PA can be presented as energetic play in different indoor and outdoor playgrounds (Tremblay et al., 2012).

Nowadays, most of the pre-school aged children attend pre-school education institutions. It is claimed that PA inadequacy of children in the preschool period is related with spending too much time in preschool education institutions (Corcoran & Steinley, 2019). Preschool education institutions are a key environment for children who spend most of their days at school to engage in PA (WHO, 2016). Preschool education is an important environment for health promotion, as there are many opportunities to simultaneously support the development of PA habits and healthy behaviors of large numbers of children (Ward et al., 2020). Although preschool children are physically active by nature (Reilly, 2016), children's physical movement skills do not develop spontaneously. Being physically active is a developmental state (Clark, 2005). Physical movements need to be taught, practiced and reinforced to children (Logan et al., 2012). For this, interventions that will increase the PA of children regularly and systematically should be made (Carson et al., 2016; Clark, 2005). Interventions to increase the PA of children in preschool education enable disadvantaged or sedentary children to have the same level of PA as other children (Burger, 2010). Therefore, directing preschool children to activities involving PA at school will allow them to acquire a habit of PA in later ages (Jones et al., 2013).

Teachers may have concerns that including more PA in preschool classrooms, they shorten the time allocated to other activities (Rasberry et al., 2011). When PA is integrated with other activities and offered to children, these concerns of teachers may disappear. While a story is being read, children can move when they hear an action in the story (For example, if the story mentions a frog jumping forward, children may jump in the classroom). Games with short physical movements can be used in transitions between activities (Dinkel et al., 2017). They can use active exercises to improve PA while planning activities related to various concepts. With studies like these, other activities can be applied and children can be physically active. For example, four-year-old children were given PA early literacy training and it was concluded that the children developed their early literacy skills and the children became physically active in the process (Kirk & Kirk, 2016).

It is stated that PA contributes to the development of children both in a separate time period and when presented with other activities (Rasberry et al., 2011). With sufficient inclusion of PA, children achieve better primary school readiness goals (Bingham et al., 2016; Hoza et al., 2020; Rasberry et al., 2011); It is emphasized that their cognitive, motor, and psychosocial developments are positively affected (Carson et al., 2017). There are studies on the PA of preschool children, which have an important place in children's lives. Most of the studies are about evaluating how physically active children are with the aid of a device (such as an accelerometer) (Wiersma et al., 2019) and it is noteworthy that it consists of studies for more PA studies in kindergartens (Ward et al., 2020). However, the main key to PA acquisition in children is teachers (Connelly et al., 2018). Children spend most of their days in schools starting from preschool (Tribolet, 2020). It can be said that being physically active during the day is directly proportional to teachers' perceptions and knowledge of PA.

There are studies examining the teachers' and administrators' views on the role of school administrators and preschool teachers (PT) in children's physical activities (Connelly et al., 2018); the effect of social factors on preschool children's PA in line with teachers' views (Coleman & Dymont, 2013). When these studies are examined, it is thought that the number of participants in the study groups is limited. In examining the views on PA, it is thought that the opinions obtained from more teachers working in different kindergartens will allow more generalizable and comprehensive results to be obtained. It provides important information on determining teachers' perceptions of PA, how to encourage teachers to plan activities related to PA and to include PA in classrooms (Webster et al., 2015). Additionally, identifying barriers, opportunities and benefits for teachers to include PA in their classroom; Children's PA levels can be thought to be related to their effective use of the indoor-outdoor playground or classroom environment for PA.

In this study, it is aimed to understand the perceptions of PT around the PA levels of children in preschool period and the factors that increase or limit their PA. In this study, four research questions are examined:

- i) What are the practices PT uses to improve children's PA?
- ii) What are the opinions of PT about the effects of PA on preschool children?
- iii) What are the factors that develop and limit PT' PA practices?
- iv) What are the suggestions of PT for PA?

METHODOLOGY

The case study design, one of the qualitative research methods, was used in the study. In this study, the PA levels of children in the preschool period and the factors that increase or limit their PA were considered as the situation, and interviews were made with PT to examine the situation

Participants

Maximum variation sampling was used in the selection of the study group. To ensure maximum variation one or two teachers who work in public pre-schools and nursery classes affiliated to elementary school functioning under the Afyonkarahisar Directorate of National Education were selected. A total of 102 teachers, out of 296 teachers, working in 85 schools were reached.

Data Collection Tools

Teacher interview form. The interview form prepared by the researcher was used in the study. Before creating the data collection tool, the relevant literature was researched. An Interview form consisting of eight open-ended questions was created. The questions in the interview form were grouped under four themes: practices, effects, factors that limit-improve, and recommendations. The data collection tool was examined by three experts in order to ensure interview forms of internal validity and arrangements were made in line with the recommendations of experts. The interview form was applied by two teachers who were not in the study group.

Data Collection Procedure

Interviews were made with PT who volunteered to participate in the study. The interviews were held face-to-face in a quiet environment in their schools whenever teachers were available. The interviews with the teachers lasted about 30 minutes.

Data Analysis

The data were analyzed using the content analysis technique. The data collected in the content analysis technique is first conceptualized, then organized logically according to the emerging concepts and the themes explaining the data are determined. Accordingly, the data were read by the researcher and encoded. The data were evaluated and coded by another researcher who is a field expert. Different codings have been changed by negotiating again. The themes were created by examining the codes created and the codes were collected under themes. Codes and themes were compared and re-examined, and then the codes and themes were finalized. Frequency percentage tables for the encodings were created. The frequency and percentage values calculated by digitizing the obtained data are presented in tables and in the text. In the study, teachers were coded as T1, T2, T3, T4 etc. and analyzes are presented with these codes.

The study were examined, coded and analyzed separately by two independent researchers. The reliability between the coders was calculated using Miles and Huberman's (1994) consensus-divergence, and the reliability was determined as .87.

Ethics Statement

Ethical approval was obtained from Afyon Kocatepe University Social and Human Sciences Scientific Research and Publication Ethics Committee.

RESULTS

The data obtained from the study was collected under four main headings: applications, effects, limiting-improving factors, and recommendations. The term 'activities' used in the tables and in the text includes Turkish, Art, Drama, Music, Movement Play, Science, Mathematics and Readiness for Reading and Writing specified in the Ministry of National Education (MoNE, 2013).

Applications and Activities

PT used movement play (f=86), drama (f=39), music (f=31), art (f =9), mathematics (f=7), readiness for reading and writing (f=7). They stated that they took place in science (f=5) and all activities (f=7). Two teachers stated that they took place in all activities except art. Most of the teachers stated that activities that include PA every day of the week (f=81), and some of them 3-4 days a week (f=21).

The answers of the PT about the activities and their frequency in which they include PA are as follows:

T12. *“I take part in play, drama and music. I get the best participation in the play activity”.*

T42. *“I frequently include PA in play and drama. I also try to take place in other activities in line with the possibilities provided by the plan and physical conditions”.*

PT were asked how physically active children were during their stay at school. Most of the teachers stated that children were physically active by nature, and they were physically active in some way even during sedentary activities (f=81). Some of the teachers stated that the children were physically partially active because they included their activities equally in passive and active activities (f=13). Some teachers, on the other hand, stated that children could not be physically active and mobile due to reasons such as small classroom environment, large classroom size, and unsuitable climatic conditions (f=7).

The answers of the PT regarding the PA levels of the children during the day are as follows:

T39. *“I think they are 50% active. Because in activities such as art and during play times, children mostly sit and play and complete their activities”.*

T34. *“Children are more engaged in PA at school. Because playgrounds and activities provide the child's energy, emotional satisfaction, and the opportunity to do what they cannot do at home”.*

PT give importance to planned movement play (f=88) and free plays (f=47) for children in indoor and outdoor playgrounds. Few of the teachers stated that they do not have indoor playgrounds and they do not play games with children in the outdoor playgrounds. When detailed information was obtained about the activities of the teachers in the playgrounds, it was concluded that they provided the opportunity to play the movement play under their own guidance, and that they made unattended observations in free play or did other things at that time.

The answers of the PT regarding the PA they plan in indoor and outdoor playgrounds are as follows:

T31. *“I want them to play more free games in open playgrounds. Because the games they set up and play within the rules set by themselves are more enjoyable. It also supports their creativity more”.*

T39. *“I try to give the children as much physical exercise as possible. I give them opportunities to play various movement play. Sometimes I try to explore their interests by releasing them completely at play time”.*

Effects of PA

PT have positive views about including PA in the preschool education program and they stated that it should be included in the activities. When the reasons for this situation were examined, it was concluded that the PT stated that they should be included in the activities as they support children's development (f=68), provide physical relaxation (f=26) and affect healthy development (f=12).

The responses of the PT regarding the inclusion of PA in the preschool education program are as follows:

T35. *“PA should be included in the education program in the preschool period. The child does not only learn to use his body when the child participates in physical education and sports activities and gets acquainted with them in the period of 2-6 years when the social development of the child increases rapidly. It is also of great importance in terms of self-confidence and individual development”.*

T70. *“Childhood is the fastest development period after infancy. I believe that the inclusion of PA and sports in this period can positively affect the cognitive, affective, physical and motor development of the child, and will be the basis of important attitudes and habits for later life”.*

The PT stated that PA has no negative effects on children. According to teachers, PA improves children's developmental areas, health levels, sports skills and learning skills and enables them to relax (see Table 1).

Table 1
Positive and negative effects of PA.

Theme	Category	f	%
Development	Physical	106	49,8
	Motor		
	Holistic		
	Social Emotional		
Health	Healthy lifestyle and development	24	11,3
Relaxation	Energy throwing	40	18,8
	Being happy		
	Meeting the need for movement		
Sport	Sports skill	28	13,1
	Sports habit		
Learning	Learning	15	7,0
	Participation		
	Success		
Total		213	100

PT' views about PA on children are as follows:

T76. *“It contributes to the psycho-motor development, cognitive and social development of children. It has no negative effects”.*

T88. *“Children's self-confidence increases and social aspects improve. They adapt to their friends. In the future, they become healthier individuals by increasing their interest in sports activities. It has no negative effects”.*

Factors That Limit and Improve PA

PT stated that the factors that improve the planning of PA stem from the positive effects it provides to children. PT explained these as supporting the development of children, relaxation and development of learning skills. In addition, teachers stated that having good environmental conditions positively affected their planning activities involving PA (see Table 2).

Table 2
Positive and negative factors affecting preschool teachers' planning activities with PA.

Theme	Category	f	%	Theme	Category	f	%
Positive				Negative			
Development	Holistic	43	38,1	Physical factors	Physical disability of the classroom	123	74,1
	Psychomotor				Indoor-outdoor playground insufficiency		
	Physical				Class size		
	Cognitive				Climatic conditions		
	Social-emotional				Material-resource shortage		
Relaxation	Entertainment	35	31	Classroom Management challenge	Class control difficulty	11	6,6
	Relaxation				Inability to explain the rules of the game		
	Energy throwing				Individual differences		

	Meeting the need for game				Lack of motivation		
	Participation increased				Attention		
Learning	Motivation	21	18,5	The process of implementation of the activity	Activity transition problem		
	Permanent Learning				Preparation difficulty	12	7,2
	Sports				Teacher fatigue		
Environmental Conditions	Physical condition				Duration of activity		
	Parent-teacher attitude	14	12,4	Dangerous situations	Accident	13	7,8
Total		113	100		Illness		
				Lack of support	Family support		
					School management support	7	4,3
				Total		166	100

T1. *“Children's holistic development is supported and their body coordination is ensured”.*

T4. *“It is a fun process both for me and for the children. Children's gross motor skills are developing”.*

The PT stated the factors that limit their PA planning as physical inadequacies, difficulty in classroom management and the implementation process of the activity, experiencing dangerous situations, and inadequate support. It is striking that among the constraining factors, teachers state physical disabilities at the highest frequency.

T29. *“Children have limited movement in the classroom. Our classes are large in size, so they move limited. Only when the weather is good we go to our outdoor playground. They move more comfortably there. It is not very popular because the weather is usually cold”.*

T5. *“Narrow indoor and outdoor playground, lack of wider environments such as a gym”.*

T10. *“Parent attitude, bad weather conditions, insufficient material”.*

Teachers' Suggestions

PT made suggestions to improve the physical environment in the school, to have regular PA, to direct them to sports, to make family education and interesting planning in order to increase the PA levels of children. It is noteworthy that improving the physical environment and making interesting training plans have the highest frequency (see Table 3).

Table 3
Suggestions of preschool teacher about PA.

Theme	Category	f	%
Improving physical conditions.	Arrangement of indoor-outdoor playgrounds	54	36,2
	Arranging the classroom environment		
	Remedy for lack of material		
Interesting plans.	Use of different efficiency-methods-techniques	44	29,5
	Different material		
	Open air		
	Different branch teachers		
Regular PA	Regular PA	18	12,1
Should be directed to sports.	Should be directed to sports	18	12,1
Family education.	Family information	15	10,1
	Exercising at home		
Total		149	100

T68. *“Family participation can be carried out, children can be introduced to gyms, children can be directed to sports branches with the support of their school. One hour can be added to the daily training plan”.*

T76. *“We can increase the areas where children can play in order to increase their PA in preschool period. We can try to diversify the materials more. It should be ensured that they play games that include PA at home and at school every day”.*

DISCUSSION AND IMPLICATIONS

The life experiences of children in the preschool period are effective on the healthy development of children (Tandon et al., 2016). PA plays an important role in the acquisition and maintenance of healthy development (Ward et al., 2020). Preschool is a critical period to interfere with children's PA (Goldfield et al., 2012). For this reason, PT are thought to have an important role in improving children's PA levels (McWilliams et al., 2009).

Preschool children experience the most physically active processes of their lives in line with their developmental characteristics (Reilly, 2016). In this period, it is important to determine how physically active children are in the school environment. In the study, most of the PT stated that children are physically active during the day and they include PA every day. The World Health Organization emphasized that it should be done regularly every day in order to gain the desired benefits from children's PA (WHO, 2011). But in Turkey, The Preschool Education Program, aims to improve pre-school education programs for children in

different areas of development with different types of events. Therefore, all activities are included in the preschool education program equally (MoNE, 2013). It was concluded that teachers integrate PA with other activities in order to keep children physically active every day. Similar to this result, it is suggested that PA should be integrated into the preschool education curriculum (Gagné & Harnois, 2013). Some studies seem to focus on the need for PA to be offered to children by integrating or pairing with other activities (Pate et al., 2016). It can be said that positive effects can be seen if PA are regularly integrated with other activities every day.

Teachers use PA in the form of structured activities (play and movement) and unstructured activities (free play). In structured PA, all children participate in the activity, as the teachers make work in line with their plans. It enables children who tend to sedentary activities during free PA to be physically active on an equal basis with others (Eather et al., 2013; San et al., 2021). There is evidence that children participating in structured PA have high levels of PA in children participating in leisure PA (Pate et al., 2016). Free physical activities performed in the outdoor playgrounds positively affect the development of children, just like structured activities (Tremblay et al., 2015). However, when children are in free PA, teachers are less active and sitting without interfering with guidance tasks at that moment negatively affects children who do not do PA (Cardon et al., 2008). However, if teachers are in a participatory and supportive role during free PA, they may not have a negative effect on children. In short, PT' involvement in PA in a planned manner is important for the more systematic development of PA levels of all children. Turkish PT include both planned and free physical activities in their practice.

Main factor in including PA in their regular and systematic practices is directly proportional to the teachers' views on PA and their contribution to the child. When the opinions of PT regarding the inclusion of PA in preschool education program were examined, it was concluded that most of the teachers had positive opinions. Teachers stated that preschool education should be included in preschool education because of its positive effects on children's development, physical relaxation, sports skills, health levels and learning skills. It is stated that teachers generally have positive views because they are knowledgeable about the contribution of PA to children's health and development (Stylianou et al., 2016). There are research results showing that it positively affects cognitive development of PA in preschool children (Carson et al., 2016, 2017). Because during PA, children use cognitive skills to perform complex motor movements (Reedy & Krebs-Smith, 2010). In addition, preschool children develop learning skills by using their senses more actively with movement activities (Bruce & Meggit, 2002). It creates the Proximal Development Zone by enabling the formation of the most suitable learning environment thanks to the advances in the cognitive and social development of children during PA. This enables children to improve their learning skills by using their cognitive skills better in social interaction (Vygotsky, 1978). In terms of psychosocial aspects, it has been proven that PA depends on the social interaction skills and social behaviors of preschool children (Burdette et al., 2004). PA in preschool education is not in the form of individual exercises; It is carried out in large or small groups as play activities. PA performed by children by interacting with their peers contribute to the development of skills such as ability to act in cooperation, social skills, internal discipline, taking responsibility and empathy (Fraser-Thomas et al., 2005).

Psychomotor development is at the forefront, as PA takes place using the entire body of children. Studies have proven that PA has a positive effect on children's motor development (Carson et al., 2017). In this way, it is stated that children acquire some basic

movement skills early in order to have PA habits and to be able to do sports (Clark, 2005).

Individuals who learn basic movement skills and gain PA and sports habits from preschool period have a high level of health indicators (Poitras et al., 2016). Enabling children to be physically active in the preschool period is an effective strategy for the positive development of their health (Burdette et al., 2004) and well-being (Baltacı & Sapsağlam, 2021). In particular, to have a healthy body weight and prevent obesity risk (Mohamad Khalid, 2013; Logan et al., 2012) and to healthy development of the musculoskeletal system (Carson et al., 2017), it has been proven that regular PA habits have an important place since preschool. Participation in PA from preschool years contributes to the protection and development of children's mental health (Vella et al., 2015). In a study, it was concluded that problems such as depression and anxiety are less common in physically active children than sedentary children (Biddle & Asare, 2011). In addition, it is stated that while doing PA, children have fun, enjoy themselves and feel good, thereby positively affecting children's well-being (Stylianou et al., 2016).

In the study, PT stated that the positive effects of PA on children increase their frequency of including PA. Although PA contributes a lot to children, there are various limitations in pre-school education institutions regarding its implementation during the day. In this study, PT stated that they had difficulties in practicing activities involving PA due to insufficient physical facilities, lack of support from family and administrators, experiencing dangerous situations, difficulty in classroom management and the process of implementing the activity. For the implementation of PA, not all schools have open and closed playgrounds, wide classrooms and suitable materials. A suitable educational environment and materials are needed for PT to make plans to improve children's PA. Because all these are related to the PA levels of children (Gunter et al., 2012). Having various materials for PA also increases children's motivation and participation in activities. For this reason, it is important that materials for PA are available in schools as much as possible and are suitable for the age and height of children. In many schools, there are no indoor or outdoor playgrounds where PA can be performed. It is not possible for PA to take place in a small classroom setting (Logan et al., 2012). Although class size is appropriate, sometimes items and materials can be fixed or very heavy. It can be difficult to obtain the free space required to perform the activity. Preparing an environment for PA by eliminating materials and materials is very difficult for teachers. For this reason, teachers often give up activities that include PA (Cardon et al., 2008). Materials and items should be stable and portable in an environment that supports PA. In addition, having an outdoor playground in schools is linked to children's PA (Tandon et al., 2018). PA levels of children who spend little or no time in the outdoor playground are reduced (Razak et al., 2018). In addition to the outdoor playground, it was emphasized that children who spend more time outdoors within the preschool education program have higher PA levels (Tandon et al., 2018). Indoor playgrounds as well as outdoor playgrounds in kindergartens should be improved in terms of physical properties. Having indoor playgrounds in schools positively affects children's PA (Neshteruk et al., 2018). In addition, some teachers stated that bad weather conditions limit their planning of PA. With the availability of a suitable sized indoor playground, bad weather conditions and the family barrier on this issue will be eliminated (Ward et al., 2020). As children may be more active with increasing PA level, they can cause dangerous situations. Participants in the study stated that PA led to dangerous situations such as injuries, falls, collisions, fractures and sweating; therefore, they stated that both parents and school administrators have a negative attitude towards PA and all these situations limit their participation in PA in their classrooms. Similarly, PA has been reported to cause fractures (Clark et al., 2008) and injuries (Damashek & Kuhn, 2013). The

supportive environment supports the PA of children (Davison & Lawson, 2006). Having a supportive structure of family and school administrators for PA will eliminate the limitations in the implementation of PA.

PA is a type of activity that children participate fondly and with fun. However, teachers stated that there are factors that limit their planning of activities involving physical activity: such as, preparation, overly tired, children's problems with obeying the rules, difficulty in ending the activity. Whereas, teachers should be able to perform all these without any problems due to their teaching profession knowledge skills. At this point, it can be said that there is a small inadequacy in teacher education. Because problems like this are not expected in an event that children enthusiastically participate in. The mentioned problems will not be experienced in PA that teachers plan by using interesting materials suitable for children's developmental characteristics (Coe, 2020).

CONCLUSION

PT's practices to improve the level of PA and their views on PA reveal very important results. PT's evaluation of the situation regarding PA, along with their suggestions regarding what can be done to increase the PA of children, is considered to be an important result. Teachers made suggestions to improve physical conditions, to have regular PA, to direct them to sports, to ensure that children exercise at home with family education, and to plan the plans interesting so that they can include more PA and make children more physically active. Policy makers, healthcare providers, and teachers should take into account these recommendations and provide various supports to increase children's PA levels.

REFERENCES

- Baltacı, K., & Sapsağlam, Ö. (2021). Comparison of subjective well-being increasing strategies that Turkish and Swedish mothers use for their children. *Southeast Asia Early Childhood Journal, 10*(2), 104-118. <https://doi.org/10.37134/saecj.vol10.2.7.2021>
- Biddle, S. J. H., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine, 45*(11), 886–895. <https://doi.org/10.1136/bjsports-2011-090185>
- Bingham, D. D., Costa, S., Hinkley, T., Shire, K. A., Clemes, S. A., & Barber, S. E. (2016). Physical activity during the early years. *American Journal of Preventive Medicine, 51*(3), 384–402. <https://doi.org/10.1016/j.amepre.2016.04.022>
- Bruce, T., & Meggit, C. (2002). *Childcare and education* (3rd ed.). Hodder & Stoughton.
- Burdette, H. L., Whitaker, R. C., & Daniels, S. R. (2004). Parental report of outdoor playtime as a measure of physical activity in preschool-aged children. *Archives of Pediatrics & Adolescent Medicine, 158*(4), 353-357. <https://doi.org/10.1001/archpedi.158.4.353>
- Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Childhood Research Quarterly, 25*(2), 140–165. <https://doi.org/10.1016/j.ecresq.2009.11.001>
- Cardon, G., Van Cauwenberghe, E., Labarque, V., Haerens, L., & De Bourdeaudhuij, I. (2008). The contribution of preschool playground factors in explaining children's physical activity during recess. *International Journal of Behavioral Nutrition and Physical Activity, 5*(1), 11-16. <https://doi.org/10.1186/1479-5868-5-11>
- Carson, V., Hunter, S., Kuzik, N., Wiebe, S. A., Spence, J. C., Friedman, A., ... Hinkley, T. (2016). Systematic review of physical activity and cognitive development in early childhood. *Journal of Science and Medicine in Sport, 19*(7), 573–578. <https://doi.org/10.1016/j.jsams.2015.07.011>

- Carson, V., Lee, E.-Y., Hewitt, L., Jennings, C., Hunter, S., Kuzik, N., et al. (2017). Systematic review of the relationships between physical activity and health indicators in the early years (0-4 years). *BMC Public Health, 17*(5), 854. <https://doi.org/10.1186/s12889-017-4860-0>
- Clark, E. M., Ness, A. R., & Tobias, J. H. (2008). Vigorous physical activity increases fracture risk in children irrespective of bone mass: A prospective study of the independent risk factors for fractures in healthy children. *Journal of Bone and Mineral Research, 23*(7), 1012–1022. <https://doi.org/10.1359/jbmr.080303>
- Clark, J. E. (2005). From the beginning: A developmental perspective on movement and mobility. *Quest, 57*(1), 37–45. <https://doi.org/10.1080/00336297.2005.10491841>
- Coe, D. P. (2020). Means of optimizing physical activity in the preschool environment. *American Journal of Lifestyle Medicine, 14*(1), 16–23. <https://doi.org/10.1177/1559827618818419>
- Coleman, B., & Dymont, J. E. (2013). Factors that limit and enable preschool-aged children's physical activity on child care centre playgrounds. *Journal of Early Childhood Research, 11*(3), 203–221. <https://doi.org/10.1177/1476718X12456250>
- Connelly, J.-A., Champagne, M., & Manningham, S. (2018). Early childhood educators' perception of their role in children's physical activity: Do we need to clarify expectations? *Journal of Research in Childhood Education, 32*(3), 283–294. <https://doi.org/10.1080/02568543.2018.1464979>
- Corcoran, L., & Steinley, K. (2019). *Early childhood program participation, from the national household education surveys program of 2016 (NCES 2017-101.REV)*. National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, DC. <https://nces.ed.gov/pubs2017/2017101REV.pdf>
- Damashek, A., & Kuhn, J. (2013). Toddlers' unintentional injuries: the role of maternal-reported paternal and maternal supervision. *Journal of Pediatric Psychology, 38*(3), 265–275. <https://doi.org/10.1093/jpepsy/jss113>
- Davison, K.K., Lawson, C. T. (2006). Do attributes in the physical environment influence children's physical activity? A review of the literature. *Int J Behav Nutr Phys Act, 3*(19), 1–17. <https://doi.org/https://doi.org/10.1186/1479-5868-3-19>
- Dinkel, D., Schaffer, C., Snyder, K., & Lee, J. M. (2017). They just need to move: Teachers' perception of classroom physical activity breaks. *Teaching and Teacher Education, 63*, 186–195. <https://doi.org/10.1016/j.tate.2016.12.020>
- Eather, N., Morgan, P. J., & Lubans, D. R. (2013). Social support from teachers mediates physical activity behavior change in children participating in the Fit-4-Fun intervention. *International Journal of Behavioral Nutrition and Physical Activity, 10*(1), 68. <https://doi.org/10.1186/1479-5868-10-68>
- Fraser-Thomas, J. L., Côté, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education & Sport Pedagogy, 10*(1), 19–40. <https://doi.org/10.1080/1740898042000334890>
- Gagné, C., & Harnois, I. (2013). The contribution of psychosocial variables in explaining preschoolers' physical activity. *Health Psychology, 32*(6), 657–665. <https://doi.org/10.1037/a0031638>
- Goldfield, G. S., Harvey, A., Grattan, K., & Adamo, K. B. (2012). Physical activity promotion in the preschool years: A critical period to intervene. *International Journal of Environmental Research and Public Health, 9*(4), 1326–1342. <https://doi.org/10.3390/ijerph9041326>
- Gunter, K. B., Rice, K. R., Ward, D. S., & Trost, S. G. (2012). Factors associated with physical activity in children attending family child care homes. *Preventive Medicine, 54*(2), 131–133. <https://doi.org/10.1016/j.ypmed.2011.12.002>
- Hoza, B., Shoulberg, E. K., Tompkins, C. L., Meyer, L. E., Martin, C. P., Krasner, A., et al. (2020). Meeting a physical activity guideline in preschool and school readiness: A program evaluation. *Child Psychiatry & Human Development, 52*(4), 719-727. <https://doi.org/10.1007/s10578-020-01055-9>
- Jones, R. A., Hinkley, T., Okely, A. D., & Salmon, J. (2013). Tracking physical activity and sedentary behavior in childhood. *American Journal of Preventive Medicine, 44*(6), 651–658. <https://doi.org/10.1016/j.amepre.2013.03.001>
- Kirk, S. M., & Kirk, E. P. (2016). Sixty minutes of physical activity per day included within preschool academic lessons improves early literacy. *Journal of School Health, 86*(3), 155–163. <https://doi.org/10.1111/josh.12363>
- Logan, S. W., Robinson, L. E., Wilson, A. E., & Lucas, W. A. (2012). Getting the fundamentals of movement: A meta-analysis of the effectiveness of motor skill interventions in children. *Child: Care, Health and Development, 38*(3), 305–315. <https://doi.org/10.1111/j.1365-2214.2011.01307.x>
- McWilliams, C., Ball, S. C., Benjamin, S. E., Hales, D., Vaughn, A., & Ward, D. S. (2009). Best-Practice guidelines for physical activity at child care. *Pediatrics, 124*(6), 1650–1659. <https://doi.org/10.1542/peds.2009-0952>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Sage Publications.

- Mohamad Khalid, N. H., Ahmad, Y., Mustafa, M., Hashim, A., & Madon, M. S. (2013). Dietary patterns, involvement in physical activity, and the relationship between body mass index (BMI) and physical self-concept among obese children in Klang Valley area. *Southeast Asia Early Childhood Journal*, 2, 75-84. <https://ejournal.upsi.edu.my/index.php/SAECJ/article/view/938>
- MoNE (Ministry of National Education). (2013). *Preschool education program*. Ankara: Ministry of National Education General Directorate of Basic Education. https://mufredat.meb.gov.tr/Dosyalar/20195712275243-okuloncesi_egitimprogrami.pdf
- Neshteruk, C. D., Mazzucca, S., Østbye, T., & Ward, D. S. (2018). The physical environment in family childcare homes and children's physical activity. *Child: Care, Health and Development*, 44(5), 746-752. <https://doi.org/10.1111/cch.12578>
- Pate, R. R., Brown, W. H., Pfeiffer, K. A., Howie, E. K., Saunders, R. P., Addy, C. L., & Dowda, M. (2016). An intervention to increase physical activity in children. *American Journal of Preventive Medicine*, 51(1), 12-22. <https://doi.org/10.1016/j.amepre.2015.12.003>
- Pate, R. R., Hillman, C. H., Janz, K. F., Katzmarzyk, P. T., Powell, K. E., Torres, A., & Whitt-Glover, M. C. (2019). Physical activity and health in children younger than 6 years. *Medicine & Science in Sports & Exercise*, 51(6), 1282-1291. <https://doi.org/10.1249/MSS.0000000000001940>
- Physical Activity Guidelines Advisory Committee. (2008). *Physical activity guidelines advisory committee report*. Washington, DC: U.S. Department of Health and Human Services. https://health.gov/sites/default/files/2019-09/PAG_Advisory_Committee_Report.pdf
- Poitras, V. J., Gray, C. E., Borghese, M. M., Carson, V., Chaput, J.-P., Janssen, I., ... Tremblay, M. S. (2016). Systematic review of the relationships between objectively measured physical activity and health indicators in school-aged children and youth. *Applied Physiology, Nutrition, and Metabolism*, 41(6 (Suppl. 3)), S197-S239. <https://doi.org/10.1139/apnm-2015-0663>
- Rasberry, C. N., Lee, S. M., Robin, L., Laris, B. A., Russell, L. A., Coyle, K. K., & Nihiser, A. J. (2011). The association between school-based physical activity, including physical education, and academic performance: A systematic review of the literature. *Preventive Medicine*, 52, S10-S20. <https://doi.org/10.1016/j.ypmed.2011.01.027>
- Razak, L. A., Yoong, S. L., Wiggers, J., Morgan, P. J., Jones, J., Finch, M., ... Wolfenden, L. (2018). Impact of scheduling multiple outdoor free-play periods in childcare on child moderate-to-vigorous physical activity: a cluster randomised trial. *International Journal of Behavioral Nutrition and Physical Activity*, 15(1), 34. <https://doi.org/10.1186/s12966-018-0665-5>
- Reedy, J., & Krebs-Smith, S. M. (2010). Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *Journal of the American Dietetic Association*, 110(10), 1477-1484. <https://doi.org/10.1016/j.jada.2010.07.010>
- Reilly, J. J. (2016). When does it all go wrong? Longitudinal studies of changes in moderate-to-vigorous-intensity physical activity across childhood and adolescence. *Journal of Exercise Science & Fitness*, 14(1), 1-6. <https://doi.org/10.1016/j.jesf.2016.05.002>
- San, N. M. H., Myint, A. A., & Oo, C. Z. (2021). Using play to improve the social and emotional development of preschool children. *Southeast Asia Early Childhood Journal*, 10(2), 16-35. <https://doi.org/10.37134/saecj.vol10.2.2.2021>
- Stylianou, M., Kulinna, P. H., & Naiman, T. (2016). '...because there's nobody who can just sit that long.' *European Physical Education Review*, 22(3), 390-408. <https://doi.org/10.1177/1356336X15613968>
- Tandon, P. S., Tovar, A., Jayasuriya, A. T., Welker, E., Schober, D. J., Copeland, K. et al. (2016). The relationship between physical activity and diet and young children's cognitive development: A systematic review. *Preventive Medicine Reports*, 3, 379-390. <https://doi.org/10.1016/j.pmedr.2016.04.003>
- Tandon, P., Saelens, B., Zhou, C., & Christakis, D. (2018). A comparison of preschoolers' physical activity indoors versus outdoors at child care. *International Journal of Environmental Research and Public Health*, 15(11), 2463. <https://doi.org/10.3390/ijerph15112463>
- Tremblay, M., Gray, C., Babcock, S., Barnes, J., Bradstreet, C., Carr, D. et al. (2015). Position statement on active outdoor play. *International Journal of Environmental Research and Public Health*, 12(6), 6475-6505. <https://doi.org/10.3390/ijerph120606475>
- Tremblay, M. S., LeBlanc, A. G., Carson, V., Choquette, L., Connor Gorber, S., Dillman, C., ... Timmons, B. W. (2012). Canadian physical activity guidelines for the early years (aged 0-4 years). *Applied Physiology, Nutrition, and Metabolism*, 37(2), 345-356. <https://doi.org/10.1139/h2012-018>
- Tribolet, K.A. (2020). *The provision of movement experiences in Australian early childhood curriculum: Examining educators' practices and children's participation in physically active play* [Unpublished doctoral dissertation]. University of Wollongong.
- Vella, S. A., Cliff, D. P., Magee, C. A., & Okely, A. D. (2015). Associations between sports participation and psychological difficulties during childhood: A two-year follow up. *Journal of Science and Medicine in Sport*, 18(3), 304-309. <https://doi.org/10.1016/j.jsams.2014.05.006>

- Vygotsky, L.S. (1978). The collected words of L.S. Vygotsky. In R. Rieber & A. Carton (Eds.) *Vol. I. Problems of general psychology* (pp 37-285). Plenum Press.
- Ward, D. S., Neshteruk, C. D., & Mazzucca, S. (2020). Means of optimizing physical activity in the preschool environment: A commentary on Coe (2019). *American Journal of Lifestyle Medicine, 14*(1), 28–31. <https://doi.org/10.1177/1559827619881126>
- Webster, C. A., Russ, L., Vazou, S., Goh, T. L., & Erwin, H. (2015). Integrating movement in academic classrooms: Understanding, applying and advancing the knowledge base. *Obesity Reviews, 16*(8), 691–701. <https://doi.org/10.1111/obr.12285>
- WHO. (2011). *Global recommendations on physical activity for health*. World Health Organization <https://www.who.int/dietphysicalactivity/physical-activity-recommendations-18-64years.pdf>
- WHO. (2016). *Report of the commission on ending childhood obesity*. Geneva, Switzerland: WHO Document Production Services. https://apps.who.int/iris/bitstream/handle/10665/204176/9789241510066_eng.pdf
- Wiersma, R., Lu, C., Hartman, E., & Corpeleijn, E. (2019). Physical activity around the clock: Objectively measured activity patterns in young children of the GECKO Drenthe cohort. *BMC Public Health, 19*(1), 1647. <https://doi.org/10.1186/s12889-019-7926-3>