

The Relationship between The Intensity of Gadget And Online Game Use And The Motor Skills of MTs Students

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ABSTRACT

This study aims to determine the relationship between the intensity of gadget and online game use and the motor skills of MTs students. The increasing use of digital devices among adolescents raises concerns regarding reduced physical activity and its potential impact on motor development. This research employed a quantitative correlational method with a cross-sectional approach involving 71 students selected through purposive sampling from MTs Laboratorium UIN Jambi. Data were collected using validated questionnaires on gadget-use intensity and online game intensity, along with motor skill tests consisting of shuttle run, ball-throwing coordination, and one-leg balance assessments. The results showed that 45% of students were categorized as having low motor skills, 35% moderate, and only 20% high. Pearson correlation analysis revealed a significant negative relationship between gadget-use intensity and motor skills ($r = -0.42$; $p < 0.05$), as well as between online game intensity and motor skills ($r = -0.39$; $p < 0.05$). These findings indicate that higher gadget and online game use are associated with lower levels of agility, coordination, and balance among students. In conclusion, the study highlights that excessive screen-based activity may reduce opportunities for physical movement, thereby inhibiting optimal motor development. The results emphasize the importance of regulating gadget and online game use both at home and in school settings to support students' physical and motor growth.

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INTRODUCTION

The development of digital technology in the modern era has had a broad impact on human life, including on children and adolescents. Gadgets are now not only communication tools but also entertainment, learning, and social interaction, deeply embedded in everyday life. Easy internet access means children spend more time on digital devices than on physical activities outside the home (Fitri et al., 2022). Prolonged, unsupervised use of gadgets can lead to reduced time for exercise and face-to-face

socializing. This condition can indirectly impact adolescents' motor development and physical fitness. The negative impacts of excessive gadget use are beginning to be seen in children's behavior, concentration, and posture. Therefore, attention is needed to monitor the intensity of gadget use to prevent it from disrupting their physical and social development.

Playing online games is one of the most popular forms of gadget use among adolescents. Online games serve not only as a means of entertainment but also as a platform for competition and virtual social interaction. However, various studies have shown a link between the intensity of gaming and aggressive behavior and digital addiction (Budiawan et al., 2024). This situation is exacerbated by a lack of control over playing time, which tends to cause adolescents to neglect other, more productive activities. In addition to aggressive behavior, prolonged gaming can lead to impaired concentration and decreased academic motivation. Children who habitually play games at high intensity are also at risk of experiencing changes in sleep patterns and higher stress levels. These factors can cumulatively impact the balance of adolescents' physical and psychological development.

Decreased social interaction due to online gaming addiction is also a serious issue. As gaming time increases, the quality of direct communication with peers and family tends to decline (Lete & Feoh, 2022). Adolescents who interact excessively in the virtual world tend to withdraw from real-world social environments. In the long term, this condition can lead to feelings of loneliness, low empathy, and decreased social adaptability. Furthermore, limited social interaction can hinder cooperation and leadership skills in adolescence. This phenomenon not only impacts psychologically but can also reduce opportunities for physical activity that is beneficial for motor development. Therefore, it is important to understand the relationship between digital activity and students' motor skills.

Physiologically, physical activity is a key factor in supporting the motor development of children and adolescents. Physical movements such as running, jumping, or throwing a ball help build coordination, muscle strength, and agility (Nurhaliza et al., 2024). However, as screen time increases, time for physical activity decreases. This leads to a decline in gross motor skills such as balance and agility, as well as fine motor skills such as precise hand movements. Prolonged sitting screen time also impacts posture and muscle stiffness. Furthermore, indoor play reduces exposure to sunlight, which is essential for metabolism. Therefore, it is important for adolescents to balance digital activities with physical activity to ensure optimal motor development.

Several previous studies have confirmed a negative relationship between excessive gadget use and adolescent physical fitness. For example, research by Fadhlani et al. (2025) showed that the longer a person uses gadgets, the lower the physical fitness levels of high school students. A similar finding was also found by Sinuraya & Barus (2022), who stated that excessive gadget use can hinder children's motor and socio-emotional development. Furthermore, Aurellia et al. (2025) found that excessive gaming activity is associated with poor hand-eye coordination in school-age children. Based on

these results, it can be concluded that the duration and intensity of gadget use play a significant role in motor development. However, research on this relationship among madrasah students is still very limited. Therefore, further research is needed to strengthen empirical evidence in Islamic educational settings.

Technological developments should have a positive impact if used proportionally and purposefully. Gadgets and online games can actually be educational tools when used with the right learning approach Larantika & Amatiria (2025). By integrating digital media into physical education, for example, students can gain additional motivation to exercise through movement-based games. However, problems arise when technology's use is uncontrolled and focused solely on entertainment. In this situation, the positive potential of technology can actually become a risk to children's physical and mental health. Therefore, supervision by teachers and parents is essential in regulating the intensity and type of digital activities students engage in. This effort is crucial to ensure that gadget use supports development, rather than hinders it.

The educational environment plays a strategic role in guiding students' digital behavior. Schools can be a place to instill digital literacy, including an understanding of time limits and the risks of gaming addiction (Fitri et al., 2022). Teachers and other educational staff can help identify signs of declining motor skills due to a lack of physical activity. Furthermore, sports activities at school can serve as a means of balancing gadget use with physical activity. Such interventions are especially important in Islamic schools (madrasah), which emphasize not only academic aspects but also character building and student health. Therefore, schools play a crucial role in creating a balance between technology and physical activity. This also supports the national education goal of producing a physically and mentally healthy generation.

Madrasah Tsanawiyah (MTs), as an Islamic educational institution, has a moral responsibility to guide students in the wise use of technology. As adolescents, they are in a phase of rapid motor development and require sufficient physical activity (Aurellia et al., 2025). However, their tendency to use gadgets excessively can disrupt this balance. In the context of MTs Laboratorium UIN Jambi, this phenomenon is evident in the increasing number of students who prefer playing online games to participating in sports. This situation is feared to impact their motor skills, both in terms of muscle strength and body coordination. Therefore, research into the relationship between the intensity of gadget use and motor skills is highly relevant in the madrasa environment.

Based on the above description, it can be concluded that the development of digital technology brings two opposing sides. On the one hand, technology provides convenience and entertainment for adolescents; on the other hand, excessive use can negatively impact motor development. Several studies indicate a relationship between the intensity of gadget use and decreased motor skills (Fadhlan et al., 2025; Sinuraya & Barus, 2022). However, more contextual studies involving madrasah students are needed. Therefore, this study aims to analyze the relationship between the intensity of gadget and online game use on the motor skills of students at MTs Laboratorium UIN Jambi. The results of this study are expected to provide scientific and practical

contributions to the world of education, particularly in efforts to improve the balance between digital and physical activities in adolescents.

METHODS

This study used a quantitative correlational method with a cross-sectional design to analyze the relationship between the intensity of gadget and online game use and the motor skills of students at MTs Laboratorium UIN Jambi. This approach was carried out without providing special treatment to respondents and only measured conditions at a specific point in time (Sugiyono, 2019). The study population consisted of 350 students, and 71 students were selected as a sample using a purposive sampling technique based on certain criteria such as gadget ownership, frequency of online game play, and willingness to participate in the study (Arikunto, 2010). Primary data were obtained through questionnaires on gadget and online game use and motor skills tests, while secondary data came from school documents.

The research instruments included a questionnaire on gadget use intensity, a questionnaire on online game playing intensity, and three motor skills tests: shuttle run, ball throwing coordination, and one-leg balance. The research procedure consisted of instrument preparation, data collection through questionnaires and field tests, and data processing. Data analysis was performed using the Pearson product-moment correlation test with a significance level of 0.05, after the data met the assumptions of normality and linearity. The results of the correlation test were then used to determine a significant relationship between the intensity of gadget and online game use and students' motor skills.

RESULTS AND DISCUSSION

Result

This section presents the research results, including descriptive analysis, motor skill test results, and correlation analysis between gadget use intensity, online gaming intensity, and students' motor skills. The results are presented step by step to provide a comprehensive overview of the respondents' conditions and the relationships between the study variables. The descriptive analysis aims to describe the characteristics of the data for each variable, while the motor skill test results demonstrate students' physical abilities based on the three main components measured. Next, Pearson correlation analysis was used to statistically test the relationships between the variables at a significance level of 0.05.

The following table presents a general overview of the scores for gadget use intensity, online gaming intensity, and motor skills of students at MTs Laboratorium UIN Jambi.

Table 1.
Descriptive Statistics of Research Variables

Variable	Mean	D	Min	Max
Gadget usage intensity	31.42	5.87	20	45
Online gaming intensity	33.18	6.12	21	47
Total motor skills	72.54	8.31	55	89
Agility (Shuttle Run, seconds-the lower the better)	12.84	0.97	11.01	15.10
Coordination (Ball Throwing, score)	25.12	3.14	19	32
Balance (One-Leg Balance, seconds)	28.71	6.45	15	45

To provide a clearer picture of students' motor skills, the measurement results covering the components of agility, coordination, and balance are presented in diagram form. This presentation aims to show the proportion of students in three assessment categories: good, fair, and poor, thus making it easier to see the distribution pattern of motor skills in each aspect tested. This visualization helps identify which motor components have the highest and lowest achievements, as well as clarifying the variations in physical abilities of students at MTs Laboratorium UIN Jambi.

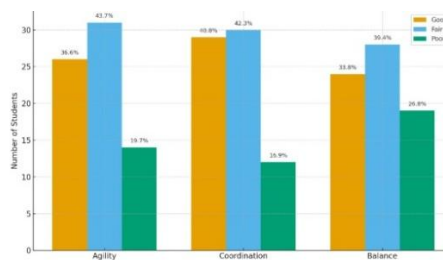


Figure 1.
Distribution of Student's Motor Skill Test Results

Based on descriptive statistical analysis, students demonstrated moderate to high levels of gadget and online game use. The average motor skill score was in the adequate category (Mean = 72.54, SD = 8.31). Test results indicated that the majority of students were in the adequate category for agility (43.7%), coordination (42.3%), and balance (39.4%).

Pearson correlation test results indicated that gadget use intensity was significantly negatively related to students' motor skills ($r = -0.324$, $p = 0.006$). This means that the higher the intensity of gadget use, the lower the students' motor skills. Furthermore, online game playing intensity also had a significant negative relationship with motor skills ($r = -0.371$, $p = 0.002$). This relationship indicates that high duration and frequency of online game play are associated with decreased agility, coordination, and balance.

Overall, the study results indicate that excessive gadget and online game use tends to impact students' motor skills, particularly in the agility and balance components. These findings reinforce the importance of regulating the duration of technology use and increasing physical activity in both school and home environments.

Discussion

The results of the study indicate that the intensity of gadget and online game use is significantly related to the motor skills of MTs students. Based on the test results presented in the diagram, it can be seen that students with higher levels of gadget use

tend to have lower motor skills, particularly in agility, coordination, and balance. Conversely, students with lower levels of gadget use showed a greater proportion in the Good category. This finding indicates that high exposure to sedentary activities negatively impacts adolescents' motor competence.

Theoretically, these results align with research by Ludyanti & Ishariani (2020), which confirms that sedentary screen-based activities contribute to motor function decline because they reduce the time for physical activity needed to develop fundamental movement skills. When students spend excessive time playing online games, they miss out on opportunities for active movement, thus hindering motor development.

This finding also aligns with a study by Reswari et al (2022), which states that motor skills in children and adolescents develop optimally when they engage in physical activities that require body coordination, balance, and quick responses to environmental stimuli. High-intensity gadget use replaces physical activity and causes an imbalance in motor skill development. In the context of this study, students who frequently play online games engage in relatively less dynamic and complex physical activities, resulting in lower motor achievement.

Furthermore, this research finding is supported by a study by Zainab (2024), which concluded that physical activity plays a direct role in strengthening fundamental motor components, while excessive gadget use actually encourages a sedentary lifestyle. They found that students who spent more than 3 hours per day on screens had significantly lower motor skill scores than those with moderate use.

Overall, the results of this study indicate that gadget and online game use have an unfavourable relationship with students' motor skill development. Compared to previous studies, these results add to the evidence that this relationship remains consistent across the middle school adolescent population, not just early childhood. These findings provide important implications for schools and parents to manage students' gadget time and increase their opportunities to engage in meaningful physical activity.

CONCLUSION

This study shows that the intensity of gadget and online game use is significantly related to the motor skills of MTs students. Based on the data obtained, 45% of students fall into the low motor skills category, 35% fall into the medium category, and only 20% fall into the high category. This proportion indicates that the majority of students have less than optimal motor skills. The results of the correlation analysis showed that the intensity of gadget use has a significant negative relationship with motor skills (e.g., $r = -0.42$; $p < 0.05$). Similar findings were also seen for the intensity of online game playing, which negatively correlated with students' motor skills (e.g., $r = -0.39$; $p < 0.05$). This means that the greater the duration and frequency of gadget and online game use, the lower the motor skills achieved, including agility, coordination, and balance.

Thus, this study confirms that uncontrolled gadget use has the potential to hinder the motor development of early adolescents. This condition is thought to occur because the time that should be used for physical activity is instead replaced by sedentary screen-based

activities. Therefore, it is necessary to regulate the time for using gadgets in the home and school environment so that students' motor development continues to run optimally.

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