

## **The Relationship Between Gadget Use and Physical Activity Among Adolescents**

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### **ABSTRACT**

Indonesia is one of the internet users that reaches 210 million users and as many as 99.16% of internet users are teenagers. Technology has a negative impact, one of which is gadget addiction that causes someone to be less active, so that gadget use is a form of sedentary behavior. Objective: To determine the relationship between playing gadgets with physical activity of adolescents aged 16-19 years. Method: This study design uses Correlation with Cross-Sectional. The research sample was 69 respondents using simple random sampling technique.. The research instrument uses a gadget use questionnaire and IPAQ with Spearman-Rank. Results: The results obtained that negative gadget use was 60 respondents (87.0%) and a high level of physical activity was 42 respondents (60.9%). The results of the bivariate test obtained  $p = 0.856 > \alpha = 0.05$  Conclusion: There is no relationship between gadget use and physical activity of adolescents aged 16-19 years in the Kamasan Environment. Suggestion: It is hoped that adolescents limit the use of gadgets to reduce sedentary behavior or lack of movement, because this can reduce the health benefits obtained during physical activity.

**Keywords:** Gadget, Physical Activity, Teenagers

### **1. BACKGROUND**

Technological development has become a balancing factor in the advancement of science and a benchmark for modern global progress. Society is becoming increasingly intertwined with technology, particularly digital devices such as gadgets and smartphones [7]. In 2020, Newzoo predicted that the number of smartphone users worldwide would reach 3.6 billion, an increase from 3.4 billion in the previous year. By 2023, this figure was estimated to reach 4.3 billion users [1].

In Indonesia, the penetration of internet and gadget use continues to rise. According to a survey by APJII, the average duration of daily gadget use based on gender shows that 49.59% of males and 53.74% of females use gadgets for 1–5 hours per day. For a duration of 6–10 hours, the percentages are almost equal, with 31.11% of males and 30.75% of females [2]. Among 7,568 respondents, the most common reason for using the internet was to access social media (98.02%), followed by accessing public services

(84.9%), online transactions (79%), working or studying from home (90.21%), news (92.21%), entertainment (77.25%), financial services (72.32%), online transportation (76.47%), and email (80.74%) [3].

A 2021 survey also showed that the highest internet usage was among teenagers aged 13–18 years (99.16%). During the pandemic, this age group also recorded the highest internet usage at 76.63% [2]. In West Nusa Tenggara (NTB) Province, mobile phone users in 2021 reached 64.72% in urban areas and 53.62% in rural areas [4].

However, alongside these benefits, technological advancement also brings negative impacts on people's lifestyles. A sedentary lifestyle is becoming more common, characterized by activities such as commuting, watching TV, and prolonged gadget use [5]. According to Fitriyani (2017), physical activities in children—such as jumping, running, and other movements—are increasingly replaced by digital games that can be played while sitting still

[6]. Excessive gadget use can lead to various lifestyle changes, particularly in health, including vision problems, sleep disturbances, reduced concentration, gadget dependency, and decreased physical activity [8].

Extended use of gadgets leads to reduced bodily function and energy imbalance, contributing to an increase in body mass index (BMI) [9]. This condition increases the risk of obesity and can hinder adolescent growth due to lack of physical activity [10]. A study by Sari (2023) found a relationship between physical inactivity and overnutrition in adolescents [11]. Physical activity is a crucial component in maintaining physical fitness. Examples of physical activities include exercise, jogging, and playing. Data from RISKESDAS 2018 shows that 37.8% of urban residents were categorized as physically inactive, compared to 28.4% in rural areas [12]. This indicates that people in urban areas tend to be less physically active than those in rural areas.

A study by Harfika and Widayanti (2019) revealed that adolescents with high gadget addiction levels had low physical activity, with 65 out of 105 respondents falling into this category. The study also found a significant relationship between smartphone use and adolescents' physical activity ( $p = 0.044$ ) [13]. Research by Lestari and Indrawati (2023) also found that 95.7% of adolescents used gadgets with an average duration of 75 minutes per day at moderate intensity, while 3.3% used gadgets for 200 minutes at high intensity [14].

Interviews conducted by the researcher with 10 adolescents in the Kamasan area showed that, on average, they used smartphones for 5–6 hours per day, with some reaching up to 10 hours daily. They reported difficulties concentrating while studying and often felt sleepy. Although some reported exercising twice a week, they frequently stayed up late using their gadgets and felt tired and sleepy at school.

## 2. RESEARCH METHODS

This study employs a cross-sectional design. The respondents are 69 adolescents aged 16–19 years living in the Kamasan area.

The sample was selected using a simple random sampling technique.

The independent variable in this study is gadget use, while the dependent variable is physical activity. Data were collected using a questionnaire. The data were analyzed using the Spearman Rank correlation test.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

**Table 1.**

Demographic Characteristics of Respondents

Demographic Characteristics	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	37	53.6
Female	32	46.4
<b>Age</b>		
Middle Adolescence (14–17 years)	43	62.3
Late Adolescence (18–24 years)	26	37.6

Based on Table 1. the majority of respondents were male (53.6%), and most were in the middle adolescence age group (62.3%).

**Table 2.**

Distribution of Gadget Use and Physical Activity Levels

Research Variable	Frequency (n)	Percentage (%)
<b>Gadget Use</b>		
Positive	9	13.0
Negative	60	87.0
<b>Physical Activity</b>		
Low	12	17.4
Moderate	15	21.7
High	42	60.9

As shown in Table 2, 87% of adolescents were categorized as having negative gadget use, while 60.9% had a high level of physical activity.

**Table 3.**

Correlation Test Results Between Gadget Use and

Physical Activity		
Variable	Physical Activity	Sign
Gadget Use	Sig. (2-tailed)	.856

Table 3. shows that the significance value is 0.856, indicating that there is no significant relationship between gadget use and physical activity among adolescents.

### 3.2 Discussion

The results of this study indicate that the majority of adolescents use gadgets negatively. This may be due to the fact that gadgets have both positive and negative impacts that influence their use. According to Hijriyani & Astuti (2020), gadgets can be beneficial for social interaction, communication, and education [15].

Technological developments in the era of globalization have led to changes in lifestyle and societal behavior. Nowadays, behavior patterns are characterized by unlimited access to social media and the internet. Gadget use can also lead to increased criminal activity due to inappropriate usage. Additionally, gadgets may encourage antisocial behavior, where users become absorbed in their devices and ignore their surroundings, preferring gadgets over interacting or simply conversing with others [9]. Among adolescents, gadget use is not a new phenomenon, as most human needs today are fulfilled digitally and online [16]. Rashid et al. (2021) stated that adolescents' gadget use is driven by easy internet access and available online features. However, it also contributes to several health issues such as headaches and sleep disturbances [17]. Therefore, gadget use has significantly influenced behavior patterns, particularly in terms of physical activity.

In this study, the physical activity variable showed that most adolescents had a high level of physical activity. This could be influenced by various factors, including

demographic, biological, social, psychological, and environmental aspects. In the Kamasan area, adolescents commonly engage in physical activities such as playing football, jogging, badminton, walking, and cycling.

A study by Kumala et al. (2019) reported that 14.8% of respondents had low physical activity levels, while moderate and high physical activity levels accounted for 42.6% [22]. Physical activities included cycling, participating in extracurricular activities, weekly exercise, and walking to and from school. Meanwhile, other respondents spent their time watching TV, playing with gadgets, and doing assignments [18].

The Spearman-rank test in this study showed no significant relationship between gadget use and physical activity among adolescents aged 16–19 years in the Kamasan area. This result can be attributed to the fact that, despite the negative use of gadgets, physical activity levels in the area remain high. The availability of sports facilities such as badminton courts and open fields that are frequently used by adolescents may contribute to their active lifestyle.

Effendy et al. [19],[21] found no relationship between physical activity and obesity. This was because higher levels of intense physical activity were observed in the 18–49 age group (51.2%) compared to those aged 50–65. Additionally, male respondents were more likely to engage in heavy physical activity (53.7%) compared to females. Based on occupation, farmers and farm laborers had higher physical activity levels (53.7%) compared to other professions [19], [21].

A literature review by Efendi [5] found that four studies reported a significant relationship between smartphone use and physical activity among students, while five other studies did not find such a relationship. This inconsistency may be due to other

contributing factors influencing adolescents' physical activity, such as mood regulation, availability of sports facilities, sleep duration, parental support, daily activities outside school, regular weekly exercise, and fast-food consumption [5].

Smartphone addiction can also reduce social interaction and academic achievement, ultimately leading to problems in social relationships. In most cases, smartphone addiction causes several common health issues such as memory disorders, reduced attention span, headaches, fatigue, ear heating, and hearing problems. Specifically, insufficient physical activity is believed to harm both physical and mental health. Evidence shows that 80.4% of schoolchildren in Southeast Asia are physically inactive, and globally, around 80% of young people are not physically active [20].

According to Penglee et al. [23], concerns over increasing smartphone use among university students relate to sedentary behavior, which is associated with increased body fat, reduced physical fitness, and low self-esteem. A study in the United States found no relationship between smartphone use and physical activity among students [23]. Similar results were found among students at a Midwestern U.S. university from various majors. However, the amount of time spent on smartphones was significantly associated with sedentary behavior.

A study by Hambali [22] found a significant relationship between smartphone use intensity and the physical fitness of Grade VIII students at SMPN 2 Karangpuncung-Cilacap during the COVID-19 pandemic. During online learning, students spent more time at home, mostly sitting and playing with smartphones, which led to decreased physical activity [22].

It is increasingly recognized that some people are physically active yet still allocate significant time to sedentary behaviors. These

individuals are known as “active couch potatoes.” A meta-analysis of 47 studies concluded that sedentary behavior—regardless of physical activity level—is associated with increased risks of mortality, cancer, type 2 diabetes, and cardiovascular disease. Thus, high levels of sedentary behavior have negative health effects, even for those who are otherwise physically active [20].

The advancement of technology today raises serious concerns due to increasing gadget addiction, which contributes to reduced physical activity. Gadget addiction is linked to negative outcomes such as depression, anxiety, sleep disturbances, lack of self-control, and low emotional intelligence. It also negatively affects academic performance, memory, attention span, causes headaches, fatigue, and hearing problems [16]. According to Ahmad (2021), gadget addiction causes many behavioral changes among children and adolescents, including reduced social interaction. Children who spend more time on gadgets may develop temperamental behavior, social withdrawal, and experience vision problems [23].

#### **4. CONCLUSION**

Based on the results obtained, it can be concluded that adolescents tend to use gadgets in a negative manner while still maintaining a high level of physical activity. The correlation test showed that there is no significant relationship between gadget use and physical activity among adolescents. It is recommended that adolescents use gadgets more wisely and continue to engage in regular physical activity in order to maintain their health and physical fitness.

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