



The Effect of Physical Activity on Mood

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Abstract

Physical activity is considered to affect mood, but this relationship is not always consistent and may depend on the context of the activity and individual characteristics. This study aims to analyze the effect of physical activity on mood among members of a recreational sports community using a cross-sectional study design involving 52 respondents selected through purposive sampling. Physical activity was measured using the International Physical Activity Questionnaire (IPAQ) and grouped into three type of activities (running, trail run, and cycling), while mood was measured using the Brunel Mood Scale (BRUMS). Data analysis was performed using One-Way ANOVA test, which showed that there were no significant differences in physical activity levels between activity groups ($F = 2.502$; $p = 0.092$) or in mood conditions between physical activity groups ($F = 2.006$; $p = 0.145$). These findings indicate that physical activity does not have a significant effect on mood in the recreational sports community in this study, suggesting that the relationship between physical activity and mood is complex and may be influenced by other factors such as intensity, consistency, social context, and unmeasured psychological variables.

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INTRODUCTION

Physical activity is an important part of a healthy lifestyle that provides both physio-logical and psychological benefits (Istyanto & Rahmi, 2023). In recent years, attention to physical activity has increased because its role is not only related to physical health (Ayu et al., 2023), but also to a person's emotional state (Khoirunnisa et al., 2024). Mood, as a psychological aspect, is closely related to physical activity, where changes in the intensity and frequency of physical activity can affect daily emotional states (Liu et al., 2024). Therefore, scientific studies on the effects of physical activity on mood are becoming increasingly relevant in the context of mental health in society (Saufi et al., 2024).

This effect is even more interesting to explore, given that many studies show that physical activity triggers the release of neurotransmitters such as endorphins and dopamine, which play a role in improving mood (Firdaus et al., 2025). However, the effect of physical activity on mood is not always the same between individuals because it is influenced by the duration, intensity, and type of activity performed (Skurvydas et al. 2024). These variations in response indicate the need for further research to understand how physical activity in specific populations affects their mood (Kencana et al., 2025). Thus, more specific analysis was conducted primarily on groups with clear physical activity patterns.

One interesting group to study is recreational sports communities that regularly engage in physical activity as part of their hobbies and social needs (Restu et al., 2025). This community has a unique characteristic, namely that it engages in exercise not solely for competitive reasons, but as a form of recreation, relaxation, and emotional fulfillment (Santai et al., 2024). These conditions allow for mood variations that may differ from those experienced by the general population. Therefore recreational sports communities are an ideal subject for researching the dynamics of physical activity's influence on mood.

The novelty of this study demonstrated by the selection of recreational sports communities as the focus of the study, which until now has not received much attention in research on the relationship between physical activity and mood. Unlike previous studies that generally examined athletes, students, or the general population, this study examined physical activities that took place spontaneously and were not bound by formal training patterns within the community

environment. Furthermore, comparing several types of recreational physical activities carried out in a social context provides a broader perspective on how mood experiences are formed through sports activities that are oriented towards fun and togetherness, rather than competitive demands.

Based on this background, this study aims to analyze the effect of physical activity on the mood of members of recreational sports communities. This study is expected to provide empirical evidence on the influence of these two variables and serve as a reference for sports practitioners, community coaches, and future researchers to understand the importance of physical activity in improving emotional regulation and psychological well-being.

METHOD

This study used a cross-sectional study design (Sofya et al., 2024). This design was chosen because the researchers did not treat the respondents directly, but rather examined the influence between physical activity (as an independent variable) and mood (as dependent variable) based on conditions that had previously occurred among members of the recreational sports community (Afiah & Sugiaty 2025). Cross-sectional research allows researchers to obtain an overview of the effect of physical activity on mood by collecting data at a single point in time. This design was chosen because the independent variable, namely physical activity, cannot be manipulated directly by researchers, but is measured based on the actual conditions of the participants. The relationship between the two variables was tested through statistical analysis to determine the extent to which physical activity contributes to mood variations in the research subject. Data collection was conducted through an online questionnaire using google forms, allowing respondents to fill it out independently and flexibly according to their own schedules.

The research population consisted of all members of the recreational sports community who actively participated in weekly activities. The sampling technique used was purposive sampling with the following criteria: (1) actively participating in community activities for at least the last month, and (2) willing to complete the questionnaire. From the selection results, 52 respondents who met the inclusion criteria were obtained. This number was considered adequate for data analysis using the One Way Anova test in quantitative social research.

In addition, the sample size was consider-

red to have met the minimum requirements for One Way ANOVA analysis, in which each physical activity group had an adequate number of respondents for statistical analysis.

Although no specific power analysis was conducted, this sample size is considered sufficient to provide an initial overview of the effect of physical activity on mood in the population studied. However, the relatively limited sample size remains a consideration in interpreting the research results. Therefore, further research involving a larger number of respondents is recommended so that the results obtained have higher statistical power and can be generalized more broadly.

The independent variable in this study was physical activity, which was grouped into three categories based on intensity or activity level. The dependent variable was mood, which included 24 sub-dimensions according to the mood instrument used. Both variables were measured using a standard questionnaire that had been tested for reliability and validity in previous studies. Physical activity data were collected using the International Physical Activity Questionnaire (IPAQ) (Akbar et al., 2025) obtained through a questionnaire that measures the frequency, duration, and intensity of weekly physical activity. Meanwhile, mood is measured using the Brunel Mood Scale (BRUMS) (Zaky et al., 2017) using a psychological scale that contains several indicators of respondents' feeling and emotional conditions. Respondents provided assessments using a 0-4 Likert scale (0 = not at all, 1 = slightly, 2 = moderately, 3 = quite, 4 = very). Each statement item has a specific score range, enabling quantitative statistical analysis. All questionnaires were completed online to facilitate distribution and increase participation.

In this study, several potential biases were identified and minimized. Confounding bias may also affect the results of the study, given that mood is influenced by various other factors such as stress levels, sleep quality, and social environmental conditions that were not directly measured in this study. Nevertheless, the researchers sought to reduce the influence of confounding bias by consistently grouping physical activities and using statistical analyses appropriate to the study objectives.

The data obtained were analyzed using a one-way ANOVA test to determine differences in mood based on physical activity categories. The analysis process began with descriptive statistical tests to provide an overview of the characteristics of the data obtained, such as mean values and standard deviations. The ANOVA test was used

because the physical activity variable consisted of three groups, namely running, trail run, and cycling. Meanwhile, the mood variable was numerical data that could be compared between groups. The entire analysis process was performed using SPSS (Statistical Package for the Social Sciences) software with a significance level of $\alpha = 0.05$.

RESULTS AND DISCUSSION

Based on the results of descriptive statistical analysis of 52 respondents, an overview of the respondents' physical activity and mood was obtained. The physical activity variable had a minimum value of 888 and maximum value of 24.132, with an average value of 4.225.86 and a standard deviation of 3.454.015. The relatively large standard deviation value indicates that there is a wide variation in the level of physical activity among respondents.

For the mood variable, the minimum value obtained was 9 and the maximum value was 59. The average mood score of respondents was 21.44 with a standard deviation of 10.226. This shows that the mood of respondents varied, with a fairly heterogeneous data distribution. Meanwhile, the physical activity group variable had a minimum value of 1 and a maximum of 3, with an average value of 1.65 and a standard deviation of 0.837, indicating that the distribution of respondents in each physical activity group was relatively even.

Table 1. Descriptive

	N	Min	Max	Mean	SD	Description
Physical Activity	52	888	24132	4225.86	3454.015	High Variability
Mood	52	9	59	21.44	10.226	Moderate level
Group	52	1	3	1.65	.837	Relatively Balance

Hypothesis testing was conducted using a one-way ANOVA test to determine the difference in means between physical activity groups. The analysis results showed that for the physical activity variable, an F value of 2.502 was obtained with a significance value (p) of 0.092. This value is greater than the significance level of 0.05, so statistically there is no significant difference between physical activity groups.

Furthermore, the results of the one-way ANOVA test on the mood variable showed an F value of 2.006 with a significance value (p) of 0.145. This significance value is also greater than 0.05, indicating that there is no significant difference in the average mood scores between physical activity groups. Thus, based on these test

results, it can be concluded that the respondents level of physical activity did not have a significant effect on their mood.

Table 2. One Way Anova

		Sum of Squares	df	Mean Square	F	Sig	Description
Physical Activity	Between Groups	56381866.34	2	28190933.17	2.502	.092	No Significant
	Within Groups	552059205.8	49	11266514.40			
	Total	608441072.2	51				
Mood	Between Groups	403.510	2	201.755	2.006	.145	No Significant
	Within Groups	4929.317	49	100.598			
	Total	5332.827	51				

This study aims to analyze the effect of physical activity on mood (Ayu et al., 2023). Based on the results of data analysis, this study shows that differences in physical activity levels do not have a significant effect on respondents moods. These findings indicate that physical activity, in the context and characteristics of the respondents in this study, is not yet able to be a major distinguishing factor in an individual's mood. This shows that the relationship between physical activity and mood is complex and cannot always be explained simply by differences in physical activity levels alone.

Theoretically, physical activity is often associated with improved mood through physiological and psychological mechanisms (Liu et al., 2024). Physical activity can simulate the release of hormones and neurotransmitters that play a role in regulating emotions, such as endorphins and serotonin, so individuals who are physically active tend to report more positive psychological conditions (Firdaus et al., 2025). However, the results of this study show that these benefits do not always appear consistently in all individuals. This reinforces the view that the effects of physical activity on mood are greatly influenced by context, such as the type of activity, intensity, duration, and the individuals condition when performing the activity (Putra et al., 2025).

The results of this study are in line with several previous state that physical activity is not always significantly related to mood, especially in observational studies that do not involve controlled treatment or intervention (Koker et al., 2023). Several studies show that physical activity only has a significant impact on mood when it is done regularly, in a structured manner, and at a certain intensity. (Huang & Wong, 2025). In this study,

the physical activities performed by respondents were natural and varied, so it is likely that the psychological effects caused were also inconsistent (Pham et al., 2023).

In addition, mood is an affective state that is highly dynamic and can change rapidly (Dork et al., 2024). A person's mood is not only influenced by physical activity, but also by various other factors such as academic pressure, social problems, family circumstances, sleep quality, and daily stress levels (Babatunde et al., 2025). These factors have the potential to become confounding variables that cannot be fully controlled in this study. Therefore, although physical activity plays an important role in maintaining mental health, its effect on mood cannot be considered independently without taking into account other supporting factors (Muqorrobin et al., 2024).

This study also shows that differences in physical activity levels are not strong enough to produce meaningful differences in mood (Fikri et al., 2025). This may be due to the possibility that the physical activity performed by respondents has not reached the optimal level of intensity or duration to bring about significant psychological changes (Huang & Wong, 2025). Previous studies have confirmed that the benefits of physical activity on mood are more evident in moderate to high-intensity activities that are performed continuously (Samsudin et al., 2024). Thus, light or inconsistent physical activity may not have a significant impact on mood (Skurvydas et al. 2024).

From a methodological perspective, the results of this study may also be influenced by the use of self-report instruments (Beer et al., 2024). Measurements of physical activity and mood that rely on respondents perceptions have the potential to introduce subjective bias, such as respondents tendency to underestimate or overestimate their condition (Curtis et al., 2020). In addition, differences in respondents understanding of the statements in the instrument may also affect the accuracy of the data obtained (Safitri & Widodo, 2024). This is one of the limitations that needs to be considered when interpreting the research results.

Although the results of this study did not show a significant effect, these findings still have an important contribution to the development of studies on physical activity and mental health (Lederman & Lederman, 2016). This study shows that increased physical activity alone does not necessarily automatically improve mood without considering quality, context, and individual conditions (Skurvydas et al. 2024). In other words, efforts to improve mental health through physical

activity need to be accompanied by a more holistic and integrated approach (White et al., 2024).

The implications of this study suggest that physical activity promotion programs should not only focus on the quantity of activity, but also consider the accompanying psychological, social, and environmental aspects (Kumayas et al., 2022). An approach that combines physical activity with social support, stress management, and mental health education has the potential to provide more optimal results in improving mood (White et al., 2024).

The limitations of this study include its observational research design, which does not allow researchers to draw direct causal conclusions (Munte et al., 2024). In addition, this study did not consider moderator variables such as gender, age, or stress levels that may influence the relationship between physical activity and mood (Luo et al., 2025). Therefore, further research is recommended to use experimental or longitudinal design and include additional variables so that the relationship between physical activity and mood can be understood more deeply.

Overall, the results of this study confirm that the relationship between physical activity and mood is not simple and is influenced by various internal and external factors (Babatunde et al., 2025). These findings are expected to serve as a reference for further research and contribute to the development of more effective physical activity-based interventions to support mental health.

CONCLUSION

Based on the results of the study, physical activity did not demonstrate a clear effect on the mood of members of recreational sports communities. Differences in the type of physical activity performed did not result in meaningful differences in mood. These findings indicate that the relationship between physical activity and mood is complex and may be influenced by factors beyond the variables examined in this study.

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