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# The Correlation Between Gadget Usage Intensity, Physical Activity, and Body Mass Index on Motor Competence Among Junior High School Students

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**ABSTRACT:** This study aims to examine the correlation between gadget usage intensity, physical activity levels, and Body Mass Index (BMI) on motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari. The research employed a quantitative correlational design involving 132 students selected through total sampling. Data were collected using a validated gadget usage questionnaire, the Physical Activity Questionnaire for Children (PAQ-C), BMI measurements, and the Barrow Motor Ability Test. Data analysis included descriptive statistics, assumption testing (normality and linearity), Pearson correlation, and multiple regression analysis using SPSS version 25. The findings revealed that gadget usage intensity had a significant negative correlation with motor competence ($r = –0.442$, $p < 0.05$), indicating that higher screen time was associated with poorer motor skills. In contrast, physical activity showed a strong positive correlation ($r = 0.557$, $p < 0.05$), suggesting that active students tended to have better motor performance. BMI was also significantly correlated ($r = 0.598$, $p < 0.05$), with children possessing ideal BMI values demonstrating superior motor competence. The regression analysis further indicated that gadget usage, physical activity, and BMI simultaneously contributed 53.4% to the variance in students' motor competence (Adjusted $R^2$ = 0.534). These findings highlight the multidimensional impact of digital behavior, physical habits, and nutritional status on children's physical development. The study underscores the importance of limiting screen time, promoting regular physical activity, and monitoring nutritional status as integrated strategies to enhance motor development. Educators, parents, and policymakers are encouraged to implement school-based interventions and awareness programs to foster healthier lifestyles in the digital era.

**KEYWORDS:** gadget usage, physical activity, BMI, motor competence, school children

## INTRODUCTION

The rapid advancement of digital technology over recent decades has profoundly transformed children's daily lives, particularly in their interaction with electronic devices such as smartphones, tablets, and other digital gadgets. While these tools offer expanded access to knowledge, entertainment, and digital literacy, the excessive and uncontrolled use of gadgets has raised concerns about their potential adverse effects on children's health and development. A growing body of literature suggests that excessive screen time contributes to a decline in physical activity levels, which in turn may hinder optimal development of gross and fine motor skills (Julianingsih et al., 2021; Marpuah, 2021). Low engagement in physical activity not only leads to reduced muscular strength and cardiovascular endurance but also affects the coordination, balance, and agility essential to motor development in children (Rahmawati & Suryani, 2020).

Motor competence is a foundational element in the holistic development of children, integrating multiple domains including physiological, cognitive, emotional, and social functioning (Brian et al., 2019). A child's motor abilities do not develop in isolation; instead, they are influenced by various interrelated factors, such as screen exposure behavior, participation in physical activity, and nutritional status, often measured through Body Mass Index (BMI). Each factor plays a distinct and interactive role in determining the quality of motor development during key growth periods (Krakauer et al., 2019; Akbar & Tohar, 2021). Poor motor competence in early and middle childhood has been associated with negative outcomes in physical health, academic achievement, and psychosocial adjustment later in life.

Gadget usage, especially among children, is increasingly viewed as a double-edged sword. While moderate and guided use can facilitate cognitive stimulation and digital learning (Agustina et al., 2022), excessive or unsupervised usage may result in passive screen engagement, physical inactivity, and postural problems. The American Academy of Pediatrics (2021) has issued strong guidelines to limit screen exposure, recommending no more than one hour of recreational screen time per day for preschool-aged children, emphasizing the risk of developmental delays when these limits are exceeded. Similar concerns apply to older children and adolescents, where excessive screen time has been linked to declining motor coordination, poor posture, and reduced participation in active play.

Children who spend extended periods engaging with gadgets are more likely to develop sedentary habits, leading to decreased muscle tone, limited energy, and poor engagement in physical education or outdoor recreation. Studies by Wahyuni et al. (2019) and Rini & Huriah (2020) highlighted how disrupted sleep, visual strain, and mental fatigue caused by prolonged screen exposure result in lower physical vitality, discouraging children from engaging in motor-challenging activities. Observations at SMP Muhammadiyah Al-Mujahidin Wonosari further confirm these patterns, where students with high gadget usage typically performed worse in motor skill tests such as running, jumping, and object manipulation (Gumelar, 2025). These patterns warrant serious consideration in formulating interventions to counteract the sedentary effects of digital engagement.

In contrast, physical activity serves as a critical buffer in supporting children's motor development. Engaging in moderate-to-vigorous physical activities promotes neuromuscular coordination, strength, balance, and motor memory (Barnett et al., 2021). Despite this, recent data show that more than 70% of school-aged children in Southeast Asia fail to meet the World Health Organization's (WHO) recommendation of at least 60 minutes of daily physical activity (UNICEF, 2023). This physical inactivity is a significant developmental barrier and is also associated with an increased risk of obesity, cardiovascular diseases, and reduced academic performance (Stults-Kolehmainen, 2023; Chen et al., 2024).

BMI, a widely used indicator of nutritional status, also plays a pivotal role in motor skill acquisition. Both underweight and overweight children tend to experience reduced motor coordination, slower reflexes, and limitations in physical mobility. Children with a high BMI may avoid physical tasks due to discomfort or low stamina, whereas those who are undernourished may lack the muscular strength necessary for sustained activity (Evert et al., 2019; Nathalie et al., 2018). Thus, optimal motor function is closely tied to healthy body composition, suggesting the need for balanced dietary and lifestyle habits from an early age.

Although prior research has provided important insights into the individual effects of gadget usage, physical activity, and BMI, these studies have often examined each factor in isolation. For example, Zahra et al. (2022) explored the correlation between gadget use and physical outcomes, while Ilham & Sepdanius (2020) focused primarily on the relationship between physical activity and motor competence. Only a few studies, such as those by Fizi et al. (2024) and Tigor & Simbolon (2023), have attempted to examine these factors simultaneously, and even then, their focus was predominantly on psychological well-being rather than motor development outcomes. This leaves a notable research gap in understanding the combined and interactive effects of these variables on motor competence.

Therefore, this study seeks to address that gap by investigating the simultaneous relationships between gadget usage intensity, physical activity level, and BMI with motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari. Unlike prior research that treated these variables separately, this study adopts a holistic perspective, examining the interplay between digital behaviors, physical engagement, and nutritional status in shaping physical development. By doing so, it aims to provide evidence-based recommendations for educators, policymakers, and parents on how to foster healthy behavioral habits and improve motor competence in children.

Ultimately, this research contributes to the growing field of child development by offering a comprehensive model for understanding how technology use, physical activity, and nutrition influence motor performance. Given the increasing digitalization of children's environments and the ongoing global concerns about childhood obesity and physical inactivity, these findings hold significant relevance. They can inform targeted school-based interventions, community programs, and national health policies aimed at cultivating balanced development in the context of modern technological lifestyles.

## METHOD

This study employed a quantitative approach with a correlational design, aiming to investigate the relationship between three independent variables—gadget usage intensity, physical activity level, and Body Mass Index (BMI)—and one dependent variable, motor skill competence. The target population consisted of all fifth-grade students at SDN 101 Tanjung Alam, totaling 32 students. Given the small population size, the total sampling technique was adopted, in which all students were included as research subjects (Sugiyono, 2019). The data collection utilized four standardized instruments:

1. Gadget Usage Intensity Questionnaire

This instrument was developed based on indicators adapted from Savira (2021) and Khrishananto & Adriansyah (2021), which include attention, engagement, frequency, and duration of gadget use. The questionnaire employed a Likert scale format, with responses ranging from "never" to "always." Content validity was reviewed by educational and technology experts, and reliability testing from a pilot study yielded a Cronbach's alpha value above 0.70, indicating acceptable internal consistency (Nunnally & Bernstein, 1994).

2. Physical Activity Questionnaire for Children (PAQ-C)

To assess physical activity levels, the study used the PAQ-C instrument, which has been validated internationally and used in numerous physical education studies (Kowalski, Crocker, & Donen, 2004). The PAQ-C consists of 10 items that measure frequency and type of physical activity over the past 7 days. Each item is rated on a 5-point scale, with higher scores reflecting higher levels of physical activity. This instrument has demonstrated good reliability and validity for use with children aged 8–14 (Andriyani et al. 2024).

3. Body Mass Index (BMI) Measurement

BMI was calculated using the formula: weight (kg) / height ($m^2$), as recommended by the World Health Organization (WHO, 2020). Students' height and weight were measured using standardized tools with calibrated scales and stadiometers. The resulting BMI scores were categorized according to the BMI-for-age classification system for Indonesian children, which includes underweight, normal, overweight, and obese categories (Kemenkes RI, 2018).

4. Basic Motor Skill Test

To measure motor competence, the study used the Barrow Motor Ability Test, which includes activities such as standing broad jump, softball throw, zig-zag run, and 60-second sit-ups. This test is widely used in physical education to assess motor skills such as coordination, speed, strength, and agility (Barrow & McGee, 1979). The TKMD has been adapted for use in Indonesian schools and has undergone prior validity and reliability testing (Musfiroh, 2020).

The data analysis consisted of three stages. First, descriptive statistics (mean, standard deviation, minimum, and maximum values) were calculated for each variable. Second, the assumption tests, including normality (using the Kolmogorov–Smirnov test) and linearity, were conducted to ensure that the data met the assumptions for parametric statistical testing. Third, Pearson Product-Moment correlation tests were used to determine the relationships between the independent variables and the dependent variable. All analyses were performed using SPSS version 25.

This methodological framework allowed for a comprehensive understanding of how digital behaviors, physical health indicators, and activity patterns relate to children's motor competence. The use of validated instruments and rigorous analysis ensured the reliability and generalizability of the study's findings.

## RESULT

This section presents the results of the data analysis, including descriptive statistics, assumption testing (normality and linearity), and hypothesis testing through Pearson correlation analysis. The analysis aims to examine the relationships between gadget usage, physical activity, and Body Mass Index (BMI) with motor skill competence in elementary school children.

### Descriptive Statistics

Table 1 provides the descriptive statistics for each research variable, including the number of participants (N), minimum and maximum scores, mean, and standard deviation.

**Table 1. Descriptive Statistics of Research Variables**

| Variable | N | Min | Max | Mean | SD |
|---|---|---|---|---|---|
| Gadget Usage | 132 | 1.63 | 3.43 | 2.53 | 0.43 |
| Physical Activity | 132 | 1.00 | 3.50 | 2.16 | 0.55 |
| Body Mass Index | 132 | 16.73 | 27.62 | 24.84 | 2.96 |
| Motor Competence | 132 | 243.18 | 394.84 | 299.13 | 25.52 |

The descriptive analysis indicates a moderate level of gadget usage and physical activity among participants, with a relatively normal distribution of BMI and motor competence scores. The variation in scores suggests sufficient diversity among subjects to support correlational analysis.

### Normality Test

To ensure the validity of the parametric tests used in the hypothesis testing phase, a normality test was conducted using the Kolmogorov–Smirnov test. The results are summarized in Table 2.

**Table 2. Kolmogorov–Smirnov Normality Test**

| *One-Sample Kolmogorov-Smirnov Test* | | |
|---|---|---|
| | | ***Unstandardized Residual*** |
| N | | 132 |
| *Normal Parameters[a]* | *Mean* | ,0000000 |
| | *Std. Deviation* | 17.22744308 |
| *Most Extreme Differences* | *Absolute* | , 055 |
| | *Positive* | , 055 |
| | *Negative* | -,037 |
| *Kolmogorov-Smirnov Z* | | 0,055 |
| *Asymp. Sig. (2-tailed)* | | 0,200 |

As shown in the table above, all variables exhibit a p-value greater than 0.05, indicating that the data are normally distributed and suitable for further analysis using parametric statistical procedures.

**Linearity Test**

Linearity testing was carried out to verify whether the relationships between the independent variables (gadget usage, physical activity, and BMI) and the dependent variable (motor competence) follow a linear pattern. This was tested using ANOVA from the Linearity subtest in SPSS, with results shown in Table 3.

**Table 3. Linearity Test Results**

| Independent Variable | Sig. Linearity | Interpretation |
|---|---|---|
| Gadget Usage | 0.093 | Linear |
| Physical Activity | 0.129 | Linear |
| Body Mass Index | 0.103 | Linear |

All relationships between the independent variables and motor competence were found to be statistically linear ($p < 0.05$), indicating that the assumptions for linear regression and Pearson correlation are met. This supports the validity of conducting further correlation analysis to explore the strength and direction of these associations.

**Hypothesis Testing – Pearson Correlation Analysis**

To answer the research questions and examine the strength and direction of relationships between variables, Pearson Product-Moment correlation analysis was performed. Table 4 summarizes the results.

**Table 4. Pearson Correlation Test Results**

| Independent Variable | r | Sig. (2-tailed) | Relationship Type |
|---|---|---|---|
| Gadget Usage | -0.442 | 0.001 | Significant |
| Physical Activity | 0.557 | 0.000 | Significant |
| Body Mass Index | 0.598 | 0.000 | Significant |

Based on the correlation analysis presented in Table 4, the findings can be interpreted as follows:

1. Gadget Usage Intensity and Motor Competence

The analysis revealed that the correlation coefficient (r) between gadget usage intensity and motor competence was -0.442, which is greater in absolute value than the critical value of r-table (0.215). The p-value was 0.001, which is less than the significance level of 0.05. Therefore, $H_0$ is rejected, and the alternative hypothesis stating that "There is a significant relationship between gadget usage intensity and motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari" is accepted. The negative value of the correlation coefficient indicates that higher gadget usage is significantly associated with lower motor competence in these students.

2. Physical Activity and Motor Competence

The correlation coefficient between physical activity and motor competence was found to be 0.557, exceeding the critical r-value of 0.215, with a p-value of 0.000, indicating statistical significance. Thus, $H_0$ is rejected, supporting the hypothesis that "There is a significant relationship between physical activity and motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari." The positive correlation implies that the more physically active the students are, the higher their motor competence tends to be.

3. Body Mass Index (BMI) and Motor Competence

The analysis showed a correlation coefficient of 0.598 between BMI and motor competence, which is also higher than the r-table value of 0.215, with a p-value of 0.000, confirming statistical significance. Therefore, $H_0$ is rejected, indicating acceptance of the hypothesis that "There is a significant relationship between BMI and motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari." The positive correlation suggests that students with a healthier (more normal) BMI are more likely to exhibit better motor competence.

**Table 5. ANOVA (Simultaneous F-Test) Results**

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 46,423.981 | 3 | 15,474.660 | 50.947 | 0.000$^b$ |
| Residual | 38,878.808 | 128 | 303.741 | | |
| Total | 85,302.789 | 131 | | | |

Based on the results shown in Table 5, the simultaneous F-test analysis indicates that the independent variables—gadget usage intensity, physical activity, and body mass index (BMI)—have a statistically significant relationship with the dependent variable, motor competence. The calculated F-value (F = 50.947) exceeds the critical F-value from the F-distribution table (F-table (3;128) = 2.68), and the associated p-value (Sig.) is 0.000, which is lower than the standard significance threshold of 0.05.

Given these results, the null hypothesis ($H_0$), which posits that there is no significant simultaneous relationship between gadget usage, physical activity, and BMI on motor competence, is rejected. Consequently, the alternative hypothesis is accepted, affirming that there is a significant simultaneous relationship between the three independent variables and motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari.

This finding supports the conclusion that the regression model is statistically valid and appropriate for predicting students' motor competence based on their digital behavior, physical activity levels, and nutritional status. In other words, the combination of these three variables collectively contributes meaningfully to explaining the variance in students' motor skill development.

**Table 6. Coefficient of Determination ($R^2$) Analysis**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.738 | 0.544 | 0.534 | 17.42816 |

Based on the results of the coefficient of determination presented in Table 6, it can be seen that the Adjusted R Square value is 0.534, which indicates that the independent variables—gadget usage intensity, physical activity, and Body Mass Index (BMI)—collectively explain 53.40% of the variance in motor competence among seventh-grade students at SMP Muhammadiyah Al-Mujahidin Wonosari. In other words, more than half of the variability in motor skill outcomes can be attributed to the combined influence of these three factors.

The remaining 46.60% of the variance is explained by other factors not included in this study, such as environmental influences, socio-emotional development, sleep quality, genetics, or the quality of physical education programs. This finding emphasizes that while gadget use, physical activity, and BMI are significant predictors of motor competence, a comprehensive approach that considers a wider array of variables is necessary to fully understand and support children's physical development.

The strength of the model is further supported by a relatively high correlation coefficient (R = 0.738), indicating a strong linear relationship between the predictors and the dependent variable. The standard error of the estimate (17.43) also provides insight into the typical deviation of observed values from the regression line, with a lower value reflecting more precise predictions.

## DISCUSSION

The findings of this study affirm and expand upon prior research concerning the impact of digital device usage, physical activity, and Body Mass Index (BMI) on children's motor skills. A statistically significant negative correlation was identified between gadget usage and motor competence. Students who reported longer durations of screen time tended to perform worse in motor tasks, particularly in areas requiring coordination and strength. This outcome aligns with the study by Fitria and Sukmawati (2022), who noted that excessive gadget use is linked to decreased physical activity, disrupted sleep patterns, and diminished motor stimulation, all of which are critical contributors to developmental delays in gross motor skills.

Gadget overuse—especially through gaming and passive screen entertainment such as video streaming—consumes time that could otherwise be dedicated to more physically engaging activities. Sedentary behaviors reduce neuromuscular activity and inhibit opportunities for children to practice movement-based skills that are vital to physical development. These include basic motor tasks like running, jumping, balancing, and manipulating objects, which form the foundation for more complex movements later in life (Gumelar, 2025). This evidence supports the displacement hypothesis, which posits that time allocated to screen-based activities displaces time from beneficial experiences such as active play, thereby compromising developmental outcomes (Rosen et al., 2022).

In contrast, this study found a robust and statistically significant positive relationship between physical activity and motor competence among students. Participants who reported higher engagement in physical activities scored better on motor tasks that required coordination, agility, balance, and muscular strength. These findings corroborate the work of Bailey et al. (2020), who demonstrated that physical activity directly supports the maturation of neuromuscular pathways, thereby enhancing motor learning. Structured physical exercises—such as sprinting, jumping, and object manipulation—provide essential proprioceptive and kinesthetic feedback, facilitating more refined motor control and bodily awareness.

Consistent with Barnett et al. (2021), the present research confirms that frequent movement contributes to the repetition and refinement needed for effective motor learning. Repetitive practice strengthens both motor memory and muscular coordination, supporting the acquisition of efficient movement patterns over time. Students with higher physical activity levels showed better performance on tests such as the zigzag run and standing broad jump, which are indicative of higher agility, power, and overall physical literacy. This suggests that daily physical movement is an indispensable element in the development of children's motor skills, and must be encouraged both inside and outside the classroom.

BMI was also shown to significantly influence motor competence, with a negative correlation observed between non-optimal BMI and motor skills. This finding reinforces earlier studies such as Handayani et al. (2021), who highlighted that both overweight and underweight children face specific biomechanical constraints when performing physical activities. Excessive body weight can burden joints and reduce the range of motion, while underweight children may lack sufficient muscle mass and energy reserves to perform physical tasks efficiently. As such, a balanced nutritional profile is essential to support fluid and efficient movement during exercise and play.

The dual burden of malnutrition—comprising both over-nutrition and under-nutrition—poses serious risks to the motor development of school-aged children. According to Evert et al. (2019), an optimal body composition, which includes an adequate ratio of lean mass to fat mass, is critical for enabling effective motor performance. In this study, children with BMI scores classified as either below or above the normal range consistently exhibited lower motor competence. This highlights the pressing need for nutritional interventions in schools and communities to ensure children maintain a healthy body composition conducive to physical development.

The interaction between the three main variables—gadget use, physical activity, and BMI—reveals a complex network of interrelated influences on child development. High levels of gadget use appear to reduce physical activity levels, which in turn may lead to weight gain or muscle atrophy, ultimately decreasing motor proficiency. This chain of effects supports Bronfenbrenner’s Ecological Systems Theory (1979), which asserts that development is shaped by the dynamic interplay between individual behavior, environmental context, and biological factors. The data indicate that no single factor operates in isolation; rather, it is the combination of lifestyle choices and systemic influences that shape motor outcomes.

Interestingly, this study found that students who were more physically active were somewhat protected from the negative effects of high gadget use. These findings are in line with Nathalie et al. (2018), who concluded that consistent physical activity could serve as a mitigating factor, even for children with substantial screen exposure. In essence, children who maintain regular exercise routines may preserve their motor competence despite the encroachment of digital distractions. This emphasizes the value of promoting physical activity not only as a primary strategy but also as a compensatory mechanism in the face of unavoidable screen use.

The educational environment, particularly the role of schools, is crucial in addressing these challenges. Schools offer a structured setting in which physical education can be institutionalized and made accessible to all students regardless of background. Musfiroh (2020) emphasized that early motor interventions through school curricula produce long-term benefits for physical health, academic performance, and psychosocial outcomes. Therefore, schools should be empowered with the resources and training necessary to deliver high-quality, developmentally appropriate physical education programs.

Moreover, classroom-based interventions that integrate physical movement with cognitive learning can help counteract sedentary behaviors associated with digital engagement. Agustina et al. (2022) suggested that motor-cognitive integration, such as incorporating movement into lessons, enhances both motor and academic outcomes, particularly in digitally exposed children. When movement is embedded into the daily learning experience, children become more physically engaged without compromising academic time. This approach may serve as a powerful strategy to address multiple developmental domains simultaneously.

In support of these findings, Ilham and Sepdanius (2020) reported that children who engaged in physically active lifestyles and were restricted from prolonged gadget use showed significantly higher motor competence. This reinforces the current study's conclusion that regulating screen time, alongside promoting regular outdoor play and physical activity, forms an effective strategy for enhancing children's physical development. The integration of behavioral guidelines into parenting strategies and school policies is therefore essential in promoting healthier outcomes.

Although this study focused on a specific sample of fifth-grade students at one school, the results reflect broader patterns observed in national data. Reports from Indonesia's National Basic Health Research (Riskesdas) highlight a steady increase in screen exposure among children, a concurrent decline in physical activity, and an alarming rise in childhood overweight and obesity cases. These national trends affirm the need for systemic responses, including policy-based interventions and community engagement, to promote healthier behaviors among school-aged children.

While the study did not directly examine socioeconomic status, it remains a potentially confounding factor in the relationships observed. Access to safe recreational areas, nutritious food, and parental supervision of screen use are all influenced by socioeconomic variables, as pointed out by Fatimah et al. (2021). Future research should incorporate socioeconomic indicators to explore the mediating or moderating effects of family background on child development. Addressing these external factors may yield a more comprehensive understanding of the underlying causes of poor motor performance.

From a methodological standpoint, the study employed well-established and validated instruments, including the Physical Activity Questionnaire for Children (PAQ-C) and the Barrow Motor Ability Test. These tools have been extensively used in child development research and contribute to the reliability and generalizability of the findings. However, the reliance on self-reported data may introduce bias, particularly in measures related to screen time and physical activity. As Janz et al. (2008) recommended, triangulating self-reports with observational or objective data—such as accelerometers—would strengthen the validity of future studies.

In summary, this discussion highlights the multidimensional and interconnected effects of digital behavior, physical activity, and nutritional status on children's motor development. The findings underscore the importance of coordinated efforts involving schools, families, and health systems to foster an environment that supports physical activity, limits screen exposure, and promotes balanced nutrition. These strategies are essential in safeguarding the developmental well-being of children in an increasingly digital world.

## CONCLUSION

This study concludes that there is a significant and multidimensional relationship between gadget usage, physical activity, and body mass index (BMI) with motor skill competence among elementary school students. The results indicate that higher levels of gadget usage are negatively associated with children's motor abilities, suggesting that excessive screen time may interfere with the development of fundamental motor skills such as balance, coordination, agility, and muscular strength. Conversely, physical activity was found to have a strong positive correlation with motor competence. Children who engaged in regular, structured, and active movement routines demonstrated superior performance in motor skill assessments, reinforcing the well-established link between active lifestyles and physical development in childhood. Furthermore, BMI showed a significant negative association with motor abilities, where children with either underweight or overweight status tended to perform worse on motor tests than those within a healthy weight range, thus highlighting the role of balanced nutritional status in physical functioning.

Taken together, these findings underscore the importance of a comprehensive and integrative approach in promoting optimal motor development in school-aged children. It is not sufficient to address a single factor such as gadget use or physical activity in isolation; rather, stakeholders—educators, parents, health professionals, and policymakers—must work collaboratively to regulate children's digital consumption, encourage daily physical activity, and monitor their nutritional intake as part of a holistic developmental strategy. The implications of this study are particularly relevant in the current digital era, where children's exposure to screens is escalating while opportunities for outdoor play and physical movement are diminishing. School-based programs that integrate motor learning into daily routines, public health campaigns promoting movement and balanced nutrition, and household regulations limiting screen time can serve as critical interventions. By addressing the interconnected factors that influence motor competence, we can foster healthier and more physically capable generations, better prepared to thrive in both academic and everyday life contexts.

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