# Physically Active Pedagogical Approach: Supplementing Traditional Teaching Methods in Primary School Classrooms

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## INTRODUCTION

The broad spectrum of benefits that physical activity and movement has on children's development and overall physical health is well recognised and researched (Chalkley and Milton 2020). The innovative physically active pedagogical approach aims to combine movement, physical activity and educational components of the curriculum and integrate both elements into the classroom learning environment (Daly-Smith et al. 2020). The ever-growing demands of the National Curriculum (2014) can put a strain on young children; however, changing pedagogical approaches and teaching methods may provide various benefits for children, meeting developmental needs and theoretical perspectives of learning and developing body and brain (Biddle et al. 2019). Within the classroom context, this could be used to meet the statutory requirements set out in the National Curriculum (2014) in the core subjects of mathematics, English and science, as well as foundation subjects. Physically active learning was successfully implemented in numerous primary schools both in America, Australia, and other European countries, aiming to reduce sedentary behaviour and enhance academic achievement (Speck 2019). This desk-based research project aimed to explore whether physically active teaching methods could positively impact the emotional wellbeing of school-aged children.

## METHODOLOGY

The desk-based research project adopted both the interpretivist and positivist paradigm and implemented mixed-method approach. The qualitative approach represents a valuable viewpoint from the researchers' perspective, avoiding generalisations (Mukherji and Albon 2018:86). It acknowledges the complexities of various explanations and meanings to different actions, holistic perspectives, and worldviews (Mukherji and Albon 2018:92). However, the quantitative approach allows to identify the limitations of sedentary teaching and learning approaches in primary schools through large scale studies, statistical data, and analysis of specific variables (Queiros, Faria and Almeida 2017). Figure 1 represents the search parameters of the academic literature accessed for the research project.

| EDUCATIONAL DATABASES | KEY SEARCH TERMS | EXCLUSION CRITERIA | LITERATURE SEARCH |
|---|---|---|---|
| | | | |
| EBSCO | Physical Activity | Adolescents | 29 Peer Reviewed Journals (a mixture of quantitative and qualitative research/studies) |
| ProQuest | Physically Active Learning | Secondary School Children | Date range of peer reviewed research/studies: 2010-2020 |
| Elsevier | Physically Active Lessons | | Educational Books |
| Francis and Taylor | Movement and Mind | | Government Publications/Policies/Reports |
| Wiley Online Library | Emotional Wellbeing | | Public Health England/NHS guidelines and statistics |
| CU Coventry Locate | Psychological Wellbeing | | |
| ScienceDirect | Sedentary Teaching Methods | | |
| | Seated Lessons | | |

Figure 1. Literature search parameters (Awuson-David 2021)

 

The integration of the mixed-method approach generates and accurately captures the conceptual validity in the objective and subjective aspects of the research (Ponce and Maldonado 2015). Therefore, the purpose and justification of the chosen approach acknowledges the complexity of both the research aim and question.

## ETHICAL CONSIDERATIONS

The United Nations Convention on the Rights of the Child (UNCRC 1989) holds a central place in all educational initiatives. These initiatives aim to re-evaluate children's choices and rights as active participants instead of passive recipients, giving them a voice and acknowledging their intrinsic ways of their learning (Laevers and Declercq 2018).

Neuman (2014:68) highlights that every research should begin with a strong sense of ethical awareness, rather than as an afterthought. He also points out that the researcher should hold a significant stance regarding objectivity and a value-free viewpoint. This is vital whilst undertaking secondary desk-based research to avoid unconscious bias, prior assumptions, personal beliefs, opinions, and values (Neuman 2014:88). Although secondary research is considered a low-risk approach, the central values of this project included the scrutiny of ethical consideration, transparency, and conscious identification of the potential pitfall of bias (Bell 2010:94).

## LITERATURE REVIEW

Physical activity is encouraged in the Early Years Foundation Stage (EYFS 2017) either through play, creativity, exploration or outdoor activities. However, when children transition to primary school, the learning environment replaces physical activity with mostly seated lessons (Breda et al. 2018). The growing academic demands set out in the National Curriculum (2014) place physical activity at the back of a queue as academic performance and achievement take centre stage (Rudd, O'Callaghan and Williams 2019). NHS Digital (2017) published data focusing on the extent of emotional and mental health issues in children as young as two years of age. It highlighted the substantial increase by 48% since 2004 in emotional disorders in children aged 5 to 15 years. These findings recognised the ever-growing importance of early support needed to foster emotional wellbeing in young children through innovative pedagogical methods and whole-school approaches.

## THE IMPACT OF TRADITIONAL TEACHING METHODS

In the 1990s, there was an increase in research exploring the correlation between sedentary behaviour and adverse effects on physical health. More recent studies have demonstrated a particular focus on children's sedentary behaviours to prevent the lifelong detrimental effect on physical and psychological health (Azevedo et al. 2019). The longitudinal cohort study carried out by Griffiths et al. (2012) measured physical activity and sedentary behaviour in the U.K. with a comprehensive sample of 13,000 seven-year-old primary school children. The study findings exposed statistical data highlighting that children, on average, only accumulate 27 minutes of moderate physical activity a day and spend more than 5 hours a day sedentary. It further stated that only 15% lead an active lifestyle and achieve the recommended 60 minutes a day of physical activity. Griffiths et al. (2012) acknowledged that there are numerous times sedentary behaviour is unavoidable, such as reading and writing time. However, a more significant effort should be made to engage children in various physically active programmes to improve long-term health outcomes. These findings are closely mirrored by the recent "Active Lives Children and Young People Survey" (Sport England 2019) report, which focused on the 2018/2019 academic year. It showed that 40.4% of primary school children get an average of only 30 minutes of physical

 

activity per day in a school setting. A 2017 qualitative systematic review by Hesketh, Lakshman and van Sluijs highlighted that one of the significant barriers to physically active participation and learning was the teacher's focus on academic content via seated lessons.

The systematic review by Azevedo et al. (2019) aimed to identify the determinants of sedentary time amongst children aged six and below, and found that transition from early years settings to formal schooling determined and reinforced the increased time in sedentary behaviour due to structured curriculum and mainly seated lessons. According to Azevedo et al. (2019), extensive sedentary behaviour observed in young children has a negative impact not only on overall physical health but on cognitive development, behaviour and self-esteem.

Interestingly, the systematic review and meta-analysis carried out by Rodriguez-Ayllon et al. (2019) aimed to synthesise the interaction between physical activity and mental health outcomes in young children and adolescents. It focused on psychological wellbeing, paying close attention to self-esteem, self-efficacy, feelings of happiness and a positive outlook on life. The available evidence points to findings that suggest the positive correlation between physical activity and mental health outcomes in older children. However, Rodriguez-Ayllon et al. (2019) acknowledged that there is a substantial gap in research. Nevertheless, the research points out that reducing sedentary time and increasing physical activity might preserve and protect mental health or psychological wellbeing in children of all ages (Rodriguez-Ayllon et al. 2019).

## PHYSICALLY ACTIVE PEDAGOGICAL APPROACH

The principals of the physically active pedagogical approach go back to Kolb's (1984) experiential learning theory which affirms the value of learning through experience and action. His educational theory represents the knowledge of distinct individual preferences to different learning styles and approaches. According to Rose, Gilbert and Richards (2016: 84), physical aspects of active learning have numerous benefits, such as improving physical development, dexterity, coordination and balance. Furthermore, combining physical activity and accomplishing academic goals fosters self-esteem in children and in turn support emotional wellbeing (Bailey 2016).

According to Vetter et al. (2019), this could be attributed to changes in the brain functions and neurobiological mechanisms studied by Lubans et al. (2016). Lubans et al. (2016) suggest that physical activity in itself can positively affect mental health and increase self-esteem in older children and youth. However, studies are limited to younger children. This viewpoint is echoed by Rodriguez-Ayllon et al. (2019), who identified that future research in this field is necessary with younger children.

Similar to the above study, Mullender-Wijnsma et al. (2016) carried out a two-year-long randomised controlled trial in 46 Dutch elementary schools involving 499 children between the ages of five and eight. This trial aimed to investigate if a new way of learning and teaching through the combination of physical activity incorporated in maths and language lessons could positively affect children's academic achievement. The analysis of the study showed no difference in reading skills; however, the mathematical skills and spelling scores significantly improved. According to Mullender-Wijnsma et al. (2016), these improvements might be accredited to the inseparable correlation between the brain and body mechanisms. Although these lessons were adapted to the mainstream curriculum in Dutch schools, the generalised research results could be applicable and warranted in similarly developed countries (Mullender-Wijnsma et al. 2016).

As previously mentioned, the widely studied benefits of the physically active pedagogical approach focused on academic achievement (Mullender-Wijnsma et al. 2016., Daly-Smith et al. 2020). However, a distinct gap in the literature is the lack of research in the connection and correlation to the effects of emotional wellbeing on primary school children who participate in physically active academic lessons. Self-determination theory (Deci 1971) and brain-based

 

learning theory (Caine and Caine 1990) are the foundation of these educational interventions and signify the effect of physical activity on cognitive performance and attention. Both theories challenge traditional teaching methods and expose the influence emotions and stress have on learning. One of the brain-based learning theory (Caine and Caine 1990) principles strongly correlates emotional stability and ability to learn, the requirement for physical movement taking into account natural stages of child's development as part of physiological need. At the same time, self-determination theory (Deci 1971) uncovers vital aspects of successful learning through autonomy, relatedness and competence. All of these components convert to self-esteem, a sense of belonging and self-determination which enables the manifestation of intrinsic motivation and enjoyable experiences.

## PHYSICAL ACTIVITY AND BRAIN

There has been an increased identification that learning and teaching work in strong correlation and synergy with the human brain (MacBlain 2018:99). It suggests a new revolution in the educational environment and policies due to evolving developments in neuroscience that expose the undeniable correlation between body and brain (Bailey 2016).

Research carried out by Hillman et al. (2014) aimed to determine the effects of physical activity on brain function and executive control. The randomised control trial involved 221 children between the ages of seven and nine, who were included in the "FITKIDS" after school physical activity club and split into control and intervention groups. As noted by Chaddock-Heyman et al. (2014), children who engage in more physical activity compared to less active peers have larger brain volumes and exhibit superior cognitive controls. Executive functions are part of cognitive processes or controls that include attention, working memory, and mental flexibility and play a crucial role in behavioural control and academic achievement (Chaddock-Heyman et al. 2020). The results of Hillman's et al. (2014) research produced promising findings highlighting that increasing physical activity had a positive effect on brain functions, cognitive flexibility, attention, executive control and neural processing speed. The findings of this research are of particular significance to policymakers and educators. It should lead to the review of traditional sedentary teaching methods in schools to facilitate more opportunities for movement, physically active learning through the modification of the current educational practices (Hillman et al. 2014).

Furthermore, Batouli and Saba (2017) state that through physical activity and movement, the human brain can modify its structure and improve its functionality. The neural structures and networks of the brain are closely associated with physical activity, and the occurrence of this phenomenon is described as "activity-induced neuroplasticity" (Batouli and Saba 2017).

## DISCUSSION

There seems to be a consensus regarding the adverse effects of sedentary behaviours in children across statistical quantitative data and research. The systematic qualitative reviews carried out by Hesketh, Lakshman and van Sluijs (2017) and Azevedo et al. (2019) identify that highly structured curriculum and teachers' prioritisation of academic content through seated lessons act as a primary barrier to reducing sedentary behaviour. Additionally, physical activity guidance "Start Active: Stay Active" (2011) focused on the extended health benefits and the damaging effects of sedentary behaviours. The report presents compelling evidence that physical activity has far-reaching benefits not only on overall physical health but also improved learning, attainment and better mental health and mental functions in children. In 2019, the updated guidelines further acknowledged the damaging effects of a sedentary lifestyle and prolonged sitting times for children. It specifically mentions the importance of breaking up prolonged periods of sitting with light to moderate physical activity.

 

## PREVALENCE OF SEDENTARY BEHAVIOUR

Overall, there might be a potential explanation as to why sedentary behaviour is so prevalent within the primary school environment, which acts as a barrier to implementing a physically active pedagogical approach. Firstly, physical activity is progressively marginalised due to the prioritisation of core subjects in the National Curriculum (2014). Secondly, the introduction of the Education Reform Act (1988) aimed to raise attainment standards, improve efficiency and accountability, indirectly making schools compete through league tables. Thirdly, the Department for Education (DfE) and the Standards and Testing Agency (STA 2019) set national standardised tests. These tests mostly align with the core subjects, which places legislative requirements for schools to implement and report. Once again, as the Education Reform Act (1988) aimed to raise the academic standards, Ofsted (2019) became the driving force influencing school policies and decision-making. It exposes a narrow-visioned view that forces schools to "teach in order to test" children (Rudd, O'Callaghan and Williams 2019).

Similarly, the ever-growing evidence in research exposes this position as being short-sighted. Both research and theory show a strong correlation between the body's physiological functions and the brain neurological mechanisms (Hillman et al. 2014). Therefore, ignoring the expanding knowledge in this area, eventually, may have an undesired effect.

Public Health England (2015) guidance for headteachers and teaching staff provides numerous suggestions on how to increase and incorporate physical activity within the school environment. The updated version (2019) suggests developing multi-component and whole-school interventions. One of the eight guidance principles suggests embedding physical activity within curriculum, learning and teaching to improve emotional wellbeing and educational outcomes. It also encourages the engagement of children's voices and choices, empowering their ownership of involvement and learning. The guidance highlights the essential role schools play in promoting physical and emotional health and acknowledges the current research on the effects of physical activity on mental health and self-esteem. A critical issue arising from these findings raises the question if the current traditional teaching methods are still fit for purpose.

## PHYSICALLY ACTIVE PEDAGOGICAL APPROACH

The literature review highlights fundamental discoveries relating to the physically active pedagogical approach. Both Chaddock-Heyman et al. (2014) and Hillman et al. (2014) note in their studies that incorporating movement and physical activity into academic lessons can improve cognitive and mental flexibility and neural processing speed. Konorski's (1948) theory of synaptic plasticity defines the phenomenon of changes in neuron structure of the brain, which holds the ability to modify its structures through environmental factors and experiences. The above findings might lead to the assumption that physical activity has a substantial effect on psychological wellbeing. It enhances neural plasticity and supports efficient cognitive functioning, which plays a crucial role in an emotional state (Mandolesi et al. 2018). From the scientific point of view, physical activity increases serotonin levels, the hormone known to stabilise the mood and boost the feeling of wellbeing (Korb et al. 2010). The particular state of mind that Laevers et al. (2005) refers to is feeling "like a fish in water".

## PHYSICAL ACTIVITY AND PSYCHOLOGICAL WELLBEING

On closer examination, numerous studies consistently report and correlate physical activity to increased self-efficacy (Biddle et al. 2011) and self-esteem (Bailey 2016) in children. Both self-esteem and self-efficacy are the components of psychological wellbeing. They cannot be separated from the internal structures and the brain's functionality, which, due to technological advancements, can provide quantifiable results (Rodriguez-Ayllon et al. 2019). One unexpected

 

finding in the literature review is "activity-induced neuroplasticity" (Batouli and Saba 2017). The current knowledge in this area could be ground-breaking for various reasons. Firstly, it emphasises that physically active teaching methods can facilitate a broad array of a child's developmental and psychological needs. Secondly, it may act as an inclusive approach for atypically developing children and those with learning difficulties (Batouli and Saba 2017).

Self-determination theory (Deci 1971) acknowledges autonomy as one of the crucial elements of psychological wellbeing. According to Laevers and Declercq (2018), emotional wellbeing and involvement are necessary measures of the learning environment. If children's rights are genuinely observed, then, indeed, children have the right to encounter an educational approach that enables a real sense of wellbeing and involvement (Laevers and Declercq 2018). They further highlight that both wellbeing and involvement in the educational environment are fundamental rights of every child. The significance of involvement can be further explored through Csikszentmihalyi's flow theory (1997). Key elements of the theory focus on the dynamic phenomenology of interaction between a person and the environment. Csikszentmihalyi (1997) states that optimal experience and happiness is achieved through deep enjoyment and immersion in a challenging but achievable activity. Being engaged in a pleasurable task and experiencing flow promotes intrinsic motivation, focus and intense concentration (Csikszentmihalyi 2014). The review of physically active lessons by Skage et al. (2020) highlights that combining academic content and physical activity proved to be a highly engaging and enjoyable form of learning for children. Consequently, both engagement and achievement are the building blocks and determinants of positive wellbeing (Seligman 2018). In this view, physically active learning might be the new dimension of a pedagogical approach that is viewed and supported by the perspective and viewpoint of the child, especially when it comes to the educational environment.

## EMOTIONAL WELLBEING MATTERS

The research findings from the National Association of Head Teachers (NAHT) and Place2Be (2020) mental health charity showed a 66% increase in demand for emotional wellbeing support in schools since 2016. Furthermore, the "Wise Up" campaign (2017) by Young Minds highlights the need for children's emotional wellbeing to be taken as seriously as academic achievements by rebalancing the requirements and priorities of the current educational system. Preparing children to flourish academically is as important as preparing them emotionally, the latter having a more significant impact on lifelong learning than successful exams or tests (Young Minds 2017). Emotional disorders that start in early life has a detrimental impact in later life which threatens the healthy development and social functioning of every child (Ginsburg et al. 2018).

## EDUCATIONAL NEUROSCIENCE

According to Housman (2017), neural pathways of the brain are closely connected with emotions and executive functions. The limbic system of the brain predominantly acts as an "emotion hub" (Guerriero 2017:213). In turn, the executive functions, cognitive processing and emotional competence shape the cognitive abilities that enable higher academic achievement and positive emotions. Being in a positive emotional state allows us to explore creatively, seek new experiences and quickly adapt to ever-changing life conditions and circumstances (Ginsburg et al. 2018).

On the other hand, Ryff's (1989) model of psychological wellbeing theory points out that emotional wellbeing is not all about positive emotions and positive functioning. The theoretically grounded structure of the model explores well-defined dimensions of psychological wellbeing exposing multidimensional balance in a broader context. The theory acknowledges that things like positive relations, purpose in life, personal growth, autonomy, environmental mastery and self-acceptance

 

are vital elements of psychological wellbeing (Ryff and Keyes 1995:1). Empirical research emphasises that schools hold a vital role in predicting both academic achievement and lifelong success (Cohen 2013:414). However, it could be argued that the educational system strives to improve academic outcomes, overlooking the need to first address the issue of emotional wellbeing. As emphasised by Housman (2017), emotional competence is a crucial aspect of successful learning and psychological wellbeing in early childhood and beyond.

The development of educational neuroscience and contemporary theories have numerous implications for the skilful art of pedagogical practices in today's educational establishments (Guerriero 2017:198). The acquired knowledge addresses complex questions around how children learn and the positive impact that physically active teaching methods could have if implemented as a whole-school approach.

## CONCLUSION

The design of the current research project aimed to determine the impact of traditional sedentary teaching methods and explore the effect of a physically active pedagogical approach on children's emotional wellbeing. The statistical data (Griffiths et al. 2012, Breda et al. 2018) highlights the extent of sedentary behaviour in a school setting and the negative impact on overall health and psychological wellbeing.

The most significant finding presented by this research is the inseparable correlation between physical activity, brain functionalities and emotional competence (Hillman et al. 2014, Azevedo et al. 2019). According to Hillman et al. (2014), physical activity alone has a crucial impact on attention, cognitive flexibility and neural pathways of the brain. The phenomenon of "activity-induced neuroplasticity" could pave the way to a newfound knowledge of innovative teaching practices that incorporate a holistic and inclusive approach. Therefore, the assumption could be made that combining physical activity with academic content might have a positive effect on broader indicators of emotional wellbeing and future mental health outcomes (Rodriguez-Ayllon et al. 2019). The findings collated throughout this research could establish the basis for informed interventions within the classroom environment to supplement and enrich the already existing traditional teaching methods.

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