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ICSSPE Book: Physical Activity and Sport: The First Ten Years

Chapter: Physical Activity in the Early Years

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TITLE: PHYSICALLY ACTIVE PLAY IN THE EARLY YEARS

1. INTRODUCTION

Babies have an inborn drive to be physically active, which serves as a necessary moderator for their development. Young children discover and learn new skills through movement, and this important bond between physical activity and development continues as children grow older. At the toddler stage, physically active play supports the child's overall development, as they learn physical, motor, cognitive, social and emotional skills through physical activities and interaction with their peers. In this zone of proximal development, it is important that adults support all kinds of physically active play. During the preschool years, children's motor skills become increasingly versatile. With this motor development, children love to challenge their skills, and their physical activities become more structured. While sport-oriented activities attract some children, early physical activity should focus on play and a playful attitude to games, as adult-led and overly structured games and activities may cause some children to avoid physical activities. Physically active playing is physical activity of early year.

2. INNATE DRIVE FOR DEVELOPMENT

Babies are driven to be physically active (Pellegrini, 2009), and this innate drive is a key aspect of development. Without this drive, babies would be content simply to have their basic

needs met, such as feeding, hygiene and interaction with another person. In such situations, there would be no need or desire to learn new skills. However, because babies have a desire to learn and develop further, they are attracted to interaction with other people. They imitate and seek to connect with others through eye contact and through body movements (Stern, 1985). Babies are also very curious about their environment, and their interest is awakened by sensory stimulation through bodily contact with different objects and materials. All of these aspects of development are indicators of a genetic or innate drive to learn new things. Consecutive learning moments create the foundation for overall development, and sensory stimulation and bodily movements combined with cognitive challenges form the basis for reactions of every kind.

For the baby, the first year of life is about finding meaning in the ongoing flow of sensory information, gradually creating structure out of sensory chaos (Stern, 1990). At first, sensory stimuli cause reflexive movements, but as the brain develops, learned by doing and trial and error eventually lead to the successful execution of voluntary movements. This requires the ability to control the body's movements in relation to gravity, which becomes possible when the baby has sufficient muscle strength and the necessary neuro-muscular capacity and freedom to move. For that reason, parents' first supporting actions should be to provide the child with lots of 'tummy time' and multiple sensory experiences, such as touching different materials and swinging with adult assistance. These experiences form the basis for motor development and learning of fundamental skills like sitting, standing, walking, throwing and catching (Ayres, 2005).

Once the child has learnt these fundamental motor skills, they can begin to manage everyday activities independently. This is a revolutionary change, as the child can now make their own decisions about what to do and where to go. At the same time, they begin to understand that they have free will, and effective interaction and social skills become important in achieving their own targets. Playing with other children is a natural 'laboratory' in which to learn these skills.

3. INDIVIDUAL DIFFERENCES IN PHYSICALLY ACTIVE BEHAVIOUR

All babies and children have unique personalities and behave in different ways. These personality characteristics have a genetic basis. To describe these characteristics and individual differences in behaviour, Thomas and Chess's (1977) classical temperament

theory identified nine different characteristics, one of which is *activity level*. According to temperament theory, this refers to personal type and intensity of activity. Among the nine characteristics, Thomas and Chess specify a number of other traits that may also affect children's interests and actions. For example, *adaptability* refers to how quickly a child adapts to new situations, and *attention span/persistence* refers to how long a child will continue trying in the face of difficulty. In general, the theory holds that temperament determines the child's capacity for self-regulation. Maybe thought self-regulation temperament could be associated with motor skills (Taunton et al. 2018) and the style how parents respond to their child's behaviour (Laukkanen et al. 2018).

According to Thomas and Chess (1977), temperament is not the only biological factor that influences the child's behaviour. In particular, the surrounding environment also plays an important role in determining what children are allowed to do and how they are expected to behave, based on the kind of feedback they receive. Explaining how different temperament traits are seen as positive or negative in a given environment, Thomas and Chess (1977) characterise this as *goodness of fit*. In the context of physical activity, for example, gender differences may determine what kinds of behaviour are considered appropriate—that is, girls may be encouraged or allowed to participate in certain physical activities, or they may be expected to do something else. In this way, environment may require children to regulate their expression of personal characteristics.

In summary, children are born with an innate drive to be physically active, and the intensity and nature of that activity will depend both on the individual's personal characteristics and on the need to customize their behaviour to fit their current physical, cognitive, social-emotional, psychological and cultural environment.

4. PHYSICAL ACTIVITY FUELS MOTOR DEVELOPMENT

During their early years, much of the child's physical activity centres on active play that is spontaneous and sporadic. This typically involves reacting to interesting stimuli, motivated by a desire to reach something, to play with an interesting toy or to touch another person. To respond to these external stimuli and reach their goal, children must learn a range of motor skills. The first voluntary skills are basic movements (Gallahue et al., 2012) that children develop through trial and error, using what can be described as a 'learning by doing' strategy. Because trying repeatedly and making mistakes are a key element of the learning process, it

is essential that adults support this process by making space and time for children in a safe environment. In these circumstances, children can move and learn through bodily movements, based on ‘tummy time’ for babies (WHO, 2019) and appropriate outdoor playgrounds for toddlers that will challenge their skill level and enable them to learn the new motor skills they need for independent movement, including walking, running, jumping, throwing, catching, kicking and striking. These fundamental skills will be further adapted in response to the surrounding environment (Gallahue et al., 2012)—for example, by learning to use skis to move on snow. When the child first puts the skis on their feet and tries to walk, they discover that this is not the quickest or most effective way to move. After a number of attempts, they will learn how to exploit the advantages of skis by sliding! It then becomes fascinating and inspiring for the child to experiment while skiing in different terrains, learning techniques such as cross-country skiing—in other words, sport-specific motor skills (Gallahue, et al., 2012). The same is true of all sport-specific skills, such as skating, dancing and ball games.

While learning fundamental motor skills is essential for children everywhere, cultural environment also exerts a significant influence on which motor skills the child is expected to learn, including which sports they can choose as a hobby (Niemistö et al., 2019; Laukkanen et al. 2019). For Scandinavian children, for example, the environment encourages participation in winter activities like skiing and skating (Sääkslahti & Duncombe, 2019), creating a ‘natural’ progression to cross-country skiing, ski jumping and ice hockey. Every global region has its own favourite sports, and interest is commonly stimulated during the early years. For example, while children in South America play soccer everywhere, inspired by the success of their country’s players, many Australian children may be more interested in cricket or rugby. These environmental effects may also vary within a single country (Niemistö et al., 2019).

Ultimately, learning new motor skills enables children to become more physically active, which explains why overall physical activity during early years increases alongside motor skills (Stodden et al., 2008). In this regard, the beginning of schooling marks a turning point. As shown in Figure [X] below, school days that are highly structured by adults reduce children’s opportunities for physically active behaviour, and there is evidence that children are more active during free play (both indoor and outdoor) than during structured activities (Soini, 2015). Unfortunately, restrictions in children’s living environment make it more difficult to meet physical activity recommendations for typical development and health (WHO, 2010, 2019). Indeed, children’s health and wellbeing are so important aspects that it

could be possible to legitimate appropriate physical activity for children as one of their rights as stated in UN's children's rights (UN General Assembly, 1989). In Finland, physical activity recommendations based on empirical evidence specify how children's opportunities for physically active behaviour can be increased through holistic actions (OKM, 2016) based on a socio-ecological model (Bronfenbrenner 1994).

[Figure here]

The Figure X shows level of moderate to vigorous physical activity for Finnish children. The continuous curve is based on four different data sets showing the mean trend from early years (up to age 3) to adolescence.

(Reference for Figure [X]: Joy in the motion programme document 2018, p. 29)

5. PHYSICAL ACTIVITY SUPPORTS OVERALL DEVELOPMENT AND LEARNING

Physical growth and body composition

Although children's physical growth has a strong genetic basis, the body's organs also require continuous stimulation. For example, children's height may be restricted by lack of food, and excessive early physical demands may affect developmental age. A child's weight reflects their energy balance, which can differ significantly across continents. Today, there are only a few regions where children lack sufficient energy to play and grow; instead, the main challenges now relate to excessive energy intake and lost possibilities for physically active play (WHO, 2019). This latter problem affects the development of muscles, joints and bones, which need to be stimulated through physical activity and object-based play. The basic rule for development is that organs that are used will develop further while others atrophy. As childhood is a period of growth, it is essential to ensure developmentally appropriate levels of physical activity for healthy and independent life (Malina et al., 2004).

Functional capacity is based on physical abilities such as strength, speed, endurance and flexibility. In the early years, the main developmental tasks are more skills-based, but the basis for functional capacity and its development over the lifespan is shaped through

children's natural play, including physically active play (Malina et al. 2004) such as jumping games to develop strength and speed through stimulation of muscles and joints, running games to develop endurance through stimulation of the cardiovascular system and breathing and climbing to develop flexibility by extending the joints' natural range of motion.

Cognitive development

Piaget was among the first to emphasise the link between the child's physical activity and cognitive development, and subsequent research has confirmed the importance of physical activity and motor development for many other aspects of development. Piaget's (1969) theory has prompted interest in the crucial role of children's sensory systems in learning (Ayres, 2004). For example, the brain must process all sensory stimuli and store representative images in memory for the next occasion when the child may need this information or skill. Because physical activities activate all the senses, memory functions better by retaining all the information learned through bodily movements and physical activity.

In recent years, there has been increasing research interest in the association between cognitive development and physical activity. To date, this research has focused primarily on adult endurance and fitness levels, but there is increasing interest in the role of motor skills because the same brain areas are now known to be activated and involved in executive functions (Diamond, 2003). This also has implications for the role of motor skills development in children's physical activity (Robinson et al., 2015) and may further modify physical activity recommendations for children and adolescents in the future.

At a practical level, early educators have confirmed that 'learning by doing' is an effective strategy for supporting cognition and learning. Manipulating language, mathematical thinking and causal relationships is an effective pedagogical tool because it stimulates different senses during the learning process. Children learn words or concepts through concrete actions; for example, they learn the meaning of *under* and *above*, *right* and *left* or *big* and *small* while playing and moving. When crawling under a table, they gain a concrete experience of what it means to be 'under' something; when this position is verbalised during the activity, the child hears the word and captures its meaning through all their senses, making it easier to understand and remember. Causal relationships are learned in much the same way. For example, when a child jumps over something, they use their leg muscle strength. Next time,

when they need to jump longer or higher, they must use more strength to succeed. In this way, the child begins to understand the causal relationship between amount of strength and length of jump. Children's physical play is full of such challenges, which can be used creatively to support cognitive development (Pesce et al., 2016).

Social-emotional development

Fröbel (1826) recognized that a baby's first toy is their own body, as they begin to look at their fingers and later find their toes and try to reach their mouth to taste and explore these interesting items. Subsequently, a ball will attract the baby's interest and offers a means of inviting another person to join in the play, bringing adult and child together for interaction and cooperation. This kind of physically active play marks the beginning of the social-emotional development that becomes central to the child's early years. Ball games bring another person's face very near, allowing the child to observe different facial expressions and enabling them to observe and learn about basic emotions like happiness, surprise, sadness, fear and disgust. Recognizing another person's emotions forms the basis for emotional development and empathy. These skills are essential for physically active play with other children; as the group cannot function without cooperation, children must learn to respect the rules and to limit selfish behaviour. In group games, being too selfish may lead to being left out; for that reason, ball games are an excellent means of supporting social-emotional development, as they usually require at least one other person to play with.

Children's 'rough and tumble' is another interesting form of physically active play. Pellegrini (2009) has demonstrated how such activities teach interaction skills. However, contemporary society often forbids such contact because it is seen as aggressive behaviour rather than as an important opportunity to learn how to interact, to control one's emotions and strength, and to learn bodily awareness. Because of these lost opportunities, society's negative interpretation of this developmentally important form of play might well be harmful.

6. CHILDREN NEED CHALLENGES: ZONE OF PROXIMAL DEVELOPMENT

While much of the motivation to learn is innate, a significant part of this drive is determined by the child's environment. For that reason, it is important to recognise the important role of appropriate challenges in children's learning. In this context, appropriateness means that the challenge should align with the child's level of physical, motor, cognitive and psychosocial

development. Vygotsky (1978) described the zone between the child's actual and potential developmental level as the *zone of proximal development*. The actual level refers to what the child is capable of doing independently; the potential level refers to what the child is capable of doing with others' help. While this concept was originally used to describe cognitive development, the same can be seen to apply to physical activity and motor skills learning.

In the context of physical activity, the child's potential can be reached with the help of supports such as adult guidance, skilled peers and a carefully adapted physical environment. For adults, the most important task in supporting children's learning is to create a positive atmosphere that encourages them to search for solutions to motor challenges. Rather than requiring children to copy or imitate specific behaviours or skills, teaching becomes a matter of posing questions and challenges in an encouraging atmosphere that supports the child's perception of their own skill level. This is an important step towards self-confidence and increased motivation to attempt more difficult motor tasks (Niemistö et al., 2019; Robinson et al., 2015; Stodden et al., 2008).

Other children are an important factor in children's development. A more skilled peer is an excellent 'teacher' because they identify the right details for successful completion of a new task. Unfortunately, educators typically ignore this potential for learning from other children during organized physical activities. As children are typically more active when playing with their peers than when playing alone (Soini, 2015), group activities and time for peer play should be more highly valued as an element of pedagogy for young children.

Appropriate adaptation of the physical environment offers another effective means of entry to the zone of proximal development. As environments are typically created for adult use, dimensions are not always favourable for children, and changes of size, length, weight, material or colour may be needed to help a child to successfully perform certain motor tasks or skills. This requires a deep understanding of children's learning processes and knowledge of the child's actual level of motor skill; as developed for sporting practices, this is known as nonlinear pedagogy (Renshaw et al., 2010).

7. ENJOYMENT AND FLOW

As enjoyment is the key element in children's motivation to do something, adults must learn to respect those moments when children are totally focused on their play. Focused play refers to concentration on an interesting task; as the child's attention is fully focused, they lose track

of time, as they are in the middle of a flow experience (Csíkszentmihályi, 1990). This becomes possible when the demands of a task are appropriate to the child's skill level and they can 'throw themselves' into play. Typically, this kind of play requires extended and uninterrupted time, which may be difficult to achieve, as most children's lives are already so timetabled that there is no opportunity for the open-ended creativity of free play. Again, adults must respect children enough to realise that structured activities very often eliminate this possibility of creativity and flow. In this regard, it is important to remember that the basic characteristics of physically active play closely resemble the conditions for flow. For that reason, it is important both to ensure that physically active play is developmentally appropriate and to defend children's right to such play as a source of wellbeing and a precursor to achievement of their full potential.

8. CONCLUSIONS

Physical activity during the first ten years of a child's life mainly involves physically active play. Children are innately driven to be physically active, but adults often limit opportunities and time to behave naturally and learn by playing, with significant implications for children's development. Contemporary living environments do not support children's growth toward their full potential, and overly structured daily activities can cause stress. It is therefore important to respect children's right to optimal development and wellbeing by providing opportunities and time for physically active free play. Babies (0–2 years) and preschoolers (2–5 years) need this kind of play in their daily lives, as do most primary schoolers (6–10 years). Even many older children may find their passion by developing their motor skills and physical abilities prior to more structured sport activities.

Childhood is a time for free play, creative play, rough and tumble play and social play both as important aspects of overall development and for their inherent value. The next step is to understand how rapidly changing environments change children's play opportunities and habits, and there is an urgent need for cross-cultural studies of different play environments. In drawing on multidisciplinary knowledge to create optimal environments that support children's growth and development, it seems essential to acknowledge the crucial role of physically active play.

9. RECOMMENDATIONS FOR PRACTICE

- As part of children's nature, play has its own independent value.
- Children's innate drive to be physically active must be supported by allowing them freedom to move.
- Make room for curiosity and allow children to try things for themselves.
- Visit different environments and allow children to imagine and to enjoy spontaneity.
- Allow time, mistakes and dusty clothes as essential features of learning.

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