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INFORMATION TECHNOLOGY IN SPORTS SESSION

PARENTS' ATTITUDES TOWARDS THE INTEGRATION OF INNOVATIVE TECHNOLOGIES IN PHYSICAL EDUCATION FOR PRESCHOOL CHILDREN

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Abstract:

In modern-era preschool settings, there is an emphasis on motor skills improvement because of their significance in the child's overall development. Basic motor skills such as walking, running, and jumping influence not only physical development but also cognitive, social, and emotional development. New technologies might increase both gross and fine motor skills by encouraging activity in children. Studies indicate that interactive tools, virtual environments, and educational apps improve both gross and fine motor skills.

The primary objective of this study was to examine how well parents are familiar with and apply innovative technologies in the physical education of their children. As a secondary objective, we tried to identify any potential differences in the respondents' answers in relation to gender.

Study results show that most parents of both genders agree with the use of innovative technologies in working with their children, did not use applications or mobile platforms for physical education at home (without gender differences) and that they desire better collaboration with experts in this field.

Children today are encountering innovative technologies at an early age, and it is reasonable to incorporate these technologies into physical education programs as early as preschool. The time of pessimistic views on technology use in the context of physical education is behind us, and while we need to be aware of the risks, we also need to explore the opportunities for innovative technologies to change physical education in positive ways.

Keywords:

Children, Physical Activity, Mobile Apps, New Technologies.

INTRODUCTION

Motor development in preschool age is an important part of the overall development of a child. It enables the acquisition and refinement of basic physical abilities or motor skills such as walking, running, jumping, throwing, and catching. These skills form the foundation for later physical, cognitive, social, and emotional development. The development of fine motor skills, like precise movements of the hands and fingers, is also of fundamental importance, as it allows for performing everyday tasks such as drawing, writing, and dressing independently. Physical education in the preschool context stimulates children's physical development but also their emotional, social, and cognitive development. Well-designed physical education programs may enhance basic motor skills development and help children acquire values such as fair play and teamwork. Evidence strongly suggests that regular physical activity can prevent many health issues, including obesity and heart disease [1].

Motor skills have a great significance in the child's overall development. That is the reason why preschool settings of the modern era have an emphasis on their improvement. Basic motor skills such as walking, running, and jumping play a crucial role not only in physical development but also in cognitive, social, and emotional development. Inevitably, the emergence of new technologies caused adjustments in teaching methods. Today, we must admit that the use of electronic devices (smartphones, video games, tablets, etc.) has changed the way children interact and play. New methods increasingly incorporate interactive games and virtual realities to provide children with engaging and dynamic ways of learning. Studies indicate that interactive tools, virtual environments, and educational apps can improve gross and fine motor skills. These technologies might aid in the development of coordination, precision, balance, and overall physical fitness. At the same time, it can encourage additional engagement of children in physical activity, preventing obesity and other health issues [2]. Adequate use of these technologies can boost social skills such as collaboration, sharing, and conflict resolution. Furthermore, cognitive development can be stimulated through games that require problem-solving, logical thinking, and decision-making [3]. Nevertheless, it is important to maintain a balanced use of new technologies to avoid negative impacts on physical and social health [4]. Its effective use requires careful planning and integration with traditional educational practices.

The primary objective of this study was to examine how well parents are familiar with and apply innovative technologies in the physical education of their children. As a secondary objective, we tried to identify any potential differences in the respondents' answers in relation to gender.

2. MATERIAL AND METHOD

The sample in this study consisted of 30 parents of preschool-aged children. Of these, 16 parents were male, and 14 were female, mean age 43.5 years.

The survey conducted as part of this research was specifically designed for this purpose and was inspired by relevant scientific papers addressing the integration of technology into preschool education, particularly in the context of physical education. A significant influence on the survey design includes works by several authors who explored how digital games, interactive technologies, and augmented reality can impact children's engagement and motor development [5] - [7]. The questionnaire consisted of 6 items that covered data on the use of applications and digital platforms in the physical education of a child, general learning or play, parents' collaboration with technology experts, and their belief in the positive impact of technology on motor development.

The above-stated items within the questionnaire were formulated as follows:

- 1. Have you ever used apps or online platforms for physical education at home with your child?
- 2. Have you noticed any changes in your child's motor skills that you can attribute to the use of technological tools for learning?
- 3. Would you like more collaboration with experts (educators, psychologists, IT specialists) when it comes to integrating technology into physical education?
- 4. Do you track and evaluate your child's progress in physical activities that involve technology?
- 5. Do you believe that technology can positively impact a child's motor development?
- 6. How do you assess the availability of information on how to use technology to support a child's motor development?

The data analysis was conducted in the form of the frequency distribution of responses (percentage distribution), and to compare positive and negative responses, as well as any potential differences between genders in the responses, the χ^2 test was applied to all variables.

3. RESULTS WITH DISCUSSION

As shown in Table 1, the distribution of responses to the posed questions is presented in the total number of positive and negative responses, and separately by the criterion of gender.

The results from Table 1 show that most parents, of both genders, agree with the use of innovative technologies in working with their children, that they monitor their children's progress in physical activity related to technology, and that they desire better collaboration with experts in this field (answers to questions 3, 4 and 5). On the other hand, the answer to question one had the least positive outcome (for both genders), and that is related to whether parents had ever used applications or online platforms in the field of physical education at home. Answers to questions two and six had around one third of responses in an affirmative way indicating the somewhat lower effect of any changes in a child's motor skills that could be attributed to the use of technological tools and availability of information on how to use technology to support a child's motor development. The obtained results can also be interpreted in such a way that parents likely still lack sufficient technological literacy, as it is known that "digital natives" (younger generations) easily master certain digital devices for communication, while "digital immigrants" (the adult population) require specific communication and media education to successfully function in the modern world on a daily basis [8].

In a more detailed analysis of the data, we applied the χ^2 test to examine differences in responses overall by positive and negative answer choices, and then also differences between respondents by gender. The results of the χ^2 test showed that there is a statistically significant difference in the overall responses to question 1, which clearly indicates that most parents did not use applications or mobile platforms for physical education at home and there are no gender differences. These findings are in line with the previous studies that confirmed the absence of mobile applications or digital platforms in parental involvement in children's physical activity [9], [10]. However, it is worth noting that there is also a significant number of studies in which it has been found that parents prefer not to use modern technology in the physical education of their children and instead opt for traditional approaches [11] - [13].

When considering the differences in responses based on the gender of the respondents, the results of the χ^2 test showed that there are no statistically significant differences in any of the responses. These results indicate that parents of both genders are equally aware of the advantages and disadvantages of using modern technologies in the physical education of their children. These results are also consistent with some earlier studies that have confirmed a consensus among parents regarding the advantages and disadvantages of using modern technologies in the physical education of their children [14], [15].

It has been confirmed that use of technology in the form of fitness apps, exergames, and wearable devices was found to be effective in motivating children to engage in physical activity. These technologies serve as support tools and as powerful motivators that offer tracking and feedback on their activity which can encourage children to engage in physical activity more actively [16].

Question	Yes total	No total	Yes male	No male	Yes female	No female
1	13.3%	86.7%	6.7%	40.0%	6.7%	46.7%
2	30.0%	70.0%	15.3%	31.3%	16.7%	36.7%
3	70.0%	30.0%	32.3%	14.3%	35.7%	17.7%
4	70.0%	30.0%	30.3%	16.3%	36.7%	16.7%
5	70.0%	30.0%	29.3%	17.3%	32.7%	20.7%
6	33.3%	66.7%	16.7%	30.0%	16.7%	36.7%

Table 1. Distribution of answers to the questions

Table 2. Results of χ^2 test

Question	χ² Value (Total)	df (Total)	p-value (Total)	χ² Value (Gender)	df (Gender)	p-value (Gender)
1	7.50	1	0.01	0.01	1	0.92
2	2.40	1	0.12	0.00	1	1.00
3	0.00	1	1.00	0.00	1	1.00
4	0.00	1	1.00	0.00	1	1.00
5	0.00	1	1.00	0.00	1	1.00
6	1.67	1	0.19	0.20	1	0.65



Figure 1. Children like to look up to their parents and use fitness trackers (AI generated image)

A review of the obtained results can be made from the perspective of the level of technological development and changes in the sphere of technologies that define both the relativity and variability of human technological education. In the context of human development as an individual, the variability of communication and technological education in adults reflects the changing educational needs in the domain of communications and media across different age groups. As people grow, their needs change, and this also applies to the needs in the realm of communication and technological literacy. In the earliest days, a child first communicates non-verbally, and then verbally, almost exclusively with their parents. Later, peers, friends, and colleagues enter their lives, and the ways and means of communicating with them are significantly different from those practiced within certain social roles, both in earlier and current stages. Furthermore, it becomes clear that from birth, as a person grows and matures, they encounter increasingly complex needs in the areas of communication and media interaction. Therefore, it is logical that communication and media-educational needs also change and multiply [8].

The primary school students daily use mobile technology, and that should be used in the activities in an advantageous way. Increasing children's awareness and capacity to engage in physical sports activities is one way to address this issue through a health promotion strategy. Previous studies have shown that elementary school students who utilize technology are better able to comprehend and implement basic physical exercises at school, on playgrounds, or at home, particularly when those activities are combined with engaging and varied elements [17]. As argued earlier, there is a need for new methods that would increasingly incorporate interactive games and virtual realities to provide children with engaging and dynamic ways of learning. Some practical examples include numerous apps that combine games with physical activity, such as fitness challenges, location-based games, tracking fitness parameters, etc.

One of the best examples was the PLAY study that examined the feasibility and preliminary effectiveness of a mobile app, and parent-led curricula to promote fundamental motor skills proficiency for preschool children. The authors found it to be effective, with the potential for wide-scale dissemination to parents of preschoolers and to provide a model for the utilization of mobile apps to promote young children's motor skill development [18]. Another illustration is the smartphone app Jungle Gym, which was created by a team of writers to promote preschoolers' physical exercise. The software was designed to assist kids in practicing gross motor skills, improve vocabulary linked to movement, and provide parents and kids a chance to engage in movement-related conversation if they so desire. Parents who participated in the app prototype testing showed positive reactions to the app and thought it would be helpful in a range of scenarios. Preschoolers who participated in the test demonstrated a high level of engagement with the software; most of them stood and/or moved vigorously for the whole duration [19].

Furthermore, mobile apps found their use as a tool in fighting obesity in preschool children. Namely, the authors of MINISTOP 2.0 app claim that it has the potential to be implemented in primary child health care nationally (Sweden) and thereby reach many families who may benefit from it. They found it highly relevant considering that obesity is a major public health challenge globally [20].

4. CONCLUSION

As a result of the introduction of new technologies, teaching strategies ought to change. We must acknowledge that children's play and interaction these days have been altered by the usage of electronic gadgets (such as tablets, smartphones, and video games). Providing children with dynamic and interesting learning experiences, new approaches are increasingly using virtual reality and interactive games. By promoting activity in kids, new technology may improve their gross and fine motor skills.

This study's main goal was to find out how well parents understand and use cutting-edge technologies in their kids' physical education. Our secondary goal was to explore any possible gender-related discrepancies in the respondents' answers. Since children today are encountering innovative technologies at an increasingly early age it would be entirely reasonable to incorporate these technologies into physical education programs as early as preschool. It seems plausible to look at technology as a tool to support healthy lifestyles among preschool children. The time of pessimistic views on technology use in the context of physical education is behind us and while we need to be aware of the risks, we also need to explore the opportunities for innovative technologies to change physical education in positive ways. Additionally, it would be beneficial for educators or physical education teachers to make efforts and take steps toward educating parents about the positive aspects of such practices.

5. ACKNOWLEDGEMENTS

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