



Teachers' pedagogical work with children's fundamental motor skills in early childhood education centres

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ABSTRACT: The aim of this exploratory study is to analyse teachers' pedagogical work in supporting children's learning of fundamental motor skills (FMS) in early childhood education (ECE) centres. The study highlights teachers' experiences and knowledge regarding their pedagogical work with FMS. The study was conducted in Finland, and the respondents in this qualitative and inductive study consisted of 16 ECE teachers. The empirical data consisted of semi-structured interviews. The data was analysed by content analysis with a conventional approach. The results show, among other things, a variety of different factors affecting pedagogical work with children's FMS. Teachers make conscious pedagogical considerations during guided physical-activity lessons and in everyday life to support children's learning of FMS. The results of the study show teachers' versatile efforts that have significant consequences for the pedagogical work of supporting children's learning of FMS in ECE centres.

Keywords: *fundamental motor skills, physical activity, learning environment, teachers' work*

Introduction

Early childhood education (ECE) has great opportunities to influence children's learning of fundamental motor skills (FMS) and increase the physical activity of children ages one through six. In Finland in 2020, approximately 77% of all one-to-six-year-olds and almost 91% of five-year-olds participated in ECE (Finnish Institute for Health and Welfare, 2021).

ECE provides the opportunity to reach many children and influence them in the short term as well as the long term. Studies show that a physically active lifestyle is formed in early childhood (Robinson et al., 2015; Telama et al., 2014), and early childhood also forms the basis for the development of FMS (Gallahue et al., 2012).

According to Gallahue et al. (2012) and Cleland Donnelly et al. (2017), FMS are divided into three categories: stability, locomotor and object control skills. Stability includes skills where balance is maintained, such as bending, turning and stopping. Locomotor includes skills where the body is transported in a horizontal or vertical direction, such as running, jumping and climbing. Object control comprises skills involving the whole body and sports equipment or other objects, such as throwing, kicking and bouncing (Gallahue et al., 2012).

According to WHO (2019) recommendations, children over the age of three should be physically active for at least 180 minutes daily, of which 60 minutes should consist of moderate to vigorous physical activity (MVPA). Similarly, the recommendations in Finland are that children should be physically active for 180 minutes per day, including 60 minutes of MVPA and 120 minutes of light physical activity (LPA). When children exercise their locomotor skills, such as by walking fast, running and jumping, it usually constitutes MVPA. When children exercise their stability skills or object control skills, such as by throwing and catching a ball or swinging on a swing and maintaining balance, it constitutes LPA (Ministry of Education and Culture, 2016).

Studies examining the relationship between children's physical activities and FMS have confirmed that a high level of competence in FMS is associated with an increase in physical activity and vice versa (Cliff et al., 2009; Fowweather et al., 2015; Holfelder & Schott, 2014; Lubans et al., 2010). When children develop good motor skills, it is more natural for them to participate in physical activity (Williams et al., 2008). This was supported by Grønholt Olesen et al.'s (2013) study, which showed that children's motor coordination was positively associated with MVPA.

Pedagogical environments and teachers' roles in supporting children's fundamental motor skills

Within ECE in Finland, physical education is considered a key area of the curriculum and therefore physical education courses are included in the early childhood education teacher training programmes. This means that the ECE teachers obtain within the early childhood education teacher training programs theoretical knowledge, such as the advantages of versatile physical activity and practical opportunities to implement physical activity in ECE settings (Soini et al., 2021).

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One mission of ECE is to develop children's FMS, as stated by the Finnish National Core Curriculum for Early Childhood Education and Care 2022 (Finnish National Agency for Education, 2022). The physical education that teachers carry out in ECE should be child-centred, regular, versatile and goal-oriented. Children must be given sufficient opportunities to move freely indoors and outdoors daily in addition to guided physical-activity lessons. According to the Ministry of Education and Culture (2016), the goal is to create versatile and inspiring environments for play and learning. Teachers need to plan and implement physical education that supports and challenges children in their development and learning of FMS. Physical education in ECE must be planned according to the interests and needs of the children (Ministry of Education and Culture, 2016). Therefore, the role of teachers in ECE is important, as is the daily work they do to support children in their development and learning of FMS.

According to Osnes et al. (2012), planning work with FMS is important since teachers and other staff need to have a common understanding of how the pedagogical work should be conducted, what values there are and what goals they should work towards. Teachers and other staff should strive for a culture with common values and nurture collaboration for increased physical activity (Kippe & Lagestads, 2018). Organised, teacher-led physical activity with pedagogical goals ensures that more children meet the recommendations for 60 minutes of daily MVPA (Grønholt Olesen et al., 2013; Nicaise et al., 2011). Sääkslahti et al.'s (2019) study showed that 54% of the ECE centres had an own yearly plan for physical education.

Bjørngen and Svendsen's (2015) study showed, from the teachers' perspective, that the teachers' ability to participate in and share experiences of physical activity with the children is crucial to encourage the children to be inspired by physical activity. Thus, teachers see themselves as important role models and see the value of offering support regarding children's physical activity. This was supported in Mikkelsen's (2011) study, where the results showed that preschools with staff who have very positive attitudes towards physical activity and promote physical activity in children create higher physical-activity levels among children than preschools without such staff.

A comprehensive review identified the various strategies or programmes for positive effects on physical activities that have been implemented by ECE teachers (Mak et al., 2021). The most commonly observed strategies involved the direct practice of FMS and various games. They also found positive effects when teachers integrated physical activities into other subjects. Likewise, a task-based strategy proved effective when children's inner drives and motivations were encouraged in order to master tasks. Mak et

al. (2021) also found strategies such as music activities, cardio training and the provision of sports equipment to have positive effects. How often physical-activity programmes were performed varied from daily to twice a week, and duration varied from 10 to 60 minutes per occasion. The length of the activity programmes also varied, and implementation varied from three weeks to eleven months (Mak et al., 2021).

Reunamo et al.'s (2012) study showed that children's physical activity was low during activities arranged by teachers. However, children's physical activity outdoors was strong in terms of activities where teachers were involved as support in the children's free games. On the other hand, Bower et al.'s (2008) study showed that children in ECE centres where staff participated in physical activity and positively encouraged physical activity had higher and more intense levels of activity compared with ECE centres with less supportive climates. For children to develop FMS, developmentally appropriate activities are necessary, according to Logan et al. (2011), especially in teaching and learning activities, along with sufficient opportunities for children to exercise. Children who do not participate in learning activities and the teaching of FMS but participate only in free play outdoors do not show improvements in FMS and perform worse compared to children who receive guidance and teaching (Logan et al., 2011; Wick et al., 2017). Therefore, FMS needs to be taught, exercised and strengthened (Robinson, 2011).

Physical and social learning environments

The physical environment is designed and built differently in various ECE centres, and open floor surfaces are positively associated with physical activities (Sando, 2019). According to Sääkslahti et al. (2019), about one-third of the ECE centres in Finland lack a gym for physical activity in their own ECE centres. The ECE centres that do not have a gym are using, among other things, the nearby school's gym, their own ECE centres sleeping area, dining area or other space where it is possible to organise physical activity. The size of the ECE centres yards varies greatly and about 30% of ECE centres have no access to forested areas at all (Sääkslahti et al., 2019). Many ECE centres are using nearby sports grounds as sports field, ice skating rink, forest, a playground, a park. The supply of sport equipment is very limited in the ECE centres (Sääkslahti et al., 2019). In a study conducted by Tsangaridou (2017), respondents highlighted that the physical environment, including the premises and equipment, is often limited in terms of resources. The respondents pointed out that these limitations can affect the quality of physical education, but they emphasised that good planning can compensate for the lack of suitable equipment.

Boga and Normand (2017) examined different contexts for identifying outdoor activities that create higher levels of MVPA. Fixed play equipment and open surfaces gave rise to the highest levels of MVPA in most participants. The level of MVPA was not affected

differently if the child chose the activity or if someone else, such as a teacher, chose the activity for the child. Teachers' influence and commitment are important in guiding children to physical activity. Kyhälä et al. (2021) investigated children's use of time and which activities best generated physical activity—especially MVPA in ECE. The results showed that children spend about 50% of their time in day care on sedentary work, routines and reading. These activities contributed to very low levels of MVPA. The activities that generated the most MVPA were physical activity, rule games, illicit actions and role plays, which accounted for about 30% of their time. Based on these results, a physical environment that allows for these activities is needed.

Factors that contribute to increased physical activity in children are opportunities for organised physical activity, open space, portable and stationary sports equipment and trained and knowledgeable staff (Bower et al., 2008; Nicaise et al., 2011). Children are physically active when they are allowed to play on open surfaces, with few restrictions and rules for vigorous physical activity (Reunamo et al., 2012).

Willenberg et al.'s (2010) study indicated that relatively simple changes – such as the provision of portable equipment, painting of courses and game line markings and increased teacher presence on the playground – are likely to provide opportunities for increased physical activity. Reunamo et al. (2014), in turn, emphasised that children are more physically active the farther away they are from the teacher and especially when they're together with peers. When children are physically active together, they create a common physical environment when they play with sports equipment, play role-playing games and socialise with others. Children have freedom to construct their own physical activities (Reunamo et al., 2012). Dowda et al.'s (2004) results showed that when interactions between children and teachers and among children are better, children spend significantly less time in sedentary activities.

Based on the aforementioned results, teachers need to create good relationships with children and plan physical education to support their development and learning of FMS. From a sociocultural perspective, teaching and learning are considered social and situated processes (Vygotsky, 1978). The context, interactions and tools used by children and teachers are decisive for what the children will learn. This study is based on a sociocultural perspective, where learning takes place in interaction with the environment and with the material tools provided by the environment (Säljö, 2015; Vygotsky, 1978). In this study, pedagogical, physical and social learning environments are seen as interconnected and form a basis for the implementation of physical education in ECE activities (Sääkslahti, 2018). With this understanding of the learning environment as a starting point, I analyse, interpret and discuss how teachers support children's learning of FMS by focusing on the three perspectives.

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The aim of this study is to analyse teachers' pedagogical work in supporting children's learning of FMS in ECE centres. The study highlights teachers' experiences and knowledge about their pedagogical work with FMS. Based on this aim, the following research question has been formulated:

- How do teachers work to support children's learning of fundamental motor skills?

Methods

This exploratory study's aim is to analyse teachers' pedagogical work in supporting children's learning of FMS in ECE centres. A qualitative method has been used to examine teachers' experiences and knowledge about the pedagogical work (Justesen & Mik-Meyer, 2011). In qualitative research, emphasis is placed on the researcher's role in the design of data, and the analysis starts during the data collection (Denscombe, 2018). In this study, my role as a researcher was to be active and I have given the teachers supervision within the project. Throughout the process, I have tried to be as neutral as possible so that it should not affect the analysis and interpretation. Through individual interviews, I have tried to create a deeper understanding of the phenomenon (Kvale & Brinkmann, 2009). The empirical data was analysed based on an inductive approach to answer the research question: How do teachers work to support children's learning of fundamental motor skills?

By analysing teachers' work, I discovered various pedagogical and didactic aspects and an understanding of how teachers work to support children's learning of FMS. Compared to intervention related to FMS studies, which are numerous (Bardid et al., 2017; Giagazoglou et al., 2019; Pate et al., 2016; Wick et al., 2017), studies exploring physical education in ECE are still limited. By physical education, I mean spontaneous, planned and guided physical-activity lessons in which a teacher participates but children also have opportunities for practice in different learning environments.

Participants and setting

Over 15 months, beginning in 2018, a project was carried out with the primary aim of developing innovative indoor learning environments that promote physical activity. The staff at the ECE units expressed interest in participating and the municipal managers selected the nine ECE units in five municipalities, with their respective staff, who participated in the project. The participants comprised 16 teachers, 18 child carers and 177–195 three-to-five-year-olds. The staff (teachers and child carers) participated in lectures containing workshops and received supervision on four different occasions. The

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staff in the various ECE units worked to change and develop their attitudes and working methods, with a goal of children learning FMS. Previous results from the project showed that children have more opportunities to exercise FMS when the learning environment changes (Svanbäck-Laaksonen & Heikkilä, 2021). Svanbäck-Laaksonen and Heikkilä's (2021) results showed four themes that are important for more long-term and sustainable change in everyday work in the ECE centres.

This study's participants were part of a larger change and development project in Ostrobothnia. The respondents consisted of 16 ECE teachers (two teacher per unit except in two units where it was one teacher) working with three-to-five-year-olds. The majority of respondents have a bachelor's degree (lower university degree in ECE), and a couple have a day care teacher degree (degree at institute level). The respondents' work experience varied from one year to over 30 years.

Data collection

The data collection for the study consisted of 16 semi-structured interviews, which began with an interview guide containing questions with a high degree of structuring (cf. Bryman, 2018; Jacobsen, 2017). The interview guide was created based on the aim and the research question for the study. Although the structuring rate was high, there was room for the respondents to clarify their answers so ambiguities did not arise. The individual interviews were conducted in spring 2019, when the development project was completed. The interviews were conducted, undisturbed, at the ECE centres. The length of the interviews ranged from 17 to 40 minutes, and all interviews were recorded. The interviews were transcribed, and the transcribed data consisted of a total of 190 pages of text (eight to 16 pages per interview).

Ethical considerations

This study is part of a larger development project that included staff and children from different ECE centres and municipalities. The study follows good scientific practice regarding ethical considerations and data management, as stated in the Responsible Conduct of Research and Procedures for Handling Allegations of Misconduct in Finland (Finnish Advisory Board on Research Integrity, 2012). The staff who participated were informed orally about issues regarding confidentiality and that participation in the study was voluntary. According to Bryman (2018), confidentiality means that the respondents cannot be identified and that transcripts do not contain real names, which was followed in this study. In the transcription of the interviews, dialectal expressions were also translated into standard Swedish to ensure confidentiality. Thus, it is not possible to

identify the respondents in the results. The respondents also have fictitious names in the Results section.

Analysis of data

In the analysis, I assumed that the educational, physical and social learning environments were interconnected and formed a basis for the implementation of ECE activities (Sääkslahti, 2018). With this understanding of the environment as a starting point, I analysed how teachers support children's learning of FMS. In interpreting the results, I looked at the three perspectives.

I analysed the data on the basis of a qualitative content analysis with a conventional approach (cf. Hsieh & Shannon, 2005). According to Hsieh and Shannon (2005), a qualitative content analysis is characterised by a structured process and the specific steps of identifying, coding and categorising patterns or themes in the empirical material. A conventional qualitative content analysis corresponds to an inductive approach, which means analysing the empirical material with an open mind (Isaksson, 2021).

The research question was a focus during the analysis of the data, and the analysis was done in several steps. Initially, the interview transcripts were checked against the audio files and an initial review of the data (cf. Dalen, 2015). Then, I read all the transcripts again to get a comprehensive picture of the data. Lantz (2013) described reducing the amount of data as a first step in data processing, which means reducing information that is not relevant to the question.

As the first step in the analysis process, each interview transcript was thoroughly examined, and I selected content I considered relevant to the research question (cf. Lantz, 2013). According to Hsieh and Shannon (2005), this means that patterns were identified in the interviews. Then, I read through the patterns and picked out material. As step two in the analysis, I examined the material and marked paragraphs that I considered relevant to the research question; thus, the coding began (cf. Hsieh & Shannon, 2005). In the coding process, which constituted step three, I worked openly and explored with an inductive approach, but at the same time, I was objective and neutral and stuck to what was written in the transcripts (Isaksson, 2021).

In the fourth step, I selected the codes, such as integrating or using sports equipment, that provided answers to the research question. In step five, I analysed the content of these codes by searching for similarities and differences and grouping them to create qualitatively different categories (cf. Hsieh & Shannon, 2005; Jacobsen, 2017). The categories were carefully studied to identify key themes that emerged, which constituted step six. Four themes were formed based on the 14 qualitatively different categories.

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Results

The respondents included in the study agreed on the importance of children exercising FMS in view of their development, learning and well-being. They also highlighted their own activity as important to the children's learning of FMS. The results are presented in four themes emerged from data analysis and 14 qualitatively different categories. The themes are Planning, implementation, documentation and evaluation in connection with physical-activity lessons and activities, Pedagogical considerations, The teacher's own activity/own action and Inspiring and stimulating physical environment. Table 1 presents an overview of the themes and categories. In the descriptions, the categories are illustrated with quotes from the interviews and I have omitted extra and unnecessary words as well as pauses in the quotes in view of a reader-friendly text.

TABLE 1 Overview of the themes and categories that constitute the results

<i>THEMES</i>	<i>CATEGORIES</i>
Planning, implementation, documentation and evaluation in connection with physical-activity lessons and activities	a) Planning and implementation of physical activity lessons b) Using sports equipment and technology c) Documentation and evaluation
Pedagogical considerations	a) Prioritization of FMS b) Integration of FMS c) Small group activities d) Children's interests as a starting point e) Utilizing spaces
The teacher's own activity/own action	a) Encourage, allow and see opportunities b) Themselves are active c) Collaboration and inspiration
Inspiring and stimulating physical environment	a) Physical activity games b) Lines and Figures c) Available sports equipment

Planning, implementation, documentation and evaluation in connection with physical-activity lessons and activities

The teachers emphasised that they support children's learning of FMS through planning and implementation of physical-activity lessons, sports equipment and technology and pedagogical documentation and evaluation.

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Planning and implementation of physical-activity lessons

Teachers responded that they plan and implement physical-activity lessons indoors to support children's learning of FMS. In their planning, many teachers start from a goal, such as a skill. The teachers reported that they have mapped the children's FMS and assume what the children need to exercise more. Some teachers let the children be involved in both the planning and the implementation. Others start from the environment (i.e., what sports equipment is available or what space is available).

Let the children be involved and think about what they want to do and how you can exercise certain things, for example, and involve the children more in the planning.

(Anna)

I have planned just according to these FMS, seen and taken one at a time, and really gone through who can do what and what needs to be exercised. I planned the lessons according to those [FMS] – if we had to jump, we have jumped in different ways, different distances and different heights. And if it was too easy, then we have been challenged to always have a backup, a more difficult exercise.

(Eva)

All teachers seemed to agree that when they carry out a planned, guided indoors physical-activity lesson, the setup is nearly the same for everyone. Teachers responded that a physical-activity lesson usually consists of a warmup, such as a play. Then the lesson continues with a motor-activity track, playing or an activity that exercises the teacher's exact goal for the lesson. The teachers reported that they try to vary the content and make the lessons interesting and fun. The lesson usually ends with calmer playing, relaxation or a massage. The majority of teachers said that a planned, guided physical-activity lesson is held once a week; some said every two weeks. Some teachers hold two to three such lessons a week. Several teachers emphasised that the same physical-activity lesson is held two to four times in a row, with some small adjustment, so the children learn.

I usually think we should have some warmup. So they get a little warm in case they have not moved so much before. And then we exercise exactly what we have to train. And then a kind of ending, like a little relaxation or massage or something like that calmer then, at the end.

(Filippa)

The same physical-activity lesson is held two to three times, so they get used to the fact that you not only have it once. But I change a little in the lesson. But, as I said, two or three times the same, so they learn.

(Nina)

Many teachers also highlighted outdoor activities that support children's learning of FMS. The teachers reported that they use the yard of ECE centre and the local environment, such as the forest and gravel pitches, to carry out various activities. The outdoor activities

consist of various games and, in the winter, skating, skiing and sledding, the teachers stated.

But this spring we have had outdoors a lot, and then we have had that gravel pitch, and so when we skated, we skated a lot and skied.

(Ida)

Sports equipment and technology

Teachers reported that they used sports equipment during physical-activity lessons to support children's learning of FMS, such as gymnastic benches, ropes, rings, balls and beanbags. With the sports equipment, they have built different motor-activity track, played different ball games and exercised different motor skills, depending on what the goal is.

Everything from forms, benches, ropes, wall bars, and everything we have. Yes, we have a lot of equipment. Depending on what goals you have had and the motor skill to exercise.

(Cecilia)

Most teacher also expressed that they used digital tools such as iPads, projectors and computers. They have filmed and scanned QR codes with the iPad and used the cameras for various movement songs or other movement programmes like Mini-Röris during physical-activity lessons.

Of course, we have the iPads with us to play music, and we can have different movement songs from YouTube. The projector as well, and I have had movement songs through it, and also "Mini-Röris" programs are available online, so we have used it.

(Brita)

Pedagogical documentation and evaluation

Many teachers highlighted pedagogical documentation as an important part of the work to support children's learning of FMS. By documenting the children's skills, they have mapped out the children's development and learning of FMS. The teachers responded that they have observed and made notes or filled in schedules. They also expressed that they have filmed and photographed the children's motor skills to support the children in their learning. With the help of the Book Creator application (the child's own digital book), several teachers responded that they have documented (with photos or videos) children's FMS over time and made learning visible to the children. This has contributed to increasing the children's motivation to learn. The teachers reported that they evaluate progress not only together as a team but also with the children. Several teachers end

physical-activity lessons by evaluating them with the children. Oral evaluation during the actual lessons is also something that the teachers highlighted.

The children documented their own chosen skill that they would exercise, and we filmed. Then when they had learned, we documented again and filmed it again. It has contributed to increased motivation – they want to learn. They have a goal, a skill they want to learn, so that is perhaps what has had the most effect.

(Maria)

Pedagogical considerations

The teachers also described that their work regarding children's learning of FMS is about prioritisation of FMS, integration of FMS, small group activities, children's interests as a starting point and utilising spaces.

Prioritisation of FMS

Many teachers responded that they prioritise FMS in their work and they expressed that some children may have difficulties with a skill; therefore, that particular skill is prioritised or considered as the basis for continued learning. Half of the teachers prioritise skills such as crawling and creeping. Several highlighted stability skills and object control skills. The teachers reported that they planned the skills in different physical-activity lessons, at transitions (i.e., from one activity to another) or as the movement of the week.

When we go to lunch, for example, I say that anyone who wears a red shirt can jump on one leg.

(Anna)

Most focus on jumping, crawling and creeping, and skills like that. But now we have added a little more: control balls, object control skills and balance.

(Brita)

Integration of FMS

Several teachers stated that they integrate FMS with other subjects. In the physical-activity lessons, they can consciously work with, for example, numbers or colours. They also combine music and movement through different songs and dances. Several teachers responded that they try to include more movement so the children can concentrate better and so that the activity is not just sedentary. Working with FMS in connection with "fun Finnish," (language exercises) one teacher creates different motor-activity tracks and sometimes based on different themes, such as space.

I have also integrated movement with “fun Finnish” so we have worked on and played in Finnish and done various games and movements in the forest.

(Sara)

Small group activities

Most teachers stated that they usually divide the children depending on which goal, skills or activities the children will carry out during the physical-activity lessons. They also reported that they divide the children into smaller groups to have a better view of each child and be able to push those who need more support and challenge those who need it. In everyday life, they divide the children into smaller groups because some ECE units have limited spaces; then the children are given more space indoors to exercise FMS, the teachers stated.

I usually differentiate. The children who need to exercise a certain skill are in a group, and then we have a kind of movement theme, while another group of children may have a different need, and so we have it instead.

(Sara)

Children’s interests as a starting point

Some teachers highlighted that the children’s interests are a starting point for the content of activities, such as dancing and plays as ‘summer shadow’. This motivates the children, and in a systematic way, the teachers work with several different skills. The teachers responded that when the children show interest in different equipment or activities, the teachers plan activities based on that interest.

Plan what the children are interested in, and combine it with movement.

(Sara)

Utilising spaces

All teachers stated that they utilise spaces that are available, and the children exercise FMS in almost all rooms in the ECE units. Several teachers expressed that they do not have regular access to the gym and hold planned guided physical-activity lessons either in a larger room that is intended for rest or in the whole ECE unit. When the gym for physical activity is unoccupied, some teachers use it immediately, even though it may not be their actual day for the gym. Many teachers responded that they also use the hallways to support children’s learning of FMS. They create an inspiring movement environment in the hall, and the children, for example, play floorball, jump with bouncy balls and throw paper aeroplanes. The teachers reported that smaller rooms are also taken advantage of, and children can build with foam rubber blocks and throw balls. The teachers also give the children the opportunity to build a motor-activity track and let the children play tag.

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Some teachers highlighted even if they though allow children to exercise FMS in very small spaces, safety is always in mind.

Our hall has become like a movement environment where we have this trolley with sports equipment, but the children often spread the sports equipment to other rooms. But the hall is probably one of those movement places or environments.

(Cecilia)

The teachers' own activities/actions

The teachers highlighted their own activities as very important. By encouraging, allowing and seeing opportunities, they themselves are active and collaborating and inspiring.

Encourage, allow and see opportunities

The teachers reported that they encourage, allow and see opportunities for the children to learn FMS. Some encourage the children in the moment to continue with the physical activities they are doing, and some give suggestions for what they can do, such as building a motor-activity track or using various equipment. Teachers responded that some children need more encouragement than others, and it is important to observe and be sensitive to it. Several teachers expressed that they encourage children to exercise FMS in situations where they are waiting for something or someone or if they are restless or sitting still for a long time. The teachers stated that they help and encourage children so they dare to practice skills, such as by holding a child's hand or just standing next to him or her.

We practice and encourage them to see how well things are going with encouragement and support. Then they actually dare to try, and you get them forward.

(Pia)

Many teachers expressed that they allow the children to exercise FMS in several different spaces. They see opportunities to exercise FMS in places such as the hall. The teachers responded that if the children want to move furniture to create different motor-activity tracks or balance on the edge of the sofa and then jump down, this is allowed. The teachers stated that they try to create as permissive an environment as possible, so the children are be allowed to be active while respecting those who sit and work. Several teachers reported that the rules in the different ECE units are few, and the teachers and children have discussed them together.

Yes, we are permissive. They get to climb up on tables, and they get to stand and balance on those different sofas and jump down.

(Kerstin)

The teachers stated that they try to see possibilities instead of limitations; they see and create opportunities for children in their everyday work. If the children run or kick a ball in a room that is not suitable at the time, the teachers ask the children to go to a suitable room instead of interrupting the activity. Teachers expressed that the children themselves also see opportunities, and the teachers try to take advantage of that. Some teachers responded that they use different times of the day to exercise a specific skill, such as break gymnastics.

You see what they want to do, and then you try to create an opportunity for them to do it, if they want to. You see that now they want to run, now they run a lot; then you say that they get to go in the big room. Here you get to run. These guys we have who love football – that you may not be able to kick here, but you can go in the big room, where there is the opportunity to kick.

(Brita)

Teachers themselves are active

The teachers described their own physical activity as very important in their work. They find it fun to be active with the children in various ball games and motor-activity tracks. Several teachers responded that the children appreciate that the teachers are actively involved. The teachers stated that they are a role model and shows different skills and activities, even if they do not master them 100%. The teacher's task is to spread joy of movement to the children, and several teachers expressed how important their own commitment is to get the children involved. Sometimes, the teacher may be the one who needs to get started and take the initiative for various plays and games, the teachers stated.

I usually participate. Sometimes it is the children who create and start the activities, and sometimes it is me. I think it is great to be a part of it, and you also see from the children how much fun it is for them that we are there. How important it is that the teachers exercise these motor-activity tracks they have created and that we are involved in playing football and basketball. It is important for them that we participate in these activities.

(Lotta)

Collaboration and inspiration

Several teachers highlighted collaboration with colleagues, other ECE units and parents. When several staff members work in each unit, they collaborate and share responsibility in terms of planning and implementing physical-activity lessons as well as in the documentation and mapping. Some teachers reported that they hold the physical-activity lesson one week and the following week the other teacher hold the lesson. To know what the other teacher did the week before, they have to cooperate. They work together to

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know where to take over and continue where someone left off. Two teachers highlighted that one teacher is responsible for the music, and the other plans physical activity.

The teachers reported that the ECE units have different sports equipment; they borrow from each other so there is more variation for the children. Some teachers highlighted that they also collaborate when they are outdoors, and the children from different units participate in activities together. The teachers stated that they hope that their work will inspire parents to also support and help the children – for example, one unit makes the week’s movement visible to the parents and, in that way, tries to show different skills. Some teachers pointed out that both the children and different materials have inspired them in their work with FMS.

We have set up in two places [the week’s movement], both so the children can look at the unit and so the parents can see what the week’s movement is. We also said at the parent meeting that we hope the parents also support this at home.

(Brita)

Inspiring and stimulating physical environment

The teachers highlighted the physical environment as a support in the children’s learning of FMS in terms of physical-activity games, lines and figures and available sports equipment.

Physical-activity games

Some teachers reported that they have different physical-activity games available for the children; they have the opportunity to take a game, such as Twister, and play at any time. One teacher responded that they also make physical-activity fleas of paper (finger fleas) together with the children, where FMS is the content of the physical-activity fleas. The teachers expressed that regular board games that contain QR codes are also in the ECE units. When the children scan the QR codes, they have to perform a skill such as 10 X jumps. The children also play with larger foam rubber cubes with QR codes. The QR codes contain instructions for different skills to perform. The teachers described that movement cards and “keep going” cards are also worked in in different ways in everyday life.

Ordinary games with QR codes, with an instruction that you should make a movement. Preferably a regular dice game that you move forward and sometimes with codes so you had to scan and it could be like doing ten X jumps.

(Maria)

Lines and figures

Several teachers reported that they have, with the help of tape and other figures on the floor and walls, created inspiring and stimulating movement environments. They have pasted lines, squares and other figures on the floor that the children daily jump and balance on. The teachers described that these are used spontaneously by the children and are also included in the planned physical-activity lessons. Some teachers expressed that they have pasted lines on the walls that illustrate goals when the children play football, among other things. Similarly, they have pasted crosses at different heights, and the children get to throw dots with different equipment.

We have glued up lines on the walls so it is similar to football goals and crosses so the children can throw dots. They have actually used it a lot. Every day, there is someone throwing and kicking.

(Ida)

Available sports equipment

Most teachers stated that most sports equipment is available to the children, and they use it spontaneously and flexibly in everyday life. In most ECE units, there are, for example, balls, balance boards, beanbags, skipping rods, hoops, benches and carpets. All teachers seemed to agree that the children use the equipment daily, such as by building different motor-activity tracks, playing ball games such as floorball and football and throwing dots. The teachers described that in some units, all the equipment is in one room; in another unit, the equipment is divided, so there is some equipment in each room, and some units have carts for the equipment.

The children now have free access to the sports equipment, and it is noticeable that they use it spontaneously. They also have free access to the iPad, so they can use it a lot. QR codes are everywhere on the walls. Everything is on the cart for the sports equipment, so they can pick out the equipment they want.

(Maria)

Discussion

The aim of this study was to analyse teachers' pedagogical work supporting children's learning of FMS in ECE centres. The teachers in this study were part of a change and development project where they worked to change and develop their attitudes and ways of working, with children's learning of FMS in mind. Teachers' pedagogical work is shaped in different ways in the ECE centres. The results show the teachers' versatile efforts that can have significant consequences for the pedagogical work that supports children's

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learning of FMS in ECE centres. The results have been examined from a theoretical perspective of the pedagogical, physical and social learning environments to understand the themes that highlight the results of the study and are linked in terms of teachers' work to support children's learning of FMS.

Teachers play a crucial role in what happens in the teaching and learning environment (Tannehill & MacPhail, 2014). Teachers' pedagogical work to support children's learning of FMS is expressed in different ways in ECE units, which the results of this study also show. Several factors affect how teachers plan and carry out physical education. Many children need support in their development and learning of FMS, but the need decreases sharply with age, and boys often need support more than girls (Reunamo et al., 2014). Reunamo et al.'s (2014) study also showed that the children who needed the most support in their development and learning of FMS were those who were the least physically active.

The teachers in this study conduct diverse and goal-oriented pedagogical activities. The children are given opportunities to develop and learn FMS in different ways at different times during the day, which has been highlighted by the Ministry of Education and Culture (2016) and the Finnish National Agency for Education (2022) as part of early childhood education's mission and content. To be possible, awareness from the teacher and knowledge about FMS are required.

Four themes emerged describing how the teachers support the children's learning of FMS. The results show a diversity of aspects that affect the teachers' pedagogical work. Teachers make conscious pedagogical considerations during planned guided physical-activity lessons and during activities in everyday life. Teachers prioritise and work purposefully with children's FMS during guided physical-activity lessons as well as in everyday life because studies show that free play alone does not improve children's motor skills – supervision and teaching in learning activities are important (Logan et al., 2011; Wick et al., 2017). Most participating teachers plan and carry out guided physical-activity lessons every week; some hold two to three guided physical-activity lessons a week. In addition to the guided physical-activity lessons, the teachers also plan various outdoor activities, encourage the children to be active, integrate FMS in other subjects and give the children opportunities to be active on a daily basis. This can be compared with the extensive review of studies conducted by Mak et al. (2021), in which the physical-activity programmes had varying content, had positive effects on children's physical activities and were conducted daily or twice a week.

Many teachers in the study have used pedagogical documentation to map where the children are in their development and learning of FMS. Logan et al. (2011) emphasised that children need to carry out developmentally appropriate activities to learn FMS. When

teachers understand where the children are developmentally, they find it easier to plan the content of the physical-activity lessons so the children can carry out appropriate activities that support their learning. The teachers also make pedagogical considerations regarding the group division and divide the children based on the children's experiences and knowledge. These smaller groups are sometimes based on which children need more support in learning a specific goal (cf. Reunamo et al., 2014).

Social factors – such as smaller group sizes, play initiated by children rather than adults and positive encouragement from both teachers and peers – are associated with increased physical activity (Brown et al., 2009; Gubbels et al., 2011). The teachers believe that their own activity and actions are important and encourage the children in different ways. These results confirm previous studies of teachers' own actions and how they see themselves as important role models (Bjørngen & Svendsen, 2015). The teachers try to see possibilities and create permissive learning environments for the children to be physically active, and the rules in the various ECE units are few. Reunamo et al.'s (2012) study showed that children are physically active when they are allowed to play in open areas with few restrictions and rules for vigorous physical activity. The teachers in this study participate with the children in various ball games and motor-activity tracks and spread the joy of movement to the children by being active themselves, and they take initiative for various games. Previous studies have shown that higher physical-activity levels are created among children when staff members have a positive attitude towards physical activity (Mikkelsen, 2011).

In this study the results show that the physical environment plays a role in teachers' work to support children's learning of FMS. Different physical-activity games are available to the children, and lines and different figures on the floor have contributed to the children's exercise of FMS (cf. Willenberg et al., 2010). The sports equipment is also visible and accessible for the children, and they use the equipment daily to build, among other things, motor-activity track. Available physical-activity games and sports equipment activate the children, and they spend less time in sedentary activities (Dowda et al., 2004). On the other hand, Copeland et al. (2016) found no significant effect on children's physical activity due to facilities such as the size of indoor or outdoor play areas, natural elements or stationary equipment. With regard to the physical environment, the results show that the teachers make pedagogical considerations by utilising spaces and letting the children exercise FMS in different rooms in the ECE unit and create movement environments in, for example, the hallways. It shows the teachers' willingness to plan and see opportunities for children to exercise FMS. Even though not everyone has access to a gym, physical-activity lessons are arranged in the units. The results of this study can be compared with Tsangaridou's (2017) results, where the teachers emphasised that good planning and preparation can compensate for the lack of suitable equipment.

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The themes that emerged in the results exemplify the teachers' work with children's learning of FMS, which can be understood in terms of pedagogical, social and physical perspectives. All perspectives are important with regard to children's learning of FMS. The results show that purposeful work to support children's learning of FMS presupposes that the teacher has knowledge of FMS. The results describe the teachers' work and can contribute to an understanding of how pedagogical work with children's learning of FMS can be shaped in ECE centres.

The results that I have presented in this article are based on data collected through interviews with teachers who participated in the change and development project. As a researcher I have participated and given the teachers supervision in the project that may have affected the results even if I have tried to be as neutral as possible throughout the process. I had insight into their work, but observations could also have been carried out as a complement to the interviews. I noted several times in the interview transcriptions that the respondents from same ECE unit highlighted the same thing, which indicates that the answers can also be seen as credible. The result is not generalizable in a wider context but shows a valuable basis for how teachers can build up and conduct physical education in ECE settings. More research is needed on how teachers plan and implement physical education in different ECE settings, but also how the children experience physical education that is carried out in ECE centres.

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