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PSYCHOSOCIAL DETERMINANTS OF PHYSICAL ACTIVITY AMONG ADOLESCENTS AT SMAN 1 MATARAM: PERCEPTION, SELF-EFFICACY, AND CUES TO ACTION

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Abstract

Physical activity among adolescents plays an important role in maintaining health and preventing future health problems. However, adolescents' levels of physical activity still tend to vary and are influenced by psychosocial factors. The novelty of this study lies in the comprehensive application of the Health Belief Model to analyse factors related to physical activity in high school students in Mataram City. The purpose of this study was to determine the relationships among the Health Belief Model constructs (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action) and students' levels of physical activity at SMAN 1 Mataram City. The research used an observational-analytical design with a cross-sectional approach, involving 310 respondents selected via a total sampling technique, and analyzed the data using the Spearman correlation test. The results showed that perceived susceptibility, perceived severity, and perceived benefits were not significantly related to physical activity, while perceived barriers (rs = −0,25; *P-value* < 0,001), self-efficacy (rs = 0,12; *P-value* = 0,029), and cues to action (rs = 0,11; *P-value* = 0,041) had a significant relationship with physical activity, although weak. The conclusion of this study shows that psychosocial factors, especially perceived barriers, self-efficacy, and motivation to act, play a greater role in influencing adolescent physical activity than perceived risks and benefits, so that interventions to increase physical activity in schools need to focus on strengthening self-efficacy, increasing cues to action, and reducing barriers perceived by students.

Keywords: Adolescents; Cues to action; Health Belief Model; Perception; Physical activity; Self-efficacy.

INTRODUCTION

Physical activity is a key determinant of health and plays a vital role in adolescent growth and development. Adolescence is a crucial transitional period, where behavioural patterns formed during this phase tend to persist into adulthood (1). Physical inactivity during adolescence can have long-term effects on health, increasing the risk of non-communicable diseases (NCDs) such as diabetes mellitus, hypertension, cardiovascular disease, stroke, and obesity later in life (2).

The World Health Organization reports that more than 80% of adolescents aged 11–17 worldwide do not meet the recommended levels of physical activity (3). This situation indicates that adolescents are a vulnerable group to the effects of a sedentary lifestyle. Globally, the prevalence of physical inactivity has continued to increase over the past two decades, indicating a shift toward increasingly sedentary lifestyles, particularly in developing countries and urban areas (4).

The diagnosis of leprosy is established based on clinical features,

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including hypopigmented or erythematous skin lesions accompanied by sensory loss. Other common findings include peripheral nerve thickening with sensory impairment, dry skin, and hair growth disturbances in the affected lesions (3). Examination of the nasal mucosa may reveal *Mycobacterium leprae*, and histopathological findings typically show diffuse infiltrates with numerous bacilli. Leprosy reactions represent hypersensitivity responses that mark the acute phase of the disease, characterized by systemic symptoms and the appearance or worsening of skin lesions (4).

In Indonesia, the 2023 Indonesian Health Survey found that approximately 37.4% of the population aged 10 years and older remained physically inactive. West Nusa Tenggara (NTB) Province is one of the regions with a significant proportion of low physical activity. Basic Health research (Riskesdas) data shows that Mataram City has a lower level of physical activity than other regencies in NTB. This condition is closely related to the characteristics of urban areas, such as increased use of motorised transportation, limited green open spaces, and the dominance of sedentary activities in daily life.

High schools, as the primary environment for adolescents, play a strategic role in shaping healthy behaviours. SMAN 1 Mataram is one of the leading schools in Mataram City, with a large student population and diverse socioeconomic backgrounds. The competitive academic environment often prioritises study, limiting students' time and opportunities for physical activity. This situation has the potential to foster sedentary lifestyle habits in adolescents from school age.

Low levels of physical activity in adolescents are influenced not only by environmental factors but also by psychosocial factors. Adolescents are in a developmental phase marked by biological, cognitive, and emotional changes, so perceptions of health, motivation, and self-confidence play a significant role in determining physical activity behaviour. Factors such as time constraints, academic pressure, limited access to sports facilities, and low motivation are often reported as major barriers to regular physical activity among adolescents (5).

The Health Belief Model (HBM) approach is used to explain health behaviour based on individual perceptions. This model emphasises that health behaviour is influenced by perceived susceptibility to disease, perceived seriousness of disease impacts, perceived benefits and barriers of an action, self-efficacy, and the presence of cues to action. In the context of physical activity, adolescents who feel less vulnerable to the health impacts of inactivity or perceive the impacts as not serious tend to be less motivated to engage in active behavior (6).

Previous research by Khodaveisi et al. (2021) showed that a Health Belief Model-based intervention significantly increased physical activity levels, with self-efficacy as the strongest predictor and perceived barriers as the primary barrier to physical activity behaviour (7). These findings emphasise that changing physical activity behaviour requires an approach that not only increases knowledge but also strengthens individuals' beliefs in their abilities and reduces perceived barriers (8).

Although various international studies have demonstrated the role of the Health Belief Model in influencing physical activity, research specifically examining the relationships among perceptions, self-efficacy, and cues to action in adolescent physical activity in Indonesia remains limited. Therefore, this study is important to analyse the relationship between these factors and adolescent physical activity at SMAN 1 Mataram, so that it can serve as a basis for formulating health promotion strategies and school-based interventions to increase adolescent physical activity.

RESEARCH METHOD

This study used an observational-analytical design with a cross-sectional approach to analyse the relationships among perceptions, self-efficacy, and cues to action and adolescent physical activity. The study was conducted at SMAN 1 Mataram from September to December 2025, involving all students in grades X, XI, and XII. A sample of 310 students was selected using stratified random sampling by grade level. Data were collected using a structured questionnaire consisting of the Physical Activity Questionnaire for Adolescents (PAQ-A) to measure physical activity levels and a Health Belief Model-based questionnaire that assessed perceptions of susceptibility,

seriousness, benefits, barriers, self-efficacy, and cues to action. All instruments have undergone validity and reliability testing. Data analysis was carried out univariately and bivariately using the Spearman correlation test to assess relationships, with a statistical significance level of $p < 0.05$. This study was already permitted by the Ethical Committee of the Faculty of Medicine, Universitas Islam Al-Azhar, Nomor: 137/EC-01/FK-06/UNIZAR/IX/2025.

RESULTS AND DISCUSSION

Results

Table 1. Univariate Analysis Results

Variable		Category	Total	Percentage
Perception	Perceived Suspectibility	High	289	93,23
		Low	21	6,77
	Total		310	100
	Perceived Severity	High	304	98,06
		Low	6	1,94
	Total		310	100
	Perceived Benefits	High	307	99,03
		Low	3	0,97
	Total		310	100
	Perceived Barriers	High	215	69,35
		Low	95	30,65
	Total		310	100
Self-efficacy		High	294	94,84
		Low	16	5,16
	Total		310	100
Cues to Action		High	288	92,90
		Low	22	7,10
	Total		310	100
Physical Activity		High	62	20,00
		Medium	204	65,81
		Low	44	14,19
	Total		310	100

Sources: Primary Data, 2025

Based on the analysis results in Table 1, the majority of respondents had high perceived susceptibility (93,23%) and high perceived severity (98,06%), indicating that students feel vulnerable and view the impact of physical inactivity as a serious health problem. Almost all respondents also reported high perceived benefits (99,03%), indicating a strong belief in the benefits of physical activity, while the

majority were in the high-perceived-barriers category (69,35%). However, some students still reported high barriers. In addition, respondents' self-efficacy was very high, with 94.84% in the high category, and cues to action were also high among the majority (92,90%), indicating a strong drive to act. In line with this, the level of physical activity among students was dominated by the moderate category (65,81%), followed by high (20,00%) and low (14,19%), indicating that the majority of students were quite active. However, there are still groups with low physical activity that need attention.

The high proportion of respondents scoring in the upper range of most Health Belief Model constructs (>90%) may indicate a ceiling effect. Nevertheless, despite the limited variability, statistically significant correlations were still observed in the present analysis, suggesting that the relationships among constructs remain detectable. Future studies may consider using instruments with a wider response range or more discriminative items to minimize potential ceiling effects.

Table 2. Results of Bivariate Analysis of Perception

Perception	Physical Activity								rs	P-value
	High		Medium		Low		Total			
	n	%	n	%	n	%	n	%		
Perceived Suspectibility										
High	31	10,73	145	50,17	113	39,10	289	100		
Low	1	4,76	13	61,90	7	33,33	21	100	0,00	0,989
Total	32	10,32	158	50,97	120	38,71	310	100		
Perceived Severity										
High	32	10,53	154	50,66	118	38,2	304	100		
Low	0	0,00	4	66,67	2	33,33	6	100	0,01	0,849
Total	32	10,32	158	50,97	120	38,71	310	100		
Perceived Benefits										
High	31	10,10	157	51,14	119	38,76	307	100		
Low	1	33,33	1	33,33	1	33,33	3	100	-0,04	0,442
Total	32	10,32	158	50,97	120	38,71	310	100		
Perceived Barriers										
High	15	6,98	101	46,98	99	46,05	163	100		
Low	17	17,89	57	60	21	22,11	147	100	-0,25	0,001
Total	32	10,32	158	50,97	120	38,71	310	100		

Sources: Primary Data, 2025

Based on Table 2, the distribution of respondents' physical activity shows that in the high perceived susceptibility group, most respondents (50,17%) were in the moderate

physical activity category. A similar pattern was also observed among respondents with low perceived susceptibility, with the majority in the moderate physical activity category (61,90%). In the high perceived severity group, respondents were predominantly in the moderate physical activity category (50,66%). In contrast, in the low perceived severity group, most respondents (66,67%) were in the moderate physical activity category. Furthermore, in the high perceived benefits group, the majority of respondents had moderate physical activity (51,14%), while in the low perceived benefits group, the distribution of physical activity was relatively even, at 33,33% each. In the perceived barriers variable, respondents with high barriers were mostly in the moderate physical activity category (46,98%), while respondents with low barriers were more in the moderate physical activity category (60%).

The results of the correlation analysis in Table 2 show that perceived susceptibility is not significantly related to physical activity (rs = 0,00; *P-value* = 0,989), as are perceived severity (rs = 0,01; *P-value* = 0,849) and perceived benefits (rs = -0,04; *P-value* = 0,442), all of which have very small correlation coefficients and are close to zero. In contrast, perceived barriers show a statistically significant relationship with physical activity (rs = -0,25; *P-value* < 0,001), with a negative direction and weak relationship strength. This indicates that the higher the respondents perceived barriers, the lower their level of physical activity, although the relationship is relatively weak.

Although several associations were statistically significant, the correlation coefficients indicated weak relationships. This suggests that while the variables are related, the strength of the associations is modest and may be influenced by other unmeasured factors. Therefore, these findings should be interpreted cautiously, indicating the presence of relationships but with limited magnitude.

Table 3. Results of Bivariate Analysis of Self-efficacy and Cues to Action

Variable	Physical Activity								rs	P-value
	High		Medium		Low		Total			
	n	%	n	%	n	%	n	%		
Self-efficacy										
High	32	10,88	152	51,70	110	37,41	294	100	0,12	0,029
Low	0	0,00	6	37,50	10	62,50	16	100		

Variable	Physical Activity								rs	P-value
	High		Medium		Low		Total			
	n	%	n	%	n	%	n	%		
Total	32	10,32	158	50,97	120	38,71	310	100		
Cues to Action										
High	31	10,76	150	52,08	107	37,15	228	100		
Low	1	4,55	8	36,36	13	59,09	22	100	0,11	0,041
Total	32	10,32	158	50,97	120	38,71	310	100		

Sources: Primary Data, 2025

Based on Table 3, the distribution of physical activity shows variations according to respondents' levels of self-efficacy and cues to action. In the high self-efficacy group, most respondents (152, 51,70%) were in the moderate physical activity category. Conversely, among respondents with low self-efficacy, the majority (10; 62,50%) were in the low physical activity category. Meanwhile, among respondents with high cues to action, most were in the moderate physical activity category (150 respondents, 52,08%). Among respondents with low cues to action, the largest proportion was in the low physical activity category (13 respondents, 59,09%).

The correlation analysis results in Table 3 show a statistically significant relationship between respondents' self-efficacy and physical activity (rs = 0,12; *P-value* = 0,029) and between cues to action and physical activity (rs = 0,11; *P-value* = 0,041). Both relationships are weakly positive. This finding indicates that the higher the respondents' self-efficacy and cues to action, the higher their physical activity levels, although the relationship is relatively weak.

Discussion

The Relationship Between Perceived Barriers and Physical Activity

The results of this study indicate that perceived barriers are negatively associated with respondents' physical activity (rs = −0,25; *P-value* < 0,001), with a weak strength. Perceived barriers are an individual's perceptions of obstacles encountered when carrying out a health behaviour, including physical, psychological, social, and environmental factors (9). In the context of the Health Belief Model (HBM), perceived barriers are among the most powerful predictors of health behaviours. Perceived barriers can be internal, such as laziness, lack of motivation, fatigue, low self-confidence,

and the perception that physical activity is unpleasant. Furthermore, barriers can also be external, such as time constraints due to academic demands, lack of sports facilities, unsupportive environmental conditions, and minimal social support from peers and family. In high school-aged adolescents, these factors are often the main reasons for low participation in physical activity despite their knowledge and perception of its benefits (10).

This finding is consistent with recent empirical research showing that perceived barriers contribute to adolescents' low participation in physical activity. For example, a study by Syafriani et al. (2025) found that both internal and external barriers were positively associated with low participation in physical activity, such as lack of sports facilities, academic pressure, and minimal social support (r = 0,325; *P-value* = 0,001) (11).

In addition, Septiani et al. (2025) confirmed that barriers to physical activity are multidimensional and often prevent adolescents from participating regularly, including personal barriers such as motivation and time conflicts, as well as environmental barriers such as a lack of access to safe and adequate facilities (12).

This barrier component is important in the context of health promotion in schools because simply providing information about the benefits of physical activity is not enough to encourage behaviour change if these barriers are not identified and addressed (13). Effective intervention approaches, such as reducing time barriers (e.g., scheduling physical activity sessions during school hours), providing adequate facilities, and fostering social support from teachers and peers, should be designed to reduce the burden of perceived barriers on adolescents (14).

The findings of this study align with the Health Belief Model, which posits that perceived barriers are among the strongest constructs influencing health behaviour. Perceived barriers, including limited time, fatigue, lack of facilities, and environmental and psychological factors, can directly inhibit individuals from engaging in physical activity, even if they already have positive knowledge and attitudes about its benefits.

The Relationship Between Self-efficacy and Physical Activity

The results of this study indicate that self-efficacy has a statistically significant positive relationship with respondents' physical activity ($r_s = 0.12$; $p = 0.029$), with a weak strength. This finding indicates that higher self-efficacy is associated with better physical activity levels. Self-efficacy is theoretically defined as an individual's belief in their ability to organize and execute the actions necessary to achieve a given outcome in a specific situation, not simply their objective abilities. Bandura stated that self-efficacy influences the extent to which an individual is willing to initiate a behaviour, maintain effort, and overcome obstacles that arise during the behaviour change process (15). Within the Health Belief Model (HBM), self-efficacy serves as a reinforcing factor, enabling individuals to translate perceptions of vulnerability, severity, and benefits into concrete actions. Even if an adolescent has a high perception of risks and benefits, physical activity will not be consistently performed if the individual is unsure of their own abilities. Therefore, self-efficacy is often considered a bridge between intention and actual behaviour in health behaviours (16).

Research by Phung et al. (2025) among adolescents in Vietnam found that self-efficacy was significantly associated with the duration of moderate-to-vigorous physical activity. Adolescents with high self-confidence in their ability to engage in physical activity tended to spend longer periods of time engaged in physical activity (17).

The Relationship between Cues to Action and Physical Activity

The results of this study indicate that cues to action are positively associated with respondents' physical activity ($r_s = 0.11$; $p = 0.041$), though the relationship is weak. This finding indicates that the stronger the cues to action a respondent has, the greater their tendency to engage in physical activity.

In the HBM, cues to action are constructs that serve as direct triggers that encourage individuals to engage in a health behaviour. These triggers do not stand alone as primary motivational factors; rather, they serve as stimuli that activate an individual's readiness to act once perceptions of threat

and benefit have been established. Cues to action can be internal or external. Internal triggers include conditions the individual experiences, such as fatigue, body aches, or health complaints. External triggers include exposure to health information, recommendations from health professionals, invitations from family or friends, and mass media and health campaigns (18).

This finding is consistent with the research of Phung et al. (2025), which reported that cues to action were significantly related to adolescents' physical activity time, although not the most dominant factor. This study found that adolescents who had triggers to action, such as encouragement from their environment, the presence of exercise buddies, and reminders or invitations to engage in physical activity, tended to spend more time engaging in moderate to vigorous physical activity (17).

Theoretically, these findings support the Health Belief Model, which positions cues to action as triggers rather than the primary determinants of health behaviour. These findings suggest that interventions to increase physical activity in adolescents need to combine cues to action with strengthening internal and social factors, such as increased self-efficacy, peer support, and repeated, contextually tailored health messages, to respond to triggers for action optimally.

CONCLUSION AND RECOMMENDATION

Most students at SMAN 1 Mataram City demonstrated a positive attitude toward physical activity. Perceived barriers, self-efficacy, and cues to action were significantly related, though the strength of the relationship was weak. Perceived barriers were negatively associated with physical activity, whereas self-efficacy and cues to action were positively associated. These findings indicate that psychosocial factors, particularly perceived barriers, self-efficacy, and motivation to act, play a greater role in influencing adolescent physical activity than perceived risks and health benefits. Therefore, school-based interventions should focus on reducing perceived barriers, strengthening self-efficacy, and providing cues to action to promote physical activity. For example, schools can provide regular

opportunities for physical activity during school hours and use motivational reminders or campaigns to encourage students to be more active.

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