

## **PEDAGOGICAL PROCESS FACILITATING PHYSICAL ACTIVITY OF PRE-SCHOOLERS**

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**Abstract.** *The research covers analysis of theoretical literature on significance of physical activities in the development of child's integrity, as it is a well-known fact that child is researcher and his/her activity is manifested through movement. Child gets his first impressions about surrounding world through movement – the more diverse motions are, the more information is acquired, and the more intense is intellectual development thereof. However, quite often pedagogical process does not consider the specific factors facilitating capacity of child's physical, functional, motion and mental development.*

*To conduct the research, an aim was set to study physical activity of children in pre-school and opportunities to increase it via pedagogical process.*

*The research was carried out by using suitable research methods: analysis of theoretical literature, observations, and pedometrics.*

*The research covers analysis of physical activity of children and amount thereof during a day in pre-school, as well as is aimed at seeking solutions to improve it.*

*Within the research, it was concluded that pre-school education institutions do not provide children with sufficient physical activity, as 75 % of the children do not make the needed number of steps during a day in pre-school.*

*In relation to the competence-based educational content, the research gives suggestions for facilitation of physical activity of children in pedagogical process.*

**Keywords:** *physical activity, pedagogical process in pre-school, competence-based educational content.*

### **Introduction**

Nowadays, there are many different technologies making life easier. The number of digital devices and their ease of use take society to the top of technological achievements, which sometimes seem to come from fiction films. In a daily life – at home, public transport, pre-school, school, work, it may be seen that digital devices are used extensively. However, this leads to a phenomenon that certain activities are done increasingly rarer and use of the new technologies results in a more passive lifestyle – humans have to move less. Lift is often preferred to stairs, walk to work or pre-school establishment is substituted by a

ride in a car, games in yard are replaced by cartoons or computer games. Human beings unnoticeably become increasingly sedentary.

Physical activities have effect on the development of personality at all ages, however the share thereof in a daily routine at a pre-school age is very explicit and shall be considered to be a key factor in personality development that has long-term influence on personality from physical, intellectual, mental, and health aspect (Tompsonowski, Davis, Miller, & Naglier, 2008). The younger the child, the closer the relationship between movement activity and development of child's integrity. As child moves much and intensively, motion analyser in brain receives an impulse from skeletal muscles. As in brain motion analyser is located close to the areas of sight, hearing, perception, when in tone it facilitates action of various brain areas (Bula-Biteniece, Jansone, & Piech, 2013).

Physical activity is usually defined as muscle-driven body movement that, compared to the state of peace, increases energy consumption. This broad definition covers all aspects of physical activity, namely physical activity in leisure time (including most sports disciplines and dancing), physical activity at work, as well as physical activity at home (Bula-Biteniece, 2016). Physical activity is also defined as any physical movement that ends with a contraction of skeletal muscles (Zacevic & Tremblay, 2010).

Physical activity is a prerequisite for normal functioning and health of everyone, especially of children. In relation to the introduction of new competence-based learning content at pre-school, pre-school education guidelines have been amended as well, pointing out that pre-school education content is aimed at curious, creative and joyful child who lives healthy, safe and actively, acts independently and learns with interest and joy, gaining experience in and knowledge about himself, others, the surrounding world, as well as its interactions (Regulations for National Pre-School Education Guidelines and Pre-School Education Programme Examples, 2018). The new pre-school education guidelines underline the importance of facilitation of child's physical activity, indicating the study outcomes to be achieved in the field of health and physical activity:

- child happily engages in physical activities indoors and outdoors and develops healthy lifestyle habits meanwhile being aware of health risks and prevention thereof;
- moves among various obstacles, in different movement games in a way safe for himself/ herself and others by combining walking, running, crawling, climbing, keeping balance, as well as is moving items and overcoming obstacles by choosing the action suitable to the situation;
- uses fine motor skills diversely;
- is aware of own gender and body integrity, maintains personal hygiene on a daily basis;

- is able to tell what personal protective equipment should be used in each specific motion activity (Regulations for National Pre-School Education Guidelines and Pre-School Education Programme Examples, 2018.).

To achieve the results, European Social Fund project “Competence Approach in Training Content” provides for development and approbation of competence-based training content and gradual introduction of training content at pre-school, basic and secondary education until 30 September 2021. The project guides pre-school education towards changes envisaging that every pre-schooler will acquire modern education. For many teachers, this can be a challenge, as teacher has to organize common educational and learning process within which child acquires knowledge, understanding and basic skills in all areas of education, as well as develops transversal skills, and builds habits that are based on values through an integrated practical and self-motivated learning. It means that pre-school teacher shall organize pedagogical process in a way that child can be active throughout the whole day.

The research is aimed at studying physical activity of children in pre-school and opportunities to increase it via pedagogical process.

Materials and methods. The research is based on analysis of theoretical literature, partly-structured observation, pedometry, data processing, analysis and interpretation of the results of study on physical activity of children both at pre-school education institution and in family, as well as it gives recommendations for pre-school teachers to increase physical activity of children. The research was conducted in a pre-school education X in Riga in April and May of 2018 and it engaged 45 pre-schoolers aged 5–7. At the end of the study, the results acquired were summarised and analysed.

### **Interconnections between children health and physical activity**

Health is one of the preconditions for sustainable development of society. People with good health can function effectively, have constructive and creative energy, have wholesome life and can contribute to the well-being of their family and general society. Good health opens up the possibility of being active in society facilitating social and economic prosperity in the country. Health is the one that allows people to express themselves. Childhood and adolescence are the best times to lay foundations for good health and knowledge of a healthy lifestyle, to build healthy lifestyle habits. Physical activity is one of the most important factors determining child's physical and mental health, both in childhood and adulthood (Ortega, Ruiz, & Sjostrom, 2008). Appropriately intensive physical activity has beneficial effect on children blood circulation, respiratory and hormonal systems (Janssen, 2007), less often feelings of fear and depression as well as better

learning progress (Parfitt, Pavey, & Rowlands, 2009). Studies have also shown that children who engage in regular mid- and high-intensity physical activities tend to have a much lower risk of developing cardiovascular disease, type-2 diabetes, osteoporosis and various forms of malignant neoplasms in adulthood (Caspersen, Powell, & Christenson, 1985). Physical exercises suiting child's physical fitness improve physiological processes and adaptability as well as functional reserves of a body, while immobility or physical load unsuitable to child's abilities can cause unwanted changes in the body or even be harmful to the child's health and further development (Cavill, Kahlmeier, & Racioppi, 2006).

Latest researches show that there is also correlation between physical activity and cognitive development of a child. Cognitive functions in childhood may serve as an important indicator of physical and mental health in future. In a study covering 260 children (116 girls and 144 boys), physical activity was measured using an accelerometer, while cognitive development was assessed using the latest cognitive scoring scale. As a result, boys were found to have a relationship between physical activity and cognitive function, however there was no such correlation among girls (Quan, Zhang et al., 2018).

Approximately 30 methods can be used to evaluate daily physical activity, each of which has its own disadvantages and benefits. All methods can be divided into three groups:

- critical;
- objective;
- subjective.

The most often, choice in favour of one or another method depends on the purpose of the research. Movement activity rather objectively can be determined with devices recording the amount of motion. The most convenient way to express motion activity is to use number of steps made during 24 hours or throughout the waking hours. Amount of motion may be measured by step counters (pedometers) that are easy to use and allow to count steps during a given time range (Rubana, 2016).

Pre-school education institution is a place where children spend most of their daily life. Often, they attend educational institution five days a week, on average 10 hours a day.

The amount of children motion was determined by using step counters which are easy to use. The number of steps recommended for the oldest pre-schoolers constitutes at least 10 000. Children making less than 10 000 steps a day may be considered to be physically inactive and moving insufficiently (Priedīte, Lāriņš et al., 2015).

### Research of children physical activity

In order to characterize physical activity of children and relation thereof to the organization of pedagogical process, the research was carried out in two stages:

- a pedometer was placed on children hands (upon prior parental consent); it registered number of steps made by children throughout the day in a pre-school;
- on weekend, parents, who had agreed to take part in the research, also placed pedometer on the hands of their children, and it recorded the number of steps made throughout the day at home.

It should be noted that pedometers are widely used also elsewhere in the world. For example, scientists from New Zealand, when studying physical activity of pre-schoolers, suggest using pedometer as an alternative to accelerometer (Vale & Trost, 2014).

The research was conducted in pre-school education institution X located in a city. In total, the research engaged 45 children aged 5–7. Girls accounted for 23 and boys for 22 of the participants. The research was conducted during the period from 1 April to 15 June 2018. Each child was equipped with a pedometer for two full days. One day children had pedometer when not attending pre-school educational institution. Pedometer was given to parents with a request to put it on their child on the next morning when the child wakes up and take it off when child goes to bed. The measurement had to be written down. Three participants had to repeat the process, as pedometer fell off during the day and did not measure the total number of steps made during the day. The second day with pedometers was spent in pre-school education institution.

*Table 1 Steps made by children during a day*

	Number of steps made outside pre-school	Number of steps made in pre-school
Smallest number of steps	6711	5165
Greatest number of steps	12812	12180
Average number of steps	<b>9735.7</b>	<b>8273.5</b>

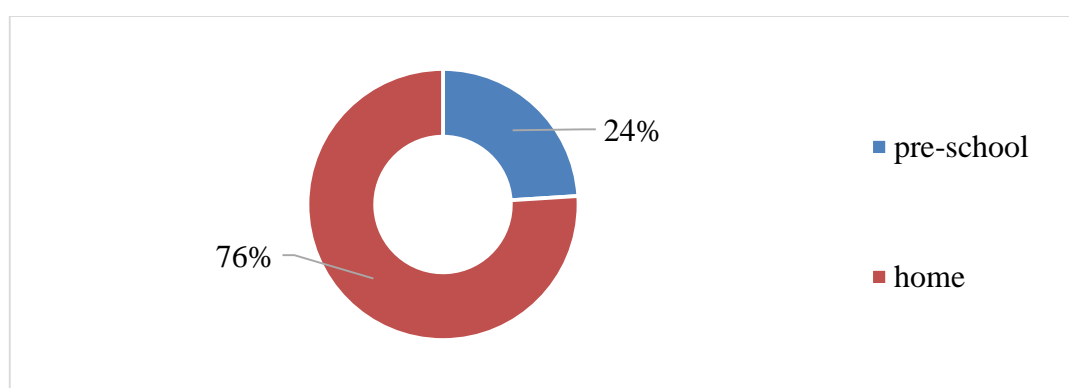
The data summarised in the Table 1 show that children make less steps when in pre-school education establishment, i.e., are less physically active. The average number of steps per day on holidays constitutes 9735.7, while in pre-school 8273.5. The results show that, in general, children are more active on days when they do not attend pre-school education institution.

When assessing how many children reached the recommended number of 10 000 steps per day, it can be seen that the number of steps made in the day when

children do not attend pre-school education institution was reached by 24 children (52 %) and not reached by 21 children (48 %).

On a day when children attended pre-school education institution the necessary number of steps was reached by 10 children (24 %) and not reached by 35 children (76 %) (refer to the Figure 1).

The results acquired show that in pre-school education institution 76 % of children do not reach the recommended number of steps to be made. Knowing the children, the number of steps made whereof during weekend reached the recommended number, it may be said that the number is logical, as their families spend their leisure time very actively. Several children and their parents go for walks, regularly participate in sports events, go on cycling trips.



*Figure 1 Sufficient physical activity at home and educational institution*

The child with the number of steps exceeding that required both during weekend and at pre-school attends football classes regularly.

### **Suggestions for increasing physical activity of children**

When launching the reform, the Ministry of Education of Science of the Republic of Latvia (IZM) defined that introduction of competence-based training content implies the need to achieve a paradigmatic shift of approach from the transfer of information to the acquisition of competences in each class and each school (Skola, 2030; IZM, 2017). To conceptually implement the new training content in practice, pre-school teachers are looking for new experiences, effective pedagogical approaches and methods. Knowing the importance of physical activity in a child's development, it is not surprising that the pre-school education programme provides sporting activities every day, however the sports lessons alone cannot satisfy the child's desire for movement. For general development of a child, great attention should be given to various ways of promoting physical activity:

- sports lessons;

- morning exercise;
- organisation of walks; ,
- fun sports activities, celebrations;
- days of health, etc.

At pre-school age, ability to perform various movements carried out in diverse activities is one of the physical development indicators (refer to the Figure 2).

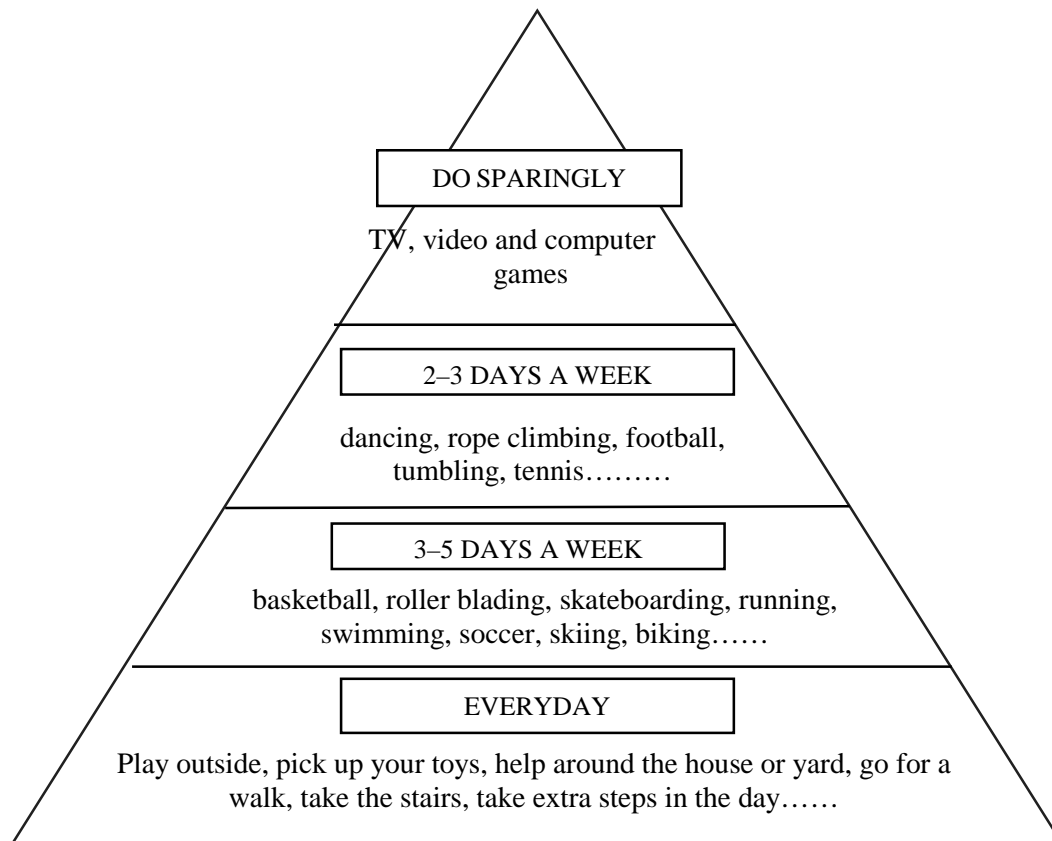


Figure 2 *Physical activity pyramid for children* (Rauramaa & Leon, 1996)

It is necessary to supplement pedagogical process with movements that are at the base of the pyramid, i.e., it is the first level where all the movements to be performed are related to the daily activities – walks, outdoor games, activity on a playground, etc. When child gets slightly older, we may start offering him activities of the level 2 – a variety of aerobic exercises, racing and sporting elements related to driving a scooter, use of various sports game elements, etc. Activities of the level 3 include movements associated with muscle activity and flexibility exercises – gymnastics, dancing, etc. By varying activities of different levels, children can be provided with the amount of activity they need during the day, however it should not be forgotten that there should be adequate rest periods between the activities.

It is of a major importance to set up a correct day regime with proper statically dynamic regime for optimal spine load. It is related to:

- settlement of ergonomic workplace for child – table and chair suitable for the child's height;
- keeping track of the child's correct posture while sitting at the table – avoiding long-lasting, uniform postures as well as asymmetric postures (no sitting on one leg, standing by basing on the same leg all the time);
- engaging in physical activities and avoiding factors contributing to the wrong posture such as uncomfortable clothing, inappropriate shoes;
- taking rest periods during the day to relieve the spine (Bula-Biteniece et al., 2013).

Physical and intellectual activity of children will be facilitated by activities and walks outside. Moving on different natural surfaces (moss, stumps, sand, etc.) strengthens physical fitness of children, co-ordination at the same time developing child's fantasy and creativity. For example, in a forest, child has opportunity to develop his fine motor skills by collecting various small items – cones, leaves, seeds and flowers. Children can develop their motion coordination by jumping from rocks, crawling on trees, walking on logs, climbing small hills or sneaking through trees. Teacher together with children may create an obstacle course using existing obstacles or build a snow slope. Acceptance of a challenge, overcoming of something that is difficult in childhood builds child's self-confidence and extends the limits of his/her ability.

The environment in which child acts is of a major importance – the more playgrounds with different equipment are available, the more experience in overcoming various obstacles and stronger desire to develop physical skills child will have. According to researchers, children who spend their free time outdoors are more active, have better-developed social skills, richer initiatives and better organizer skills than children who spend their free time indoors (Perry, Ackert, Saillis, Glanz, & Saelens, 2016).

When outdoors, teacher can use various games and plays that help children to satisfy their need for movement. Movement games are based on active natural movements – running, jumping, throwing, overcoming various obstacles. Game is a kind of school for life experience which children gain with joy, enthusiasm, dedication and passion; when playing game, children exercise their body, gain satisfaction, and express their joy.

It is important for the teacher to support children, to cheer and praise them, to help children get organized for activities, while at the same time teacher should create situations encouraging children to invent new game versions and rules by themselves, as well as use available materials, thus promoting their ability to plan, show initiative, etc.



In group lessons that do not require writing, teachers can encourage children to work when standing. To make children move around during lessons, all necessary materials can be placed on a table in the middle of a class, thus children will have to walk to get the materials.

All the facts mentioned above show that the most significant changes in the organization of the pedagogical process have to be made by pre-school teachers, envisaging play activities that include freely chosen and independent playing as well as activities purposefully organized and indirectly managed by teacher, ensuring uniform periods of load, rest, and activities meeting individual abilities of each child.

Thus, promotion of children physical activity requires:

- integration of physical education and health content in daily activities;
- positive emotional background to the children activities;
- opportunity to be active both indoors and outdoors, using various sports equipment;
- opportunity to participate in movement and sports games both indoors and outdoors;
- morning exercise that may be led by both teacher or children themselves. Morning exercise may engage complex exercises with and without objects, rhythmic, as well as poems with movements, musical games;
- conditions suitable for children to act freely thus ensuring opportunities for individual self-development.

### **Conclusions**

- Transition to a competence approach in education means a change in the style of work that ensures acquisition of competences. Teacher must ensure the acquisition of transversal skills, facilitate integration of child's external training motivation into internal, and develop learning skills.
- Personality of a teacher as well as careful planning of pedagogical process, environment and pedagogical techniques used are all important for the fulfilment of the tasks foreseen in the education reform.
- The uniformity of the activities offered by teacher and restriction of movement are tiring children, therefore it is important to take care that children at this age, along with the education process, are offered to engage in well-considered physical activity.
- The more active the pre-school teacher, the more active the children, which, in turn, in a long term will ensure that children communicate with each other better, are able to organize different games by themselves, as well as be active and self-motivated to learn at pre-school and later at school.

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