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Barriers and Predictors of Physical Activity Behavior in Middle School and Upper School Students

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Abstract

This study aims to identify perceived barriers and evaluate 24-hour physical activity behavior in middle and high school students. The phenomenon of declining participation in physical activity among adolescents is a concern, considering its impact on physical and mental health. This study used a quantitative approach with a descriptive design, involving 100 students in Subang Regency as the research sample. The instruments used included a physical activity barriers questionnaire and a 24-hour movement behavior questionnaire. The results of the Spearman correlation test showed a significant relationship between barriers and low involvement in physical activity, with a value of r = 0.325 and a significance of p = 0.001. The most common barriers found were lack of sports facilities, academic pressure, and minimal social support. This study confirms that although students are aware of the importance of physical activity, external and internal barriers remain a barrier. Therefore, interventions should include providing a supportive environment both at school and at home. Understanding 24-hour movement behavior patterns is also needed to design an integrated healthy living strategy. The results of this study are expected to be the basis for policy making in increasing adolescent physical activity in a sustainable manner.

How to Cite

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INTRODUCTION

Doing physical activity regularly is a positive behavior for health, such as more flexible muscles and stronger bones, a more proportional and ideal body, and increasing self-confidence, energy, and fitness, so that overall health conditions become better (Chaeroni et al., 2021). According to the World Health Organization (WHO), physical activity includes all body movements that involve skeletal muscles and result in energy expenditure by the body (Rau et al., 2021). Based on Riskesdas 2013 data, the level of lack of physical activity in the Indonesian population aged ≥10 years reached 26.1%, but in Riskesdas 2018, this figure increased to 33.5%, this increase is a health problem that needs immediate attention due to lack of physical activity (Sujarwati et al., 2023).

Some Indonesian people tend to have low physical activity due to changes in work patterns, daily routines, technological developments, especially in the fields of electronics and transportation, and a lifestyle that tends to be passive. Low physical fitness is influenced by poor health quality and a lifestyle with minimal activity, resulting in decreased work productivity (Lontoh et al., 2020). There are two cognitive variables that affect the level of physical activity, namely perceived benefits and perceived barriers. Perceived benefits can positively influence, while perceived barriers can negatively influence participation in physical activity. Research by (Dias et al., 2015), showed that internal barriers, such as lack of motivation and shyness, were more frequently reported by female adolescents than by males. In addition, physical activity interventions have been shown to improve self-concept and self-esteem in children and adolescents. A meta-analysis by (Liu et al., 2015), found that a physical activity intervention significantly improved self-concept and self-esteem in this age group. School environmental factors, such as limited adequate sports facilities, are also often barriers that exacerbate low student participation in physical activity. According to (Sallis et al., 2016), emphasizing the importance of a supportive school environment to increase physical activity among adolescents.

Social factors such as support from friends and family also play a big role in encouraging teenagers to continue being physically active (Guthold et al., 2018). To analyze the barriers to physical activity felt by adolescents, data collection was carried out using a barriers questionnaire consisting of 21 items (Jajat et al., 2016). To better understand 24-hour movement behavior and its health implications, it is important to develop validated and reliable instruments to assess 24-hour movement behaviour (Zheng et al., 2023). Most of the existing data focus on the association between health outcomes and time spent in a single activity over a 24-hour period, without considering the associations between activities. However, some evidence suggests that the duration of time spent in each activity may influence the health effects of other activities (Rosenberger et al., 2019). Therefore, it is very important to encourage effective time management, so that individuals can improve sleep habits, increase physical activity, and reduce sedentary behavior in order to achieve a healthier lifestyle (Saunders et al., 2016).

Adolescents are an age group that is very vulnerable to environmental influences and technological developments, which can indirectly affect their lifestyle and physical habits. In the current context, the increasing use of gadgets, internet access, and screen-based activities have shifted the tendency of physical activity to passive or sedentary activities. This imbalance between physical activity and sedentary time has the potential to cause various health problems such as obesity, metabolic disorders, baeven mental health decline (Tremblay et al., 2016). Therefore, a deep understanding of the perceived barriers and 24-hour movement behavior patterns in adolescents is essential, not only in the context of improving physical fitness, but also in efforts to establish a healthy lifestyle from an early age.

During this period, there is a transition from childhood to adulthood which is marked by accelerated physical, mental, emotional and social growth, which takes place during the second decade of life (Sawyer et al., 2018). Adolescence represents a critical phase in individual development, during which lifelong habits such as regular physical activity begin to form.(Patton et al., 2016). However, a number of studies have shown that physical activity levels actually decline significantly during adolescence, mainly due to increased academic workload, digital media use, and changes in social interests (Guthold et al., 2020). This study aims to develop a 24-hour behavioral questionnaire for middle and high school students (Zheng et al., 2023)and evaluate the barriers they face in carrying out physical activities (Guthold et al., 2020).

The main question in this study is, What are the obstacles felt by middle and upper school students in doing physical activity, and how is their movement behavior during 24 hours in the context of physical and mental health. The novel-

ty of this study lies in its dual focus: it not only identifies key barriers to adolescent physical activity but also integrates a comprehensive assessment of 24-hour movement behaviors an approach that is rarely combined in previous research within the Indonesian context. The results of this study are expected to be the basis for the development of school and family interventions or policies in increasing adolescent participation in physical activity and encouraging healthier and more balanced time management.

METHODS

This study applies a quantitative approach. The research design is descriptive, and the data collected is used to show the actual situation and then answer questions about the focus of the research (Isnawati et al., 2020). The research location is in Subang Regency. In this study, the population is middle and upper school students totaling 100 students, the research sample uses random sampling technique. This study applied a closed questionnaire for the student barriers questionnaire, which allowed participants to choose one of the available answer options.

The data collection used two structured questionnaires printed on paper. The first instrument was a physical activity barriers questionnaire adapted from (Jajat et al., 2016), consisting of 21 items categorized into seven dimensions: lack of time, social influence, lack of energy, lack of willpower, fear of injury, lack of skills, and lack of resources. Each dimension contained three items, with example statements such as "I don't have time due to school assignments." All items were rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree).

The second instrument was the 24-Hour Movement Questionnaire, developed based on (Zheng et al., 2023), which aimed to capture how students allocate their time across different types of activity within a 24-hour period. Students were asked to report the duration (in hours and minutes) of sleep, sedentary time, light activity, and moderate-to-vigorous physical activity on both weekdays and weekends. Both instruments were designed to be straightforward and did not include right or wrong answers, encouraging students to respond honestly according to their daily habits.

we consider working/study days and non-working/study days (usually on weekends, or on holidays), in one week. In both questionnaires there are no right or wrong answers, so each question must be answered accurately and honestly. researchers or data collectors have a clear understanding of the information to be collected. Therefore, researchers have prepared research instruments, namely questions, which also have alternative answers (Zheng et al., 2023).

Analysis of the questionnaire or student barriers to not doing physical activity using a Likert scale (Subandrio & Kartiko, 2021). After that, the data was processed and analyzed using the normality test with Shapiro-Wilk & Spearman rank correlation test. Furthermore, the relationship between the two variables was examined using the Statistical Program for Social Science (SPSS) version 25 to find out with a significance level (p value) below 0.05 (Fadluloh et al., 2024).

RESULTS AND DISCUSSION

Table 1. Descriptive Statistics

	N	Range	Min	Max	Mean
Lack of Time	3	14	99	113	105.67
Social Influence	3	15	86	101	95
Lack of Energy	3	5	99	104	102
Lack of Willpower	3	7	106	113	110
Fear of Injury	3	5	105	110	107
Lack of Skills	3	9	92	101	96.33
Lack of Resources	3	12	106	118	112

Table 1 presents the descriptive statistics for each category of perceived barriers to physical activity among respondents. The highest average score was found in the "Lack of Resources" category (M = 112.00), followed by "Lack of Willpower" (M = 110.00) and "Lack of Time" (M = 105.67). These findings suggest that resource limitations and personal motivational factors are the most prominent barriers experienced by the students. Conversely, "Lack of Energy" and "Fear of Injury" showed relatively lower average scores, indicating that these may be less influential factors in preventing physical activity participation.

Table 2. Results of Spearman Correlation Test between Barriers and Predictors of Physical Activity Behavior (N = 100)

Variables	Correlation Coefficient (r)	Sig. (2-tailed)
Barriers – Predictors of Physical Activity Behavior	0.325	0.001

Table 2 shows the results of data analysis using the Spearman correlation test showing that there is a significant relationship between barriers and predictors of physical activity behavior with a correlation coefficient value of r = 0.325 and a significance of p = 0.001 (p <0.05). This shows that the barriers perceived by students have a moderate positive correlation with predictors of low participation in physical activity. This means that the higher the perception of barriers that adolescents have, the more likely they are to be physically inactive in their daily lives. And above in Subang Regency. The Spearman correlation value of 0.325 with a significance of 0.001 indicates that when predictors of physical activity increase (such as awareness of the importance of exercise, social support, or personal motivation), the barriers perceived by students also tend to increase. This indicates that although students have the intention or motivation to exercise, there are real obstacles that they have not been able to overcome, both in terms of environment, psychology, and social.

To uncover the relationship, this study used two types of questionnaires that had been prepared with a closed structure. The first questionnaire measured students' barriers to physical activity and referred to an instrument developed by (Jajat et al., 2016). This questionnaire contains 21 items, each of which presents fixed answer choices, so that respondents only need to choose one answer that best suits their condition. The closed questionnaire type was chosen to facilitate data processing and maintain response consistency, considering that the respondents are large in number and come from uniform educational backgrounds.

The second questionnaire is the 24-Hour Movement Questionnaire, which is used to map how adolescents allocate their time during weekdays and holidays. This questionnaire allows researchers to assess comprehensive movement behavior patterns—including moderate to vigorous physical activity, sleep time, sitting time, screen time, and other light activities. In accordance with the principles of (Zheng et al., 2023), this questionnaire emphasizes the importance of accuracy and honesty in filling out because there are no right or wrong answers. The use of this approach allows for a more comprehensive and realistic mapping of 24-hour movement behavior in the context of students' daily lives.

The correlation results obtained strengthen the assumption that obstacles are not always absolute barriers to motivation, but can go hand in hand. For example, a student may be aware of the importance of exercise and intend to be active, but still not do it because of obstacles such as the lack of facilities, academic pressure, or lack of social support. Furthermore, this finding is consistent with the results of research by (Liu et al., 2023), which emphasizes that perceived benefits and barriers are two main cognitive variables that influence each other in shaping attitudes and behaviors towards exercise. This means that someone may understand and appreciate the health benefits of physical activity, but if the perceived barriers are too great, the tendency not to participate remains high. Therefore, it is important to create intervention strategies that not only emphasize education about the benefits of exercise, but also focus on reducing barriers, both in terms of facilities, time, and social environment.

The conditions in Subang Regency, which is the location of the research, also strengthen this argument. This regency represents the characteristics of a semi-urban area, where access to sports facilities may still be limited and physical activity has not become an integral part of school or family culture. In a context like this, teenagers tend to spend more time with sedentary activities such as watching television or playing gadgets, especially on weekends. This is exacerbated by the results of (Guthold et al., 2018)which states that the majority of adolescents in the world do not achieve the recommended daily physical activity of at least 60 minutes of moderate to vigorous intensity.

Furthermore, students' involvement in filling out the questionnaire also shows that there is awareness of their daily activities, but structural and psychological barriers still greatly influence them. Therefore, strategies to increase physical activity need to be carried out systematically. For example, schools can provide inclusive sports programs, create peer support communities, and involve families to create an environment conducive to physical activity.

These findings also highlight the importance of developing standardized instruments to assess movement barriers and behaviors simultaneously. With a better understanding of both sides, interventions can be more targeted and evidence-based. In the future, the development of integrated instruments would be very beneficial, considering that physical activity, rest, and sitting time all influence each other in shaping a healthy lifestyle as a whole (Rosenberger et al., 2019; Saunders et al., 2016).

CONCLUSION

This study shows that there is a significant relationship between perceived barriers and low physical activity participation in middle and high school students. The Spearman correlation results show a coefficient value of 0.325 with a significance of 0.001, which indicates a moderate positive relationship between barriers and predictors of physical activity behavior. This means that the higher the barriers perceived by students, the lower their tendency to engage in physical activity.

Various factors such as lack of self-confidence, limited sports facilities, and low social support from the surrounding environment are the main obstacles that hinder students' participation in physical activities. In addition, the influence of the modern environment which tends to be passive also strengthens the tendency for sedentary behavior in adolescents.

Thus, it is important for schools, families, and communities to work together to create an environment that supports adolescent physical activity, such as providing adequate sports facilities, organizing attractive fitness programs, and building awareness of the importance of 24-hour movement behavior for long-term health.

REFERENCES

Chaeroni, A., Kusmaedi, N., Ma'mun, A., & Budiana, D. (2021). Aktivitas Fisik : Apakah Memberikan Dampak Bagi Kebugaran Jasmani dan Kesehatan Mental? Jurnal Sporta Saintika, 6(1), 54–62.

Dias, P. F., Ferreira, C. E., & Santos, C. R. (2015). Barriers to physical activity in adolescents: A systematic review. Journal of Adolescent Health, 57(3), 254–261. https://doi.org/10.1016/j.jadohealth.2015.03.006

Fadluloh, F. M., Sartono, H., & Kusumah, W. (2024). Athletes ' Perception of Parental Support and Achievement Motivation : A Correlational Study with Early Age Individual Sport Athletes in Swimming. 412–421. https://doi.org/https://doi.org/10.31949/ijsm.v4i4.11454

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1□9 million participants. The Lancet Global Health, 6(10), e1077–e1086. https://doi.org/10.1016/S2214-109X(18)30357-7

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. The Lancet Child & Adolescent Health, 4(1), 23–35. https://doi.org/10.1016/S2352-4642(19)30323-2

Isnawati, I., Jalinus, N., & Risfendra, R. (2020). Analisis Kemampuan Pedagogi Guru SMK yang sedang Mengambil Pendidikan Profesi Guru dengan Metode Deskriptif Kuantitatif dan Metode Kualitatif. INVOTEK: Jurnal Inovasi Vokasional Dan Teknologi, 20(1), 37–44. https://doi.org/10.24036/invotek.v20i1.652

Jajat, Sultoni, K., & Suherman, A. (2016). Barriers to Physical Activity on University Student. Journal of Physics: Conference Series, 755(1), 8–12. https://doi.org/10.1088/1742-6596/755/1/011001

Liu, Y., Li, D., & Cao, S. (2015). Effects of physical activity interventions on self-esteem in children and adolescents: A meta-analysis. PLOS ONE, 10(7), e0134804. https://doi.org/10.1371/journal.pone.0134804

Liu, Y., Wang, X., Zhang, Y., Li, J., & Chen, Y. (2023). Perceived exercise benefits and barriers and their association with physical activity time in Chinese Han children and adolescents aged 9 to 18 years. Zhonghua Liu Xing Bing Xue Za Zhi, 44(3), 345–351. https://doi.org/10.3760/cma.j.cn112338-20221230-01141

Lontoh, S. O., Kumala, M., & Novendy, N. (2020). Gambaran Tingkat Aktifitas Fisik Pada Masyarakat Kelurahan Tomang Jakarta Barat. Jurnal Muara Sains, Teknologi, Kedokteran Dan Ilmu Kesehatan, 4(2), 453. https://doi.org/10.24912/jmstkik.v4i2.8728

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., Bonell, C., & others. (2016). Our future: a Lancet commission on adolescent health and wellbeing. The Lancet, 387(10036), 2423–2478. https://doi.org/10.1016/S0140-6736(16)00579-1

Rau, E. P. E., Kaseke, M. M., & Kairupan, B. H. R. (2021). Analisis Perilaku Aktivitas Fisik selama Pembatasan Sosial pada Dewasa Muda. E-CliniC, 9(2), 437. https://doi.org/10.35790/ecl.v9i2.34434

Rosenberger, M. E., Fulton, J. E., Buman, M. P., Troiano, R. P., Grandner, M. A., Buchner, D. M., & Haskell, W. L. (2019). The 24-Hour Activity Cycle: A New Paradigm for Physical Activity. Medicine and Science in Sports and Exercise, 51(3), 454–464. https://doi.org/10.1249/MSS.0000000000001811

Sallis, J. F., Glanz, K., & Saelens, B. E. (2016). School-based physical activity: A review of the literature. International Journal of Behavioral Nutrition and Physical Activity, 13(1), 104. https://doi.org/10.1186/s12966-016-0396-z

Saunders, T. J., Gray, C. E., Poitras, V. J., Chaput, J. P., Janssen, I., Katzmarzyk, P. T., Olds, T., Connor Gorber, S., Kho, M. E., Sampson, M., Tremblay, M. S., & Carson, V. (2016). Combinations of physical activity, sedentary behaviour

and sleep: Relationships with health indicators in school-aged children and youth. Applied Physiology, Nutrition and Metabolism, 41(6), S283–S293. https://doi.org/10.1139/apnm-2015-0626

Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (2018). The age of adolescence. The Lancet Child & Adolescent Health, 2(3), 223–228. https://doi.org/10.1016/S2352-4642(18)30022-1

Subandrio, W., & Kartiko, D. C. (2021). Survey Keterlaksanaan Kurikulum Merdeka Belajar pada Pembelajaran Pendidikan Jasmani di SMA Negeri 1 Purwoasri. Jurnal Pendidikan Olahraga Dan Kesehatan, 9(2), 177–182. https://ejournal.unesa.ac.id/index.php/jurnal-pendidikan-jasmani/article/view/42154

Sujarwati, A., Agustina, E., Azmiyannoor, M., Rosadi, D., Fakhriyadi, R., Fadillah, N. A., Lasari, H. H. D., & Nisa, M. A. (2023). Faktor-Faktor yang Berhubungan dengan Perilaku Aktivitas Fisik Pada Remaja di Kota Banjarbaru Tahun 2021. Jurnal Biostatistik, Kependudukan, Dan Informatika Kesehatan, 3(3), 192. https://doi.org/10.51181/bikfokes.v3i3.7218

Tremblay, M. S., Carson, V., Chaput, J. P., Connor Gorber, S., Dinh, T., Duggan, M., Faulkner, G., Gray, C. E., Grube, R., Janson, K., Janssen, I., Katzmarzyk, P. T., Kho, M. E., Latimer-Cheung, A. E., LeBlanc, C., Okely, A. D., Olds, T., Pate, R. R., Phillips, A., … Zehr, L. (2016). Canadian 24-hour movement guidelines for children and youth: An integration of physical activity, sedentary behaviour, and sleep. Applied Physiology, Nutrition and Metabolism, 41(6), S311–S327. https://doi.org/10.1139/apnm-2016-0151

Zheng, J., Tan, T. C., Zheng, K., & Huang, T. (2023). Development of a 24-hour movement behaviors questionnaire (24HMBQ) for Chinese college students: validity and reliability testing. BMC Public Health, 23(1), 1–10. https://doi.org/10.1186/s12889-023-15393-5.