

The Effectiveness of Watching Video About Adolescent Physical Activity on Physical Activity Levels Among Students at SMPN 39 Samarinda

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Abstract: Until now, there are still challenges in increasing physical activity as a health behavior. Changes in people's lifestyles during the Covid-19 pandemic have also resulted in a decrease in physical activity, especially among children, and an increase in sedentary living habits. This study aims to determine the effectiveness of watching a video about adolescent physical activity on the physical activity levels among students at SMPN 39 Samarinda, Indonesia. The study used a Quasi-experimental design with a One-Group Pre-test Post-test. The sample consisted of 8th-grade students from SMPN 39 Samarinda, with 19 students selected using purposive sampling. Data collection involved a pre-test, a post-test conducted one week after the intervention, and a delayed post-test carried out two weeks after the intervention. Measurements were made using the International Physical Activity Questionnaire (IPAQ) and tested using repeated measures Friedman tests. The results showed a significant increase in physical activity among students at SMPN 39 Samarinda before and after the video intervention ($p < 0.05$). The study's conclusion is that watching the video is effective in increasing students' physical activity levels. Therefore, the school is encouraged to innovate the use of videos to enhance students' physical activity levels.

1 INTRODUCTION

Globally, 23% of adults and 81% of youth (aged 11-17 years) do not meet the WHO recommended levels of physical activity (WHO, 2020), and this issue underpins action plans aimed at increasing physical activity worldwide (WHO, 2018). Even before the Covid-19 pandemic, the low levels of physical activity in the population had drawn the attention of the World Health Organization (WHO). Challenges persist in promoting physical activity as a public health behavior. According to the National Basic Health Research Report (*Riskesdas*) in 2018, in Indonesia, 33.5% of individuals aged ≥ 10 years were found to engage in physical activity for less than 150 minutes per week. In East Kalimantan, 41.11% of individuals aged ≥ 10 years were classified as physically inactive (Kemenkes RI, 2019).

The Covid-19 pandemic has had a significant impact on public health (Meilina & Kusuma, 2022). A systematic review of eight studies conducted in several countries (United States, Germany, Spain, Canada, Australia, Bosnia and Herzegovina, and

Latin America) in 2021 indicated a decline in physical activity, particularly among children, and an increase in sedentary lifestyle habits (Suryoadji & Nugraha, 2021).

Physical activity for children and adolescents is closely tied to their school activities (Hoffmann et al., 2019). Establishing physical activity habits during the school-age years has a lasting impact into adulthood (Hasan et al., 2019). However, the adoption of online learning policies, which persisted for two years, resulted in delays in implementing physical activities in schools. Consequently, changes in the behavior of children and adolescents, such as reduced physical activity, increased social media usage, and higher consumption of sugary foods and drinks, have been observed (Sidjabat, 2022).

Insufficient physical activity in children and adolescents can lead to negative health consequences, including non-communicable diseases (Suryoadji & Nugraha, 2021), stunted growth, and reduced life expectancy (Hasan et al., 2019). Previous studies have shown that most parents use social media platforms like Telegram and TikTok for purposes

unrelated to their children's health (Ifroh & Permana, 2022). This results in children and adolescents not receiving information about health, particularly physical activity, from their parents. In this context, exposure to media containing information about physical activity becomes essential. Various research studies have recommended health program interventions as a means to promote physical activity (Kurniawan, 2021; Savitri, 2018; Suryoadji & Nugraha, 2021). Video is commonly used as a medium for health information, as demonstrated by research conducted by Rahayu et al. (2018), which showed the effectiveness of health education using audiovisuals in increasing physical activity levels (Rahayu et al., 2018).

Based on previous studies, which involved interviews with 8th-grade high school students at SMPN 39 Samarinda, it is evident that the level of physical activity among students at SMPN 39 Samarinda remains low. Students tend to use transportation rather than walking to school, even when their homes are within walking distance. Additionally, students reported that they do not engage in physical activity on a daily basis. SMPN 39 Samarinda is located far from the central government, resulting in a lack of sports facilities, which are primarily concentrated in the city center. Consequently, residents living in outlying areas do not have access to these facilities. Given this context, the purpose of this study is to assess the effectiveness of video presentations on adolescent physical activity in increasing physical activity levels among students at SMPN 39 Samarinda.

2 METHOD

This study utilized a quasi-experimental design with a one-group pre-test post-test approach. The sample consisted of 8th-grade students from SMPN 39 Samarinda, with 19 students were selected using purposive sampling. SMPN 39 Samarinda has a smaller student population compared to other schools due to its distance from the central government. The selection of 19 students as samples in this research was based on previous studies that revealed low physical activity levels among 8th-grade students.

The research was conducted from January to February 2023. It commenced with a pre-test for both experimental groups using the International Physical Activity Questionnaire (IPAQ). The research subjects were then assigned to an experimental class to assess the effectiveness of video media in promoting adolescent physical activity. The study included a

post-test after the first week and a delayed post-test after the second week for the experimental group.

Data collection occurred over a seven-day period in accordance with the IPAQ questionnaire's provisions, which measured physical activity in the last seven days (IPAQ Research Committee, 2005). Physical activity level measurements were taken three times: before the video was shown, one week after, and two weeks after the video presentation. This timeframe aligns with Edgar Dale's cone of experience theory, which suggests that a significant portion of learning experiences are retained within two weeks of exposure (Maheshwari, 2016). Data collection was conducted through direct interviews.

The video creation process involved several steps, including pre-production, production, and post-production. Pre-production encompassed tasks like gathering material on adolescent physical activity, creating media design scripts, and recruiting students as video talents. Production involved recording and editing, while post-production entailed using hardware devices like phones and computers, along with video editing software. Editing activities included assembling video recordings, adding voice-overs, and incorporating text based on the prepared script. The final stage was finishing.

The video provided health information and visualizations of various adolescent physical activities in line with recommendations from the Ministry of Health. After completing the video, it underwent media trials, with content and material being evaluated. Media reviewers were lecturers from the Faculty of Public Health and Physical Education at Mulawarman University. These trials also included students of the target school-age group, specifically 30 8th-grade students from SMPN 21 Samarinda. The experimental class involved showing the video twice in a single day, interspersed with ice-breaking activities such as singing and exercises.

3 RESULT AND DISCUSSION

The table 1 presents the distribution of characteristics among the research subjects. As per Table 1, the majority of students are 13 years old (47.4%), and the student population is predominantly female (63.2%). More students utilize motorbikes as their primary mode of transportation to school (63.2%) compared to walking. Furthermore, a significant percentage of students are involved in school extracurricular activities (94.7%).

Table 1: Distribution of Respondents by Characteristics.

Characteristic	n	%
Age		
13 years old	9	47.4
14 years old	8	42.1
15 years old	2	10.5
Gender		
Male	7	36.8
Female	12	63.2
Transportation Used to Get to School		
Motorbikes	12	63.2
Walking	7	36.8
School Extracurricular Activities		
Yes	18	94.7
No	1	5.3

Physical activity can generally be categorized into different levels of intensity, including light (e.g., walking), moderate, and vigorous, based on MET (Metabolic Equivalent of Task) scores. According to the International Physical Activity Questionnaire (IPAQ), physical activity levels are divided as follows: light intensity (e.g., walking) if the total MET score is <600 METs-minutes/week, moderate intensity if the total MET score ranges from 600 to 1500 METs-minutes/week, and vigorous intensity if the total MET score is >1500 METs-minutes/week (World Health Organization, 2015).

Table 2: Distribution of Respondents by Physical Activity Level.

Physical Activity Levels	Pre-test		Post-test		Delayed Post-test	
	n	%	n	%	n	%
Walking	10	52.6	4	21.1	2	10.5
Moderate intensity	8	42.1	5	26.3	4	21.1
Vigorous intensity	1	5.3	10	52.6	13	68.4

Table 2 presents the changes in the physical activity of the respondents before, after one week, and after two weeks of viewing the video about adolescent physical activity. Before the intervention, 10 respondents (52.6%) fell into the light physical activity category (walking). This number decreased to 4 respondents (21.1%) after one week of video viewing. After two weeks of video viewing, the number of respondents in the light physical activity category further decreased to 2 respondents (10.5%). Meanwhile, respondents in the moderate intensity category also decreased, from 8 respondents (42.1%) before video viewing to 5 respondents (26.3%) after one week, and further to 4 respondents (21.1%) after two weeks of video viewing.

Simultaneously, respondents in the vigorous intensity category experienced an increase. Before video viewing, there was 1 respondent (5.3%) in this category, which increased to 10 respondents (52.6%) after one week of video viewing and further increased to 13 respondents (68.4%) after two weeks of video viewing. Based on the data presented in Table 2, it can be concluded that the intervention of watching videos about adolescent physical activity among students at SMPN 39 Samarinda leads to an increase in physical activity levels.

To determine the appropriate statistical test, a normality test was conducted. The results of the normality test indicate that some data, specifically the pre-test data, are not normally distributed ($p < 0.05$), while the post-test and delayed post-test data are normally distributed ($p > 0.05$). Therefore, to assess the change in physical activity among SMPN 39 Samarinda students, the Friedman test was employed. The following section presents the results of the statistical tests conducted on the physical activity levels of SMPN 39 Samarinda students.

Table 3: Increase in Average of Physical Activity in SMPN 39 Samarinda students.

Variable	n	Mean (METs-minutes/week)	p-value
Pre-test	19	820.05	<0.001
Post-Test	19	1450.44	
Delayed Post-Test	19	1876.89	

Table 3 provides insight into the average physical activity levels of the 19 students from SMPN 39 Samarinda. During the pre-test, the average physical activity was 820.05 METs-minutes/week, categorized as moderate intensity. Subsequently, there was a notable increase in the moderate intensity category to 1450.44 METs-minutes/week after one week, and then a further increase to 1876.89 METs-minutes/week, characterized as vigorous intensity. The p-value is <0.001, indicating statistical significance ($p < 0.05$) and demonstrating an increase in the average physical activity of SMPN 39 Samarinda students before and after the video intervention. This finding aligns with the research conducted by Rahayu et al. (2018), which showed that health education using audiovisual media had a significant effect ($p=0.001$) on physical activity in the experimental group (Rahayu et al., 2018).

To compare physical activity scores, a bivariate comparative test was conducted for two paired samples. The Wilcoxon Signed Ranks test was performed on the pre-test and post-test data due to the non-normal distribution of pre-test data. Conversely,

the Paired T-test was employed on the post-test data and delayed post-test data, as they exhibited a normal distribution. The following table, Table 4, displays the results of the statistical tests conducted on the pre-test and post-test scores of SMPN 39 Samarinda students.

Table 4: Increase in Average of Physical Activity in SMPN 39 Samarinda students.

Variable	Mean Difference (METs-minutes/week)
Pre-test — Post-test	630.38
Pre-Test — Delayed Post-test	1056.83
Post-test — Delayed Post-Test	426.44

In Table 4, it is evident that the physical activity of SMPN 39 Samarinda students increased by 630.38 METs-minutes/week when comparing pre-test and post-test scores after one week of video viewing. Furthermore, there was an increase in physical activity between the pre-test and delayed post-test, totaling 1056.83 METs-minutes/week. Notably, when comparing post-test and delayed post-test results, there was an increase of 426.44 METs-minutes/week.

These findings are in line with Edgar Dale's cone of experience theory, which elucidates that individuals tend to retain approximately 50 percent of what they see and hear after a learning experience (Maheshwari, 2016). In this context, watching a video falls under the 4th level, which involves the presentation of information that can be effectively remembered and applied. Thus, video media can effectively convey, apply, and execute messages or information.

As per Bloom's taxonomy (1956), students at the application knowledge level (C3) can employ information by using it in real-life situations (Darsini et al., 2019). In the practical or action classification, as described by Notoatmodjo (2012), the relevant level in this research is the guided response level, where students can appropriately act upon examples or recommendations, leading to increased physical activity.

4 CONCLUSIONS

Based on the study's results, it can be concluded that viewing video of health information and visualizations related to adolescent physical activity is effective in increasing the physical activity levels

of students at SMPN 39 Samarinda. This conclusion is supported by the observed increase in physical activity among SMPN 39 Samarinda students before and after the video intervention, with a p-value of <0.05, indicating statistical significance.

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