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GADGET-USE INTENSITY, EXERCISE MOTIVATION, AND PHYSICAL FITNESS AMONG STUDENTS AT MTS HIDAYATUL MUHSININ

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ABSTRACT

This study aimed to describe the profile of gadget-use intensity, exercise motivation, and physical fitness among students at MTs Hidayatul Muhsinin in the 2024/2025 academic year. The study used a descriptive quantitative design involving 50 students selected through purposive sampling. Gadget-use intensity was measured using an adapted smartphone-use intensity questionnaire based on the Smartphone Addiction Scale-Short Version framework, exercise motivation was assessed using an 11-item final questionnaire adapted from sports-motivation research, and physical fitness was profiled using the Tes Kebugaran Pelajar Nusantara (TKPN). Questionnaire data were available for 50 students, while complete TKPN records were available for 48 students because two students had incomplete fitness-test records. The results showed that gadget-use intensity was high (mean = 51.40; SD = 5.58) and exercise motivation was also high (mean = 44.66; SD = 4.39). Based on complete TKPN records, the mean body mass index was 19.78 kg/m2, sit-up performance was 20.15 repetitions, V-sit-and-reach was 5.06 cm, squat thrust was 7.21 repetitions, and PACER was 12.69 laps. The category distribution showed that all respondents were classified in the high category for gadget-use intensity and exercise motivation, while physical fitness was more varied, especially in PACER and squat thrust results. These findings should be interpreted as descriptive profiles rather than evidence of causal impact. The study suggests that schools and families need to regulate gadget use, strengthen routine physical activity, and use technology constructively to support students' active lifestyles..

keywords: gadget-use intensity, exercise motivation, physical fitness, adolescents, TKPN

INTRODUCTION

Technological development has transformed the daily routines of adolescents, especially through the widespread use of smartphones and other digital devices. In school-age populations, technology creates two possibilities. On the one hand, excessive

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screen exposure may increase sedentary behaviour and reduce time spent in active movement. On the other hand, digital tools such as fitness applications, activity trackers, and exercise videos can support active lifestyles when they are used intentionally. The World Health Organization (2020) emphasises that children and adolescents should accumulate sufficient daily physical activity and minimise excessive sedentary behaviour to maintain health and physical function.

Current screen-time evidence shows that the relationship between gadget exposure and movement is complex. Objective monitoring among children and adolescents aged 10-15 years found that smartphone screen time was not directly associated with physical activity, whereas large adolescent fitness research indicates that higher physical activity and lower screen-based sedentary behaviour tend to be associated with better physical fitness (Dahlgren et al., 2021; Dong et al., 2021). Therefore, gadget-use intensity should be understood not only as duration of use, but also as part of a wider daily routine that may displace, coexist with, or be integrated into active behaviours.

Recent studies reinforce concerns about excessive smartphone use. Problematic smartphone dependence has been associated with poorer physical health, lower physical activity, and weaker health-related outcomes among adolescents, although leisure physical activity may buffer some of these risks (Zhang et al., 2024). Indonesian school-based studies similarly report that high gadget use often coexists with only moderate or low physical fitness among students (Firdaus et al., 2025; Fadhlan et al., 2025). These findings indicate that unmanaged gadget use may reduce movement opportunities if it is not balanced with structured activity.

Broader recent evidence also supports caution. A systematic review and meta-analysis found a negative relationship between physical activity and mobile phone addiction among adolescents and young adults, while a later meta-analysis reported that smartphone addiction was associated with higher odds of reduced physical activity (Xiao et al., 2022; Nambirajan et al., 2025). In addition, nationally representative teen data show that high non-schoolwork screen time is associated with infrequent physical activity, infrequent strength training, and irregular sleep routines (Zablotsky et al., 2025). These findings strengthen the need to position gadget use as a school-health concern rather than merely as a communication habit.

At the same time, technology should not be viewed only as a threat. Digital and wearable technologies can improve self-monitoring, adherence, and autonomous motivation for exercise in children and adolescents when they are designed and implemented appropriately (Au et al., 2024; Wang et al., 2025). Motivation toward physical activity is also closely related to healthy lifestyle habits and can be strengthened

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by supportive educational environments (Cachon-Zagalaz et al., 2023). From a self-determination perspective, students are more likely to maintain physical activity when they experience autonomy, competence, and social support (Deci & Ryan, 2000). Therefore, the key issue is not technology itself, but how technology is regulated and integrated into students' routines.

This constructive interpretation is supported by recent physical-education and intervention studies. Smartphone applications have been discussed as instructional tools for promoting leisure-time physical activity from physical education, and exercise interventions have shown potential for reducing mobile phone addiction among adolescents when they are structured and sustained (Gil-Espinosa et al., 2022; Li et al., 2023). Thus, schools can move beyond prohibition by guiding students to use technology for activity goals, self-monitoring, and healthy behaviour formation.

MTs Hidayatul Muhsinin is a relevant setting for this issue because students are increasingly exposed to gadgets while the school continues to encourage physical education and healthy activity habits. However, the available school-level evidence is still limited to descriptive information. The original problem was framed as the impact of technological development, but the available data consisted of descriptive questionnaire and TKPN outputs. Consequently, the present manuscript is positioned as a descriptive profile rather than an impact or causal study.

The research gap lies in the limited descriptive evidence on how gadget-use intensity, exercise motivation, and physical fitness appear together among MTs students in a local school context. The novelty of this study is its use of gadget-use intensity, exercise motivation, and TKPN-based physical fitness data as an initial school-health profile. Therefore, this study aimed to describe gadget-use intensity, exercise motivation, and physical fitness among students at MTs Hidayatul Muhsinin in the 2024/2025 academic year. No causal hypothesis was proposed because the design was descriptive.

METHOD

Research design and setting

This study used a descriptive quantitative design. This design was selected because the study aimed to describe the profile of gadget-use intensity, exercise motivation, and physical fitness among students, not to test causal effects or predictive relationships. Therefore, the study focused on presenting the distribution, mean scores, and category profiles of each variable.

The school was selected because students in this context were increasingly exposed to gadget use while also participating in physical education and school-based physical activity. The descriptive design allowed the researcher to obtain an initial profile of

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students' digital behaviour, exercise motivation, and physical fitness condition in the school setting.

Because this study did not involve experimental treatment, the findings should not be interpreted as evidence of impact, effect, or causal influence. The terms profile, describe, and category distribution were used to maintain methodological accuracy.

Informants and sampling

The population of this study consisted of students at MTs Hidayatul Muhsinin. A total of 50 students were selected as respondents using purposive sampling. This sampling technique was used because the researcher selected students who met the criteria required for questionnaire completion and physical fitness testing.

The inclusion criteria were: (1) registered as an active student at MTs Hidayatul Muhsinin; (2) present during data collection; (3) willing to complete the research questionnaires; and (4) physically able to participate in the Tes Kebugaran Pelajar Nusantara (TKPN). Students were excluded if they were absent during data collection, had medical restrictions, or had incomplete data records.

Questionnaire data were obtained from 50 students. However, complete TKPN data were available for 48 students because two students did not complete all fitness-test components. Therefore, the analysis of gadget-use intensity and exercise motivation used 50 respondents, while the physical fitness profile was based on 48 complete records.

Table 1. Participant and Data Coverage

Component	Number of Students	Sampling Technique	Data Status
Gadget-use intensity	50	Purposive sampling	Complete questionnaire data
Exercise motivation	50	Purposive sampling	Complete questionnaire data
Physical fitness	48	Purposive sampling	Complete TKPN records

Instruments and Scoring

Gadget-use intensity was measured using an adapted smartphone-use intensity questionnaire based on the Smartphone Addiction Scale-Short Version framework. The questionnaire was used to describe the intensity of students' gadget use. The available dataset showed a score range from 40 to 70, with higher scores indicating higher gadget-use intensity. Because the scoring range did not fully follow the original SAS-SV scoring system, the instrument was described as an adapted gadget-use intensity questionnaire.

Exercise motivation was measured using an 11-item exercise motivation questionnaire adapted from sports-motivation research and student exercise motivation

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surveys. The questionnaire measured students' interest in exercise, perceived benefits of exercise, willingness to participate, persistence, and social support. Each item used a Likert-type response scale, and higher total scores indicated stronger exercise motivation.

Physical fitness was measured using the Tes Kebugaran Pelajar Nusantara (TKPN). The TKPN components included body mass index, sit-up, V-sit-and-reach, squat thrust, and PACER. Body mass index was calculated from students' body weight and height. Sit-up was used to describe abdominal muscular endurance, V-sit-and-reach was used to assess flexibility, squat thrust was used to describe agility and dynamic endurance, and PACER was used to describe cardiorespiratory endurance.

Table 2. Research Instruments

Variable	Instrument	Measurement Focus	Score Interpretation
Gadget-use intensity	Adapted smartphone-use intensity questionnaire	Intensity of students' gadget use	Higher score indicates higher gadget-use intensity
Exercise motivation	11-item exercise motivation questionnaire	Interest, willingness, persistence, benefit perception, and social support	Higher score indicates stronger exercise motivation
Physical fitness	Tes Kebugaran Pelajar Nusantara (TKPN)	BMI, sit-up, V-sit-and-reach, squat thrust, and PACER	Higher performance scores generally indicate better fitness, except BMI which must be interpreted by category

Data Collection Procedure

Data collection was conducted in several stages. First, the researcher coordinated with the school to obtain permission and determine the data collection schedule. Second, the researcher identified students who met the inclusion criteria. Third, students completed the gadget-use intensity and exercise motivation questionnaires under researcher supervision to ensure that the items were understood properly.

After questionnaire completion, students participated in the TKPN physical fitness test. Before the test, students received instructions, demonstrations, and a standardized warm-up. The test was conducted in the school setting with assistance from the physical education teacher. Each TKPN component was administered using the same instruction and recording procedure to maintain consistency.

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Safety was considered during the physical fitness test. Students were allowed to rest between test components, and those who experienced discomfort or physical limitations were not forced to continue. The researcher recorded the results of each completed TKPN component. Because two students had incomplete fitness-test records, only 48 complete TKPN data were included in the physical fitness analysis.

Data analysis and trustworthiness

Data were analyzed using descriptive statistics. The analysis included frequency, percentage, minimum score, maximum score, mean, standard deviation, and category distribution. Gadget-use intensity and exercise motivation were analyzed based on questionnaire scores from 50 students. Physical fitness was analyzed based on complete TKPN data from 48 students.

The category distribution was used to describe how students were classified in each variable. Gadget-use intensity and exercise motivation were categorized based on the scoring guideline used in the source data. Physical fitness was described using TKPN component scores, including body mass index, sit-up, V-sit-and-reach, squat thrust, and PACER.

No correlation, regression, or causal analysis was conducted because the study used a descriptive design and the available data were intended to present a profile rather than test relationships among variables. Therefore, the interpretation of the findings was limited to describing the condition of gadget-use intensity, exercise motivation, and physical fitness among students at MTs Hidayatul Muhsinin.

Ethical Consideration and Data Trustworthiness

The study was conducted with school permission and teacher supervision. Students were informed about the purpose of data collection, and their participation was voluntary. The confidentiality of student responses and test results was maintained by presenting the data in aggregate form. To support data trustworthiness, questionnaire administration was supervised directly by the researcher, and TKPN testing was conducted using clear instructions, demonstration, and consistent recording procedures. The involvement of the physical education teacher helped ensure that the fitness-test procedure was appropriate for the school context and safe for students.

RESULTS AND DISCUSSION

Results

The descriptive findings indicate that gadget-use intensity was consistently high across the sample. Exercise motivation was also high, showing that students reported a strong

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willingness to engage in sport and physical activity. However, the physical fitness profile was more varied, suggesting that motivation alone should not be assumed to guarantee uniform fitness outcomes.

Table 3. Descriptive Statistics of Gadget-Use Intensity and Exercise Motivation

Variable	N	Minimum	Maximum	Mean	SD	Theoretical / observed note
Gadget-use intensity	50	40	70	51.40	5.58	Observed score range in dataset = 40-70
Exercise motivation	50	34	55	44.66	4.39	Consistent with 11-item Likert score range

Table 4. Category Distribution of Gadget-Use Intensity and Exercise Motivation

Variable	Category	Frequency	Percentage	Interpretive note
Gadget-use intensity	High	50	100%	All students were classified as high based on source cut-off
Exercise motivation	High	50	100%	All students were classified as high based on source cut-off

Table 4 should be interpreted carefully. The placement of all students in the high category may indicate that gadget exposure and exercise motivation were indeed high in this school context. However, it may also reflect a cut-off that was not sensitive enough to differentiate levels within the sample. Therefore, the continuous mean and standard deviation in Table 3 are important for interpreting the data.

Table 4. Physical Fitness Profile Based on Complete TKPN Records

Component	n	Minimum	Maximum	Mean	SD	Interpretive focus
Body mass index (kg/m2)	48	15.8	27.4	19.78	2.60	Average BMI profile
Sit-up (repetitions)	48	5	45	20.15	10.36	Muscular endurance
V-sit-and-reach (cm)	48	2	8	5.06	1.64	Flexibility
Squat thrust (repetitions)	48	2	17	7.21	3.31	Agility / dynamic endurance
PACER (laps)	48	4	20	12.69	4.03	Cardiorespiratory endurance

Table 5. Available Category Summary of TKPN Components (n = 48)

Component	Category / description	Frequency	Percentage	Note
BMI	Mean = 19.78 kg/m2	-	-	Frequency categories were not available in the source dataset
Sit-up	Mean = 20.15 repetitions	-	-	Frequency categories were not available in the source dataset
V-sit-and-reach	Mean = 5.06 cm	-	-	Frequency categories were not available in the source dataset
PACER	Very low-low	9	18.8%	Available category distribution
PACER	Moderate	18	37.5%	Available category distribution

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PACER	Good-very good	21	43.8%	Available category distribution
Squat thrust	Very low	9	18.8%	Available category distribution
Squat thrust	Low	20	41.7%	Available category distribution
Squat thrust	Moderate to very good	19	39.6%	Available category distribution

The TKPN results show that the students did not have a uniform fitness profile. PACER results were distributed from very low-low to good-very good categories, while squat thrust results showed that 60.5% of students were in the very low or low categories. These findings suggest that some students may need more structured activity, especially activities targeting agility, dynamic endurance, and cardiorespiratory fitness.

Discussion

The first empirical finding is the uniformly high gadget-use intensity. This suggests that digital technology is embedded in the daily lives of students at MTs Hidayatul Muhsinin. This finding is consistent with broader evidence showing that smartphones have become a common part of adolescent life and can shape health behaviours in both beneficial and harmful ways (Juana et al., 2024; Zhang et al., 2024). However, because the present study is descriptive, this finding should not be interpreted as proof that gadget use causes changes in motivation or fitness.

The second finding is that students also showed high exercise motivation. This indicates that strong exposure to gadgets does not automatically mean that students report low willingness to exercise. Nevertheless, this statement is descriptive. The study did not test whether gadget-use intensity and exercise motivation were statistically related. The finding can be understood through the perspective of self-determination theory, which explains that motivation is shaped by autonomy, competence, and social support (Deci & Ryan, 2000). In school contexts, students may still feel motivated to exercise when teachers, peers, and school activities provide supportive conditions.

The third finding is that the physical fitness profile was mixed. Although motivation scores were high, several TKPN components were still concentrated in low-to-moderate categories, especially squat thrust and part of the PACER results. This pattern suggests that motivation may not always be translated into sufficient movement practice. Possible explanations include limited opportunities for regular exercise, high sedentary time, school facilities, gender differences, nutritional status, previous sport experience, and family support. These factors were not measured in the present study and should be included in future research.

The findings are supported by previous studies showing that high gadget use may coexist with only moderate or low physical fitness outcomes (Firdaus et al., 2025; Fadhlan et al., 2025). At the same time, technology may also support active lifestyles when used

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for self-monitoring, goal setting, and exercise engagement (Au et al., 2024; Wang et al., 2025). Therefore, the practical implication is not simply to prohibit gadget use, but to regulate screen time and integrate digital tools into physical education more constructively.

Several limitations must be acknowledged. First, the study used a descriptive design, so it cannot show impact, effect, or causal relationship. Second, the sampling technique was purposive and involved only 50 students from one school. Third, the gadget-use and exercise-motivation measures were self-report questionnaires. Fourth, complete TKPN data were available for 48 students, not all 50 respondents. Fifth, all students were classified as high in gadget-use intensity and exercise motivation, which may indicate a ceiling effect or limited sensitivity of category cut-offs. Future studies should use larger samples, complete demographic data, validated Indonesian versions of all instruments, and correlational or regression analyses when the research objective is to examine relationships among variables.

CONCLUSIONS AND SUGGESTIONS

This study concludes that students at MTs Hidayatul Muhsinin had high gadget-use intensity and high exercise motivation. Based on questionnaire data from 50 students, all respondents were classified in the high category for both variables. Meanwhile, the physical fitness profile based on complete TKPN records from 48 students showed varied results, with mean scores of 19.78 kg/m² for body mass index, 20.15 repetitions for sit-up, 5.06 cm for V-sit-and-reach, 7.21 repetitions for squat thrust, and 12.69 laps for PACER. These results indicate that students' fitness condition was not uniform, especially in agility, dynamic endurance, and cardiorespiratory endurance components.

These findings should be interpreted as descriptive profiles, not as evidence of effect or causal relationship. Schools are encouraged to guide students in managing gadget use, reducing sedentary habits, and using technology for positive physical activity purposes. Physical education teachers should strengthen routine activities that improve agility, endurance, flexibility, and cardiorespiratory fitness. Future studies should involve larger samples, validated instruments, complete demographic data, and correlational or experimental designs to examine the relationships among these variables more deeply.

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