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TANTANGAN KETERAMPILAN GERAK ANAK DI TENGAH MARAKNYA GAME ONLINE: TINJAUAN SISTEMATIS

CHALLENGES OF CHILDREN'S MOVEMENT SKILLS AMID ONLINE GAMES: A SYSTEMATIC REVIEW

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ABSTRAK

Penelitian ini mengkaji tantangan Keterampilan Gerak Dasar (KGD) anak-anak di Indonesia di tengah meningkatnya penggunaan game online. Latar belakang penelitian ini menunjukkan bahwa permainan online yang berlebihan dikaitkan dengan penurunan aktivitas fisik, perilaku sedentari, serta masalah kesehatan seperti obesitas dan hipertensi. Tujuan penelitian ini adalah untuk mengevaluasi pengaruh game online terhadap KGD anak-anak dan pentingnya intervensi yang terstruktur untuk meningkatkan keterampilan motorik mereka. Metode penelitian melibatkan tinjauan sistematis terhadap literatur yang mencakup artikel dari jurnal nasional dan internasional dengan menggunakan kata kunci *'fundamental movement skills'* dan *'online games'*. Dari 140 publikasi awal, hanya 10 artikel yang memenuhi kriteria inklusi. Hasil penelitian menunjukkan bahwa meskipun game online dapat mengurangi aktivitas fisik dan menghambat perkembangan KGD, intervensi fisik terstruktur terbukti meningkatkan keterampilan motorik anak-anak. Kesimpulan penelitian ini menekankan perlunya pendekatan multifaset yang melibatkan orang tua dan guru dalam mempromosikan aktivitas fisik dan menciptakan lingkungan yang mendukung untuk mengatasi dampak negatif game online dan mendorong gaya hidup aktif di kalangan anak-anak Indonesia.

Kata Kunci: keterampilan gerak dasar; *online games*

ABSTRACT

This study examines the challenges of children's fundamental movement skills (FMS) in Indonesia amidst the increasing use of online games. The background of this study suggests that excessive online gaming is associated with decreased physical activity, sedentary behavior, and health problems such as obesity and hypertension. The purpose of this study was to evaluate the effects of online games on children's FMS and the importance of structured interventions to improve their motor skills. The research method involved a systematic review of the literature covering articles from national and international journals using the keywords 'fundamental movement skills' and 'online games'. Out of 140 initial publications, only 10 articles met the inclusion criteria. The results showed that although online games can reduce physical activity and inhibit the development of FMS, structured physical interventions have been shown to improve children's motor skills. The conclusion of this study emphasizes the need for a multifaceted approach involving parents and teachers in promoting physical activity

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and creating a supportive environment to address the negative impacts of online games and encourage an active lifestyle among Indonesian children.

Keywords: *fundamental movement skills; online games*

Introduction

Excessive online gaming among Indonesian children has been linked to decreased physical activity, sedentary behavior, and health issues such as obesity and hypertension (Andriani & Basri, 2022; Fahrizal, 2023). This decline is particularly concerning given the importance of Fundamental Movement Skills (FMS) for children's motor, cognitive, social, and emotional development, as well as for their long-term physical health (Duncan et al., 2018). The gap between the use of technology in online games and the development of FMS remains significant and under-researched, necessitating special attention from researchers and practitioners.

Fundamental Movement Skills (FMS) encompass locomotor, manipulative, and balance skills that serve as the foundation for more specialized motor sequences necessary for engaging in various physical activities (Mao et al., 2022). These skills begin to develop when children can walk independently and move freely in their environment (Amirshoev & Güneş, 2023). Mastery of FMS has been identified as crucial for children's physical, cognitive, and social development, forming the basis for an active lifestyle and healthy weight maintenance throughout life (Grainger et al., 2020).

Previous research highlights the importance of integrating FMS with age-appropriate strength training to provide an optimal stimulus for children's development (Jeon & Jun, 2021; Yujin & Hong, 2022). Furthermore, research emphasizes the positive impact of FMS on various areas of children's development, underscoring their role as indicators of physical exercise capability and essential elements of children's physical play (Joschtel et al., 2021; McGarty et al., 2021). The development of FMS is critical in forming the complex movement patterns required for participation in organized and non-organized physical activities, sports, and games (Akbar & Awalludin, 2020; Tang & Wang, 2023).

Interventions aimed at improving FMS show promise in enhancing children's motor development and physical activity levels. For instance, interventions combining active play have demonstrated the potential to increase children's moderate to vigorous physical activity (MVPA) levels and fundamental movement skills (Lindsay et al., 2020). Structured physical activity programs focusing on FMS have also been effective in improving children's motor competence and promoting engagement in various physical activities (Chen & Zhang, 2021).

The relationship between physical activity and fundamental movement skills has been a subject of research, with studies indicating that children with low FMS proficiency are more likely to exhibit lower levels of physical activity, reduced cardiopulmonary function, and an increased risk of obesity (Cheng, 2023). Additionally, the COVID-19 pandemic has implications for children's motor skill development, with research suggesting variations in

locomotor skills before and during the pandemic. The integration of physical activity with technology-based interventions to enhance fundamental movement skills in children is a complex and multifaceted area of study that underscores the foundational role of FMS in child development. By focusing on interventions that promote the mastery of fundamental movement skills, researchers aim to support children in acquiring the necessary motor competencies for a healthy and active lifestyle. The synthesis of research findings in this field provides valuable insights into effective methods and outcomes for enhancing fundamental movement skills in children through innovative approaches.

The relationship between online gaming habits and physical health outcomes, such as obesity, hypertension, and sedentary behavior among children in Indonesia, is a topic of growing concern due to the increasing popularity of online games among the youth population. Research has indicated that online gaming can have both positive and negative impacts on children's health and well-being (Faraz et al., 2022). While online games can provide entertainment and stress relief, excessive gaming has been associated with various adverse health outcomes, including obesity, hypertension, and sedentary behavior (Fahrizal, 2023).

Studies have highlighted the potential negative consequences of online game addiction on children's physical and psychological health, leading to a decline in their quality of life and social relationships (Andriani & Basri, 2022; Fahrizal, 2023). Online gaming addiction has been linked to sleep abnormalities, anxiety, depression, and stress, which can further exacerbate existing health issues among children (Purwaningsih & Nurmala, 2021; Syari, 2023). Moreover, the sedentary nature of online gaming can contribute to a lack of physical activity, increasing the risk of obesity and related health conditions (Prananto et al., 2022).

The impact of online gaming on children's academic performance and social behavior has also been a subject of investigation. Research has shown that excessive time spent on online games can lead to a decline in academic achievement, missed assignments, and decreased engagement in school activities (Cañares, 2023; Rizkiana, 2023). Furthermore, children addicted to online games may exhibit changes in their social behavior, such as reduced socialization with peers and family members, which can have long-term implications on their social development (Febriady et al., 2022; Prananto et al., 2022).

Parental involvement and parenting styles play a crucial role in mitigating the negative effects of online gaming on children's health and well-being. Studies suggest that parental supervision, communication, and setting limits on gaming time can help prevent excessive online game addiction and promote healthier gaming habits among children (Amaliah, 2022). Additionally, educating parents about the potential risks of online gaming and providing guidance on managing children's gaming routines can contribute to creating a balanced approach to gaming (Guo, 2022; Lee et al., 2022).

The prevalence of online game addiction among children in Indonesia underscores the need for interventions and strategies to address this issue effectively. Research has explored the effectiveness of play therapy, coping strategies, and educational campaigns in managing online game addiction and improving children's mental health outcomes (Derakhsh, 2023; Priyono &

Fradianto, 2022). By implementing measures to promote creative and safe online gaming environments and enhancing parental awareness of the risks associated with excessive gaming, stakeholders can work towards safeguarding children's well-being in the digital age (Ghali, 2023; Ninphet & Sripa, 2023).

In conclusion, the relationship between online gaming habits and physical health outcomes among children in Indonesia is a complex and multifaceted issue that requires a comprehensive understanding of the factors influencing children's gaming behaviors and their impact on health. By considering the findings from various studies on online game addiction, parental involvement, academic performance, and social behavior, stakeholders can develop targeted interventions to promote healthy gaming habits and mitigate the negative consequences of excessive online gaming on children's health and well-being.

Method

The strategy used to search the literature involved the use of search databases, from books, national and international journals, and other reliable sources. In selecting primary sources, focus was given to the quality of articles, relevance to the topic, and completeness of data. Books, national and international journals can be accessed through search databases such as Google Scholar, PubMed and Scopus. The keywords used in the literature search included ‘fundamental movement skills’ and ‘online games’.

The exclusion criteria used were as follows: (1) Articles were not published in journals indexed by Scimago Journal Rank (SJR) and Science and Technology Index (Sinta), (2) the language used was English and Indonesian, (3) articles published in periods other than the last 10 years, namely 2013-2023. (4) Articles that did not explicitly mention the challenges of fundamental movement skills amid the increasing use of online games by children in Indonesia.

Initially, 140 publications were identified through database searches (Google Scholar: 40 articles, SINT: 50 articles, and Scopus: 50 articles). After applying the exclusion criteria, only 10 articles remained. Most of the articles were eliminated because they did not mention the effects of fundamental movement skills and online gaming. All selected articles were extracted from their sources and analysed using Mendeley software to eliminate duplication.

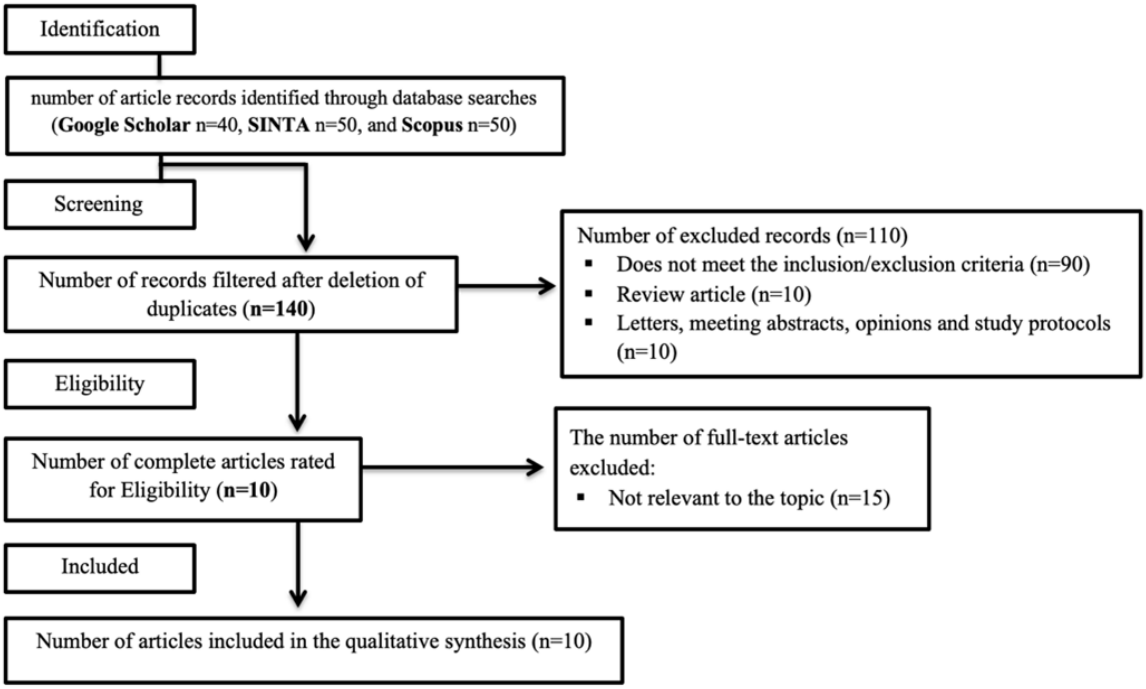

Figure 1 Selection process of articles used to utilise PRISMA guidelines

Results

Researchers have linked FMS to the increased use of online games by children in Indonesia. This difference in findings may be due to various factors such as the type of intervention, duration of the study, and individual characteristics of the participants. Despite the differences, the majority of studies affirm the important role of FMS skills amidst the increasing use of online gaming. However, research integrating FMS with the development of online gaming technology is still limited, thus further research is needed for a more thorough understanding. The results of the literature review shown in Table 1 are described and discussed in a single article. Country categories are not shown as all articles discuss Indonesia.

Table 1 Summary of Articles on the challenges of fundamental movement skills amid the increasing use of online games by children in Indonesia

Author and Year	Method and Type of Research	Article Title	Research Objective	Research Results
(Nurdiyan Haris & Zulfikar, 2022)	Cross-section study and observation	Cross Sectional Study of Elementary School Students' Basic Movement Skills	This study aims to describe the basic movement skills (FMS) of primary school students and to explore differences by	The study found that the fundamental movement skills (FMS) of primary school students were in the 'sufficient' category with a percentage of 40.80%, while the fundamental movement

			gender.	skills of boys and girls showed no significant difference.
(Jafar et al., 2023)	Quasi-Experimental, observation, and document analysis	Improving Student Motor Skills through a Structured Physical Training Program	This study aims to determine whether a structured exercise programme can improve students' motor skills, which are important for daily activities and academic success.	The structured physical training programme significantly improved students' motor skills, including coordination, agility and movement accuracy, compared to the group that did not receive the intervention.
(Bakhtiar & Famelia, 2020)	interviews, observation, and document analysis	Children's Motor Skill and Intervention: What Have We Known?	This study aims to identify factors that influence children's motor skill development, such as family context, perceived motor competence, and their physical activity level.	Structured, developmentally appropriate motor skills programmes effectively improve children's basic motor skills, which are essential for complex movements in sports and everyday activities. Family context, including parental education, paternal physical activity, and transport methods such as cycling to school, also have a positive impact on children's motor skill development.
(Putri & Umah, 2020)	qualitative approach, Penelitian Perpustakaan	The improving of higher-order thinking skills as Information filter for alpha generation	Enhancing children's higher order thinking skills in the digital age with a focus on developing analytical, critical and creative abilities through an integrated approach in the curriculum, problem solving learning, logical reasoning, in-depth discussions and wise use of digital resources.	The study found that children can improve higher-order thinking skills through engagement in learning that introduces contextualised problems from their daily lives. These problems help them develop the ability to filter and manage information effectively, an essential skill in the digital age.
(Ledi Syntiani et al., 2022)	qualitative method, field study, direct observation,	A Study of Online Gaming in the	Explore how online gaming affects children's health, learning activities,	While playing online games can be detrimental to children's health and academic performance,

	and interviews	Implementation of the Fulfilment of Children's Rights	and overall behaviour, specifically in Rijali Village, Sirimau District, Ambon City.	parents in Rijali Village manage the habit by setting time limits, providing advice and increasing supervision. Despite facing challenges in controlling gaming habits, such as balancing work and family time, parents still endeavour to enforce rules without causing conflict, as boredom, loneliness and peer influence encourage children to play online games.

Discussion

Research on the fundamental movement skills (FMS) of children in Indonesia shows that the increasing use of online games has a significant impact on the development of children's basic movement skills. In Figure 1, various studies have identified the negative influence of sedentary activities on children's psychomotor, social, and mental development. The following is a detailed discussion of the research findings displayed in the figure. The study conducted by (Nurdiyan Haris & Zulfikar, 2022) found that the basic movement skills of elementary school children were in the "sufficient" category with a percentage of 40.80%. However, there was no significant difference between the basic movement skills of boys and girls. This research indicates the need to improve the quality of children's basic movement skills through more structured interventions.

In their study, (Jafar et al., 2023) used a structured physical training program to improve students' motor skills. The results showed that this program significantly improved students' motor skills, including coordination, agility, and movement accuracy. This highlights the importance of structured interventions in supporting the development of essential motor skills for daily activities and academic success. (Bakhtiar & Famelia, 2020) found that factors such as family context, perceived motor competence, and children's physical activity levels play important roles in the development of children's motor skills. Structured, adaptive motor programs can effectively enhance children's basic motor skills, which are crucial for sports activities and daily life.

The research by Putri & Umah (2020) examined the development of higher-order thinking skills in children in the digital age. This study showed that engaging in learning that introduces contextual problems from daily life can help children develop the ability to filter and manage information effectively, an essential skill in the digital age. (Ledi Syntiani et al., 2022) explored the impact of online gaming on the health, learning activities, and behavior of children in Ambon City. This research found that although online gaming can be detrimental to children's health and

academic performance, parents still strive to manage gaming habits by setting time limits, providing advice, and increasing supervision. Additional information from the literature supports these findings, showing that fundamental movement skill challenges are increasingly prevalent among Indonesian children due to the rising use of online games. Sedentary behavior and lack of physical activity among Indonesian children are attributed to various factors such as increased use of electronic devices, limited safe spaces for physical activity, the impact of the COVID-19 pandemic, and societal norms that prioritize academic achievements over physical exercise (Hanifah et al., 2023). Lack of physical activities and exercise has been identified as a significant challenge affecting children's health and motor skills development (Hashimoto & Shishido, 2022).

Encouraging active play with family and peers has been suggested as a means to facilitate creativity skills among children, potentially addressing some of the movement skill challenges (Piya-amornphan et al., 2020). Teachers play a crucial role in shaping children's perceptions of physical activity and learning. Through physical activities, children can develop a better understanding of academic concepts, highlighting the interconnectedness of physical movement and cognitive development (Hardiyanti & Ilham, 2019). Shared physical activity participation between children and their parents has been shown to be beneficial in achieving recommended levels of moderate-to-vigorous physical activity, emphasizing the importance of family involvement in promoting active lifestyles(Filanowski et al., 2021). Moreover, utilizing play-based physical activities supported by teachers and conducive school environments can aid in weight loss efforts for overweight children aged 9-12 years (Primasoni et al., 2021).

In this context, where online games are increasingly popular among children, it is essential to consider the impact of such sedentary activities on fundamental movement skills. Analyzing children's sports performance based on big data can provide insights into evaluating and enhancing physical fitness levels, potentially addressing the challenges posed by excessive screen time and sedentary behavior(Yin & Kai-zhen, 2022) Understanding the perspectives of teachers and parents on promoting physical activity in primary schools is crucial, especially as physical activity tends to decline early in a child's academic journey (Gužauskas & Šukys, 2021). Research has shown that preschool-age children prefer natural playgrounds, indicating a preference for outdoor and active play environments that can contribute to maintaining physical activity levels (Wardianto, 2023). Involving parents, particularly fathers, in children's physical activity practices through facilitation, modeling, coaching, and encouragement can significantly impact children's engagement in physical activities (Neshteruk et al., 2020). Additionally, the availability of physical activity resources and supportive environments has been found to facilitate children's participation in physical activities after school, underscoring the importance of accessible and engaging spaces for movement(Wright et al., 2019).

Children with autism spectrum disorder (ASD) face unique challenges in engaging in physical activities, emphasizing the need for tailored interventions and familial support to promote active lifestyles among this population (Janković et al., 2021). Similarly, children with cerebral palsy can benefit significantly from increased physical activity, which can enhance their

quality of life and reduce parenting stress, highlighting the multifaceted benefits of physical movement for children with diverse needs (Bremer et al., 2020). Understanding the role of the neighborhood social environment in influencing physical activity among children is crucial, as safe and supportive neighborhoods can positively impact children's activity levels (Vainauskas et al., 2020). In conclusion, amidst the growing prevalence of online games among children in Indonesia, addressing fundamental movement skill challenges requires a multifaceted approach. Encouraging active play, involving parents and teachers in promoting physical activities, creating supportive environments, and considering the unique needs of children with diverse abilities are essential strategies to counteract the sedentary trends observed. By leveraging research insights and implementing targeted interventions, it is possible to mitigate the impact of excessive screen time and foster a culture of active living among Indonesian children.

Conclusion

This research examines the challenges of fundamental movement skills (FMS) in Indonesian children amid the increasing use of online games. The study shows that excessive online gaming leads to decreased physical activity, sedentary behavior, and health issues such as obesity and hypertension. The fundamental movement skills, which are crucial for children's motor, cognitive, social, and emotional development, are hindered. Although structured interventions can improve children's motor skills, research integrating FMS with online gaming technology is still limited. This study emphasizes the important roles of parents and teachers in promoting physical activity through structured interventions and supportive environments. In facing the prevalence of online games, a multifaceted strategy is needed to encourage an active lifestyle and reduce the negative impact of excessive screen time on the health and development of children in Indonesia.

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