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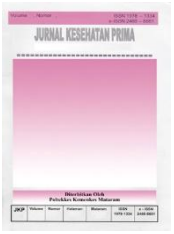

Motivation, Physical Health Status, and Academic Burnout as Predictors of Physical Activity Behavior in Adolescents

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Abstract

Physical activity is an essential health behavior in adolescence; however, the prevalence of insufficient physical activity remains high, including in West Nusa Tenggara Province. Physical activity behavior is influenced by various predisposing factors, such as motivation, physical health status, and academic burnout. This study aimed to examine the relationship between motivation, physical health status, and academic burnout with physical activity behavior among adolescents at SMAN 1 Mataram. This study employed an analytical observational design with a cross-sectional approach. A total of 310 students were selected using stratified random sampling. Data were collected using the Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2), Physical Activity Questionnaire for Adolescents (PAQ-A), PedsQL™ 4.0, and Maslach Burnout Inventory–Student Survey (MBI-SS). Data were analyzed using univariate analysis and Spearman's rank correlation test. The results showed that most adolescents had a moderate level of physical activity. Motivation was significantly and positively associated with physical activity behavior (rs = 0.11; p = 0.046), although the correlation strength was very weak. In contrast, physical health status (rs = 0.08; p = 0.136) and academic burnout (rs = 0.02; p = 0.657) were not significantly associated with physical activity behavior. In conclusion, motivation plays a significant role in adolescent physical activity behavior, while physical health status and academic burnout do not show a significant relationship in this population.

Keywords: Physical Activity; Motivation; Physical Health Status; Academic Burnout; Adolescents

INTRODUCTION

Physical activity is one of the important determinants of adolescent health that plays a role in maintaining physical fitness, mental health, and preventing non-communicable diseases in adulthood (WHO, 2024). Physically active behavior during adolescence contributes to the formation of long-term healthy lifestyle patterns, thus having significant implications for the quality of individual health in the future. However, various reports indicate that the level of physical activity among adolescents is still below the recommended levels.

The World Health Organization reports that more than 81% of adolescents worldwide do not meet the minimum recommendation of 60 minutes of moderate to vigorous physical activity per day (WHO, 2024). A similar situation occurs in Indonesia, where national data show an increasing proportion of adolescents with low physical activity levels. RISKESDAS (2018) remains the most comprehensive and nationally representative dataset on adolescent health behavior in Indonesia to date. In West Nusa Tenggara Province, the prevalence of inadequate physical activity among adolescents remains a public health concern, particularly in urban areas where

sedentary lifestyles are increasingly dominant. This situation is of particular concern given that adolescence is a crucial transitional period in the formation of health behaviors (RISKESDAS, 2018).

According to the PRECEDE–PROCEED model proposed by Lawrence Green, health behavior is influenced by predisposing, enabling, and reinforcing factors (Green et al., 1980). Predisposing factors include cognitive and psychological aspects that shape an individual's tendency to behave in a certain way. In the context of adolescent physical activity, motivation, physical health status, and *academic burnout* are predisposing factors that have the potential to influence adolescent involvement in physical activity.

Motivation acts as an internal driver that determines the extent to which individuals have the desire and commitment to engage in physical activity on an ongoing basis. Autonomous motivation tends to be associated with more stable engagement in physical activity, while non-autonomous motivation is more dependent on external pressures or demands (Ryan & Deci, 2017). On the other hand, physical health status can affect adolescents' ability and readiness to engage in physical activity, especially if individuals have physical limitations or specific health complaints (Varni et al., 2001). Physical health status is a predisposing factor that not only influences an individual's capacity to engage in physical activity, but also shapes subjective perceptions of readiness, safety, and confidence in performing physical activity without adverse health risks. These perceptions play a critical role in the formation of intention and decision-making processes related to sustained participation in physical activity, as described in health behavior theories and behavioral intention models(Varni et al., 2001). Thus, physical health status conceptually influences physical activity behavior through psychological mechanisms, rather than solely through objectively measured physical limitations.

In addition, high academic demands on high school students have the potential to cause academic burnout, which is characterized by emotional exhaustion, cynicism toward academic activities, and decreased self-efficacy as learners (Schaufeli et al., 2002).This condition has been hypothesized and empirically supported to be associated with reduced engagement in leisure-time physical activity among adolescents, mediated by psychological exhaustion, decreased intrinsic motivation, and limited time and energy for non-academic activities (Cheung & Li, 2019; Tian & Yang, 2024).

Previous studies have shown varying results regarding the relationship between motivation, physical health status, and academic burnout with physical activity behavior in adolescents. Some studies report a significant relationship, while others find a weak or insignificant relationship (Cachón-Zagalaz et al., 2023; Taylor et al., 2022). In addition, most studies still examine these variables separately, so that a comprehensive picture of the role of predisposing factors in adolescent physical activity is still limited, especially in the context of Indonesian high school adolescents.

Based on the above considerations, research is needed to analyze the simultaneous relationship between motivation, physical health status, and academic burnout with physical activity behavior among adolescents. The novelty of this study lies in the simultaneous examination of motivation, physical health status, and academic burnout as predisposing factors for adolescent physical activity behavior within the PRECEDE–PROCEED conceptual framework. In contrast to previous studies that have generally examined these variables separately, this study

integrates psychological factors and health perception into a single analytical model within the context of senior high school adolescents in Indonesia. Furthermore, the use of validated psychosocial instruments and the focus on a local context in West Nusa Tenggara Province provide empirical evidence that remains relatively limited in both national and international literature. Therefore, this study aims to analyze the relationship between motivation, physical health status, and academic burnout with physical activity behavior among adolescents at SMAN 1 Mataram, one of the leading senior high schools in Mataram City.

METHOD

This study is an analytical observational study with a *cross-sectional* approach. The cross-sectional design was selected because it is appropriate for identifying relationships between variables at a single point in time without intervention and for efficiently describing the pattern of associations between predisposing factors and physical activity behavior among adolescents. The study was conducted from June to December 2025 at SMAN 1 Mataram. The study population consisted of all active students at SMAN 1 Mataram in the 2024/2025 academic year, totaling approximately 1.372 students. The sample size was determined using the Slovin formula with a 95% confidence level, resulting in a sample of 310 respondents. The respondents were selected using stratified random sampling based on grade level.

Physical activity behavior was measured using the Physical Activity Questionnaire for Adolescents (PAQ-A). Motivation toward physical activity was assessed using the Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2) with calculation of the Relative Autonomy Index (RAI). Physical health status was evaluated using the physical functioning domain of the PedsQL 4.0 Generic Core Scales, while academic burnout was measured using the Maslach Burnout Inventory-Student Survey (MBI-SS). All instruments were Indonesian-language versions that had undergone cultural adaptation and have demonstrated adequate validity and reliability in adolescent populations. All instruments generate continuous scores according to their respective scoring manuals. The PedsQL™ 4.0 scores were transformed to a 0–100 scale, with higher scores indicating better physical health status. The PAQ-A produces a mean score ranging from 1 to 5, where higher values reflect higher levels of physical activity. The BREQ-2 assesses multiple forms of behavioral regulation, from amotivation to intrinsic regulation, from which the RAI was derived. The MBI-SS measures exhaustion, cynicism, and reduced academic efficacy. Inferential analyses were conducted using the original continuous scores to preserve statistical power and avoid information loss due to dichotomization. Where categorical groupings were presented in descriptive tables, classifications were based solely on the distribution of scores within the study sample and were applied exclusively for descriptive purposes, not as clinical or normative cut-off classifications. Specifically, categorization of physical health status was based on the sample mean score of the PedsQL™ 4.0 physical functioning domain, such that scores below the mean were classified into lower categories and scores equal to or above the mean into higher categories. These labels represent relative positioning within the study sample and do not indicate objective medical diagnosis or standardized health status levels. Data analysis was performed univariately to describe respondent characteristics and bivariately using Spearman's rank correlation test with a significance level of 0.05, following the assessment of data normality which indicated a non-normal distribution. This study has been approved by the Ethics Committee of the Faculty

of Medicine, Al-Azhar Islamic University No. 158/EC-01/FK-06/UNIZAR/X/2025.

RESULTS AND DISCUSSION

RESULTS

1. Respondent Characteristics

The characteristics of the respondents in this study were analyzed to provide an overview of their demographic profiles and social conditions. These characteristics included class, major, residential address, parental income, gender, status as an athlete, and health problems.

Table1 . Respondent Characteristics

Gender	**Frequency**	**Percentage**
Male	126	40.6
Female	184	59.40
Grade	**Frequency**	**Percentage (%)**
X	106	34.20
XI	104	33.50
XII	100	32.30
Address	**Frequency**	**Percentage (%)**
Within Mataram City	284	91.6
Outside Mataram City	26	8.4
Parental income	**Frequency**	**Percentage (%)**
≥ UMP (Rp 2,602,931)	246	79.4
< UMP (Rp 2,602,931)	64	20.60
Class specialization	**Frequency**	**Percentage (%)**
General	106	34.20
Science	180	58.10
Social Sciences	24	7.7
Athletes	**Frequency**	**Percentage (%)**
Yes	51	16.50
No	259	83.50
Has health problems	**Frequency**	**Percentage (%)**
Yes	36	11.60
No	274	88.40
Age	**Frequency**	**Percentage (%)**
14 years	1	3.00
15 Years	77	24.80
16 years	98	31.60
17 years old	105	33.50
18 years old	30	9.70
Total	310	100.00

Source: Primary Data

The respondents in this study consisted of 310 students, with the majority being female (59.4%). The distribution of grades was relatively even between grades X (34.2%), XI (33.5%), and XII (32.3%). Most of the respondents resided in Mataram City (91.6%). Most respondents did not have health problems (88.4%). The age range of respondents was dominated by those aged 16-17 years (65.1%), with the most respondents aged 17 years (33.5%).

2. Distribution of Motivation, Physical Health Status, *Academic Burnout* among Respondents

Table2 . Distribution of Motivation, Physical Health Status, *Academic Burnout*, and Physical Activity

Motivation	**Frequency**	**Percentage**
Non-autonomous	193	62.25
Balanced	10	3.23
Autonomous	107	34.52
Physical Health Status	**Frequency**	**Percentage (%)**
Poor	204	65.81
Fair	98	31.61
Very good	8	2.58
Academic Burnout	**Frequency**	**Percentage (%)**
High	22	7.09
Currently	173	55.81
Low	115	37.10
Physical Activity	**Frequency**	**Percentage (%)**
Low	44	14.19

Motivation	Frequency	Percentage
Non-autonomous	193	62.25
Balanced	10	3.23
Autonomous	107	34.52
Medium	203	65.48
High	63	20.33
Total	310	100.00

Based on Table X, most respondents had non-autonomous motivation, namely 193 respondents (62.25%), followed by autonomous motivation in 107 respondents (34.52%), and only a small portion were in the balanced category (3.23%). These findings indicate that respondents' motivation for physical activity is more influenced by external factors than intrinsic motivation.

In terms of physical health status, the majority of respondents were in the poor category, namely 204 respondents (65.81%), while 31.61% of respondents had fairly good physical health status, and only 2.58% were classified as very good. This distribution indicates that the physical health condition of respondents in general is still not optimal.

Furthermore, the distribution *of academic burnout* shows that most respondents are in the moderate category, namely 173 respondents (55.81%), followed by the low category at 37.10%, and only 7.09% of respondents experiencing high burnout. This indicates that academic pressure on respondents is relatively manageable, although there are still groups at risk. In terms of physical activity, the majority of respondents were in the moderate category, namely 203 respondents (65.48%), followed by the high category at 20.33%, and the low category at 14.19%. These findings indicate that most respondents have been doing moderate levels of physical activity, although the proportion of high physical activity is still relatively limited.

The Relationship Between Motivation and Physical Activity

Based on bivariate analysis, respondents with non-autonomous motivation mostly had moderate levels of physical activity (66.84%), while only 17.10% of respondents achieved high levels of physical activity. In the balanced motivation group, moderate physical activity also dominated (50.00%), and in the autonomous motivation group, the majority of respondents were in the moderate physical activity category (64.49%), with a proportion of high physical activity of 25.23%. The results of the Spearman's rank correlation test showed a very weak but significant positive relationship between motivation and physical activity ($rs = 0.11$; $p = 0.046$). There was a statistically significant correlation between motivation and physical activity ($rs = 0.11$; $p < 0.05$). Although statistically significant, the magnitude of the correlation was very weak. According to effect size interpretation proposed by Cohen (1988), a correlation coefficient ranging from 0.10 to 0.29 represents a small effect size, indicating that motivation contributes only minimally to the variance in physical activity behavior.

Table 3 . Relationship between Motivation and Physical Activity

Motivation	Physical Activity								rs	p-value
	Low		Moderate		High		Total			
	n	*%*	*n*	*%*	*n*	*%*	*N*	*%*		
Non-autonomous	31	16.06	129	66.84	33	17.10	193	100	0.11	0.046
Balanced	2	20.00	5	50.00	3	30	10	100		
Autonomous	11	10.28	69	64.49	27	25.23	107	100		
Total	44	14.19	203	65.48	63	20.32	310	100		

Source: Primary Data

3. Relationship between Physical Health Status and Physical Activity

Table4 . Relationship between Physical Health Status and Physical Activity

Physical health status	Physical Activity								rs	p-value
	Low		Moderate		High		Total			
	n	*%*	*n*	*%*	*n*	*%*	*N*	*%*		
Poor	30	14.70	138	67.65	36	17.65	204	100	0.08	0.136
Fair	13	13.26	62	63.27	23	23.47	98	100		
Very good	1	12.50	3	37.50	4	50.00	8	100		
Total	44	14.19	203	65.48	63	20.32	310	100		

Source: Primary Data

Based on bivariate analysis, the majority of respondents in all categories of physical health status perception showed moderate levels of physical activity, both in the poor (67.65%) and fair (63.27%) categories. The proportion of high physical activity was relatively smaller in both categories. In the very good physical health status category, 50.00% of respondents achieved high physical activity, but the number of respondents in this category was limited. The results of the Spearman's rank correlation test showed a very weak and insignificant positive relationship between physical health status and physical activity (rs = 0.08; p = 0.136). Based on commonly used effect size guidelines proposed by Cohen (1988), correlation coefficients below 0.10 are considered negligible. Thus, the observed association represents a trivial effect size and does not indicate a meaningful relationship within this sample.

Table 5 . Relationship between *Academic Burnout* and Physical Activity

Academic burnout	Physical Activity								*rs*	*p-value*
	Low		Moderate		High		Total			
	n	*%*	*n*	*%*	*n*	*%*	*N*	*%*		
High	2	9.09	19	86.36	1	4.55	22	100	0.02	0.657
Moderate	28	16.19	105	60.69	40	23.12	173	100		
Low	14	12.17	79	68.70	22	19.13	115	100		
Total	44	14.19	203	65.48	63	20.32	310	100		

Source: Primary Data

Based on bivariate analysis, the majority of respondents in all categories *of academic burnout* were at a moderate level of physical activity, with the highest proportion in the high burnout category (86.36%). The proportion of high physical activity was relatively small in all burnout categories, including moderate burnout (23.12%) and low burnout (19.13%). The results of the Spearman's rank correlation test showed a very weak and insignificant relationship between *academic burnout* and physical activity (rs = 0.02; p = 0.657). According to Cohen (1988) criteria, a correlation coefficient of this magnitude falls within the negligible range, indicating the absence of a meaningful effect size.

DISCUSSION

The Relationship Between Motivation and Physical Activity

The present study found a statistically significant but very weak positive association between motivation and physical activity among high school adolescents (rs = 0.113; p = 0.046). Although the direction of the relationship suggests that higher motivation is associated with higher physical activity levels, the magnitude of the effect was small, indicating limited explanatory power. This finding implies that motivation alone may not be a dominant determinant of physical activity behavior in this population. Behavioral engagement in physical activity is likely influenced by a broader set of contextual factors, including environmental support, peer influence, school policies, and access to facilities.

Within Lawrence Green's PRECEDE–PROCEED framework, motivation is a predisposing factor that influences an individual's readiness to engage in healthy behavior. Motivation acts as an internal drive that encourages adolescents to engage in physical activity, whether to maintain health, improve fitness, or gain psychological satisfaction (Cachón-Zagalaz et al., 2023; Green et al., 1980). The results of this study are in line with previous findings showing that motivation has a significant relationship with physical activity in adolescents, albeit with a weak relationship strength (Antunes et al., 2024; Xu et al., 2024).

The relatively weak relationship found in this study indicates that motivation is not the only factor determining adolescent physical activity behavior. A number of previous studies have reported that the influence of motivation on physical activity can be affected by other factors, such as social support, academic demands, school environment, and residential environment (Feil et al., 2021; Terashima et al., 2025). Previous studies also noted variations in access to sports facilities and green open spaces among respondents as one of the limitations of the study, which could potentially affect overall physical activity levels. These findings may explain why, even though the relationship between motivation and physical activity is significant, its contribution to physical

activity behavior is relatively weak (Wiadnyani et al., 2025).

Thus, the results of this study confirm that motivation plays a role as a predisposing factor in physical activity among high school adolescents, but its effectiveness is greatly influenced by other supporting factors. Efforts to increase physical activity among adolescents need to be comprehensive, not only by increasing motivation, but also by creating an environment that supports active behavior.

The Relationship Between Physical Health Status and Physical Activity

The results of the Spearman correlation test show that there is no significant relationship between physical health status and physical activity among high school students (p-value = 0.136; rs = 0.085). Although the direction of the relationship is positive, the strength of the correlation is very weak and not statistically significant, indicating that differences in perceptions of physical health status are not directly related to the respondents' level of physical activity.

Within Lawrence Green's PRECEDE–PROCEED framework, physical health status is a predisposing factor that influences an individual's readiness to engage in healthy behaviors. However, in this study physical health status was measured based on adolescents' subjective perceptions, which do not always reflect their objective physical condition or physical activity behaviors. In the adolescent age group, perceptions of health are often influenced by momentary physical feelings and the absence of complaints of illness, so that individuals may feel healthy even though they have low levels of physical activity.

The results of this study are in line with the findings of Feil et al. (2021)and Joensuu et al. (2024)Joensuu *et al.* (2024), who reported that perceptions of physical health are not always significantly related to physical activity in adolescents. Adolescents who feel subjectively healthy are not necessarily motivated to increase their physical activity, especially if they do not feel any real physical limitations. The difference with other studies that found a significant relationship (Karácsony & Hideg-Fehér, 2025)may be influenced by differences in measurement methods and respondent characteristics, particularly the use of objective indicators or populations with a wider range of health conditions.

Thus, the results of this study indicate that physical health status is not a major predisposing factor that encourages physical activity among high school adolescents. These findings suggest that increasing physical activity among adolescents needs to focus more on other factors that play a greater role, such as motivation and environmental support.

The Relationship Between *Academic Burnout* and Physical Activity

The results of the Spearman correlation test show that there is no significant relationship between *academic burnout* and physical activity among high school students (p-value = 0.657; rs = 0.025). The very weak correlation coefficient value indicates that the level of academic fatigue is almost unrelated to the variation in physical activity performed by the respondents.

Within Lawrence Green's PRECEDE–PROCEED framework, *academic burnout* can be viewed as a psychosocial predisposing factor that theoretically has the potential to influence health behavior. However, the results of this study indicate that the effect of *academic burnout* on physical activity is not direct. These findings are consistent with the research by Tian & Yang (2024)and Du et al. (2025), which reported that the relationship between academic burnout and physical activity in adolescents is not significant, as physical activity is more influenced by habits, environment, and other supporting factors.

Some studies even show that physical activity acts as a protective factor against burnout, rather than a behavior directly influenced by burnout.

The difference with other studies that found a significant relationship (Cheung & Li, 2019)can be explained by differences in respondent characteristics and types of physical activity performed. In this study, adolescents' physical activity was likely dominated by light or daily activities, so that academic burnout did not significantly reduce physical activity involvement.

Thus, the results of this study indicate that *academic burnout* is not a major predisposing factor affecting physical activity in high school adolescents. These findings suggest that efforts to increase physical activity in adolescents need to focus more on habit formation and environmental support rather than solely on reducing academic fatigue.

The weak magnitude of association observed in this study may partly reflect the influence of unexamined confounding variables, such as sex differences, participation in organized school sports, or variations in school-based physical activity policies. In addition, contextual and environmental factors may act as moderating variables that either strengthen or attenuate the relationship between motivation and physical activity. Future research using multivariate regression models or structural equation modeling is warranted to further clarify these potential pathways and interactions.

LIMITATIONS

This study has several considerations that should be acknowledged. The use of self-report instruments may introduce response-related bias. Score categorization was based on the distribution within the study sample and does not represent standardized clinical cut-off classifications. Additionally, potential confounding variables were not examined using multivariate modeling approaches, which may influence the precision of the estimated associations.

CONCLUSION

This study identified a statistically significant but very weak positive association between motivation and physical activity among adolescents at SMAN 1 Mataram. Physical health status and academic burnout were not significantly associated with physical activity. The small magnitude of the observed association indicates that motivation alone may not sufficiently explain variations in physical activity behavior, suggesting the involvement of broader contextual and environmental factors.

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