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Move for Happiness: Examining the Role of Emotion Regulation in the Relationship Between Physical Activity and Happiness

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ABSTRACT

Background: Physical activity is consistently associated with higher happiness, yet the strength of this relationship varies across individuals. Psychological characteristics such as emotion regulation may relate to well-being, but their role in explaining the benefits of physical activity remains unclear. **Objective**: This study examined the relationship between physical activity and happiness and evaluated whether emotion regulation is associated with differences in this relationship. **Method**: A quantitative non-experimental design was conducted involving 234 undergraduate students selected through purposive sampling. Data were collected using the Global Physical Activity Questionnaire, the Emotion Regulation Questionnaire on Indonesian Sport Setting, and the short version of the Oxford Happiness Questionnaire. Regression and moderation analyses were performed using JASP. **Results**: Physical activity was positively associated with happiness. Emotion regulation was also related to happiness at the correlational level; however, it did not significantly moderate the relationship between physical activity and happiness. **Conclusion**: The findings suggest that physical activity contributes to happiness relatively consistently across individuals, while emotion regulation represents a related psychological characteristic rather than a determining mechanism explaining the association.

Keywords: Physical activity; emotion regulation; happiness; well-being

ABSTRAK

Latar Belakang: Aktivitas fisik secara konsisten dikaitkan dengan tingkat kebahagiaan yang lebih tinggi, namun kekuatan hubungan ini bervariasi antar individu. Karakteristik psikologis seperti regulasi emosi berkaitan dengan kesejahteraan, tetapi perannya dalam menjelaskan manfaat aktivitas fisik masih belum jelas. **Tujuan**: Penelitian ini bertujuan untuk menguji hubungan antara aktivitas fisik dan kebahagiaan serta mengevaluasi apakah regulasi emosi berkaitan dengan variasi dalam hubungan tersebut. **Metode**: Penelitian kuantitatif non-eksperimental melibatkan 234 mahasiswa sarjana yang dipilih melalui purposive sampling. Data dikumpulkan menggunakan Global Physical *Activity Questionnaire, Emotion Regulation Questionnaire on Indonesian Sport Setting, dan Oxford Happiness Questionnaire* versi pendek. Analisis regresi dan moderasi dilakukan menggunakan JASP. **Hasil**: Aktivitas fisik berhubungan positif dengan kebahagiaan. Regulasi emosi juga berhubungan dengan kebahagiaan pada tingkat korelasional, namun tidak secara signifikan memoderasi hubungan antara aktivitas fisik dan kebahagiaan. **Kesimpulan**: Temuan menunjukkan bahwa aktivitas fisik berkontribusi terhadap kebahagiaan secara relatif konsisten antar individu, sementara regulasi emosi merupakan karakteristik psikologis terkait tetapi bukan mekanisme penentu yang menjelaskan hubungan tersebut.

Kata Kunci: Aktivitas fisik, regulasi emosi, kebahagiaan; kesejahteraan

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Introduction

Modern lifestyles characterized by increasing academic demands, changes in daily routines, and intensive technology use have substantially influenced psychological well-being, particularly among university students. The shift toward sedentary behavior and cognitive workload has been associated with increased psychological strain and emotional instability. Consequently, identifying everyday behaviors that support well-being has become an important focus in psychological and health research.

One behavioral factor consistently linked to psychological health is physical activity. Physical activity is not only a preventive health behavior but also a source of positive affective experiences associated with happiness and life satisfaction (An et al., 2020; Iwon et al., 2021; Wang et al., 2022; Zhang & Chen, 2019) Regular engagement in physical activity has been shown to improve mood, reduce depressive symptoms, and enhance overall psychological functioning (de Oliveira et al., 2019; Mahindru et al., 2023; Sieniawska et al., 2024; Singh et al., 2023). These benefits appear across age groups and activity types, indicating that movement behavior represents a general contributor to subjective well-being (Chan et al., 2019).

The psychological effects of physical activity have been explained through both physiological and psychological pathways. Neurobiological responses, including neurotransmitter regulation and stress reduction, are associated with positive emotional states (Chen & Nakagawa, 2023; Martín-Rodríguez et al., 2024). However, previous studies consistently report that the magnitude of the relationship between physical activity and happiness tends to be modest (An et al., 2020; Wang et al., 2022). This suggests that behavioral engagement alone may not fully explain variations in well-being across individuals.

In addition to behavior, psychological functioning plays an important role in well-being. Emotion regulation refers to the ability to monitor, evaluate, and modify emotional reactions in adaptive ways (Gross, 2002). Individuals who effectively regulate emotions tend to experience more stable positive affect and higher levels of happiness (Kamilah & Rahmasari, 2023; Morrish et al., 2018; Tian et al., 2021). Emotional competence therefore represents an important psychological characteristic associated with daily well-being.

Some studies suggest that physical activity may be related to emotional functioning. Engaging in movement activities may influence emotional experiences and coping responses (Harita et al., 2025), although empirical findings are not always consistent and may depend on contextual and individual factors (Liu et al., 2022; Nie et al., 2025). This inconsistency indicates that emotional processes may interact with behavioral experiences in complex ways rather than following a single deterministic pathway.

Previous research has consistently shown a positive association between physical activity and happiness (An et al., 2020). Nevertheless, variability in effect sizes suggests that additional psychological characteristics may influence how individuals interpret and internalize affective experiences derived from daily activities. Emotion regulation has therefore been proposed as a psychological factor potentially related to differences in well-being among individuals with similar levels of physical activity (Jannah et al., 2025; Nie et al., 2025)

Understanding whether emotional processes meaningfully contribute to variations in the well-being benefits of physical activity is theoretically important. Clarifying this relationship helps distinguish between general behavioral effects and individual psychological differences. From a practical perspective, such knowledge informs whether interventions should focus primarily on promoting behavioral engagement or also emphasize psychological skill development.

Therefore, this study aims to investigate the relationship between physical activity and happiness and to evaluate whether emotion regulation is associated with variations in this relationship. Based on previous literature, physical activity is expected to be positively associated with happiness, and emotion regulation is expected to be related to happiness and potentially associated with differences in how individuals experience the psychological benefits of physical activity.

Material and Method

This study uses a quantitative approach with a non-experimental design. This design was chosen because the study did not involve variable manipulation, but rather aimed to test the relationship between variables based on data collected through observation.

Participants

The research participants consisted of 234 active undergraduate students from various regions in Indonesia. Participants were selected using purposive sampling based on predetermined inclusion criteria, namely active student status.

Procedure

Data collection was conducted through an online questionnaire distributed to university students via social media and academic networks. Participation was voluntary, and all participants were provided with information about the purpose of the study before completing the questionnaire. This study was conducted in accordance with research ethics principles, including data confidentiality and anonymity, as well as informed consent from participants.

Data Collection

Data was collected using an online survey based on Google Forms, which was distributed via WhatsApp social media. All research instruments used a five-point Likert scale to measure participants' responses.

Instrument

Global physical activity questionnaire (GPAQ)

Physical activity in this study was assessed using the Global Physical Activity Questionnaire (GPAQ) developed by the (World Health Organization, 2020). The GPAQ captures multiple components of physical activity, including intensity, duration, and frequency, and assesses physical activity across three domains: occupational physical activity, transport-related physical activity, and leisure-time or recreational physical activity. This questionnaire is designed to estimate an individual's level of physical activity based on Metabolic Equivalent of Task (MET), which represents the ratio of the metabolic rate during a specific activity to the resting metabolic rate.

The Emotion Regulation Questionnaires on Indonesian Sport Setting (IERQ4S)

Emotion regulation was measured using the Emotion Regulation Questionnaire on Indonesian Sport Setting (IERQ4S), developed by (Jannah et al., 2023). The instrument consists of 10 items rated on a five-point Likert scale ranging from strongly disagree to strongly agree. Reliability testing yielded a Cronbach's alpha of 0.765, indicating adequate internal consistency for use in the present analysis.

8-item scale of Oxford Happiness Questionnaire

Happiness was assessed using the short version of the Oxford Happiness Questionnaire developed by (Barattucci et al., 2024). This self-report instrument consists of eight items and was designed as a multidimensional scale capturing both affective and evaluative aspects of happiness. Each item is rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Internal consistency analysis demonstrated a McDonald's omega coefficient of 0.92, indicating excellent reliability.

Data Analysis

The data were analyzed using JASP statistical software by applying simple moderation regression analysis. This analysis was used to examine the relationship between physical activity and happiness, as well as to evaluate the role of emotional regulation as a potential moderator influencing the strength of this relationship. This approach allowed for testing the difference in the effect of physical activity on happiness at different levels of emotional regulation

Result

Table 1. Descriptive Statistics

Descriptive Statistics						
	RE		HAPP		PA	
	Male	Female	Male	Female	Male	Female
Valid	63	171	63	171	63	171
Missing	0	0	0	0	0	0
Mean	37.73	35.52	28.87	27.59	6311	2662
Std. Deviation	5.848	5.604	4.156	3.689	8087	3946
Minimum	23.00	20.00	21.00	19.00	0.000	0.000
Maximum	50.00	50.00	40.00	40.00	39060	20640

Based on descriptive statistical analyses, the mean level of happiness (HAPP) among female participants was (M = 27.59, SD = 3.689), whereas male participants showed a higher mean score (M = 28.87, SD = 4.156). The average level of physical activity (PA) among females was (M = 2662, SD = 3946), compared to (M = 6311, SD = 8087) among males. For emotion regulation (RE), female participants had a mean score of (M = 35.52, SD = 5.604), while male participants demonstrated a higher average (M = 37.73, SD = 5.848). These results indicate substantial variability in scores, particularly for physical activity, suggesting marked differences in individual levels of physical activity engagement. This variability provides a sufficient empirical basis for examining the relationships between physical activity, happiness, and emotion regulation.

Table 2. Correlation

Pearson's Correlations				
			Pearson's r	P
RE	-	HAPP	0.137*	.036
RE	-	PA	0.148*	.024
HAPP	-	PA	0.176**	.007

*** p < .05, ** p < .01, *** p < .001**

Pearson correlation analysis revealed small but significant positive associations among the study variables. Regulatory effort was positively correlated with happiness (r = .137, p = .036) and physical activity (r = .148, p = .024). Happiness was also positively correlated with physical activity (r = .176, p = .007), indicating that individuals who reported higher physical activity tended to report slightly greater happiness The small correlations observed among the variables indicate that regulatory effort and physical activity are related yet largely independent constructs, each showing only modest associations with happiness

Table 3. Linear Regression

Model Summary – HAPP				
Model	R	R^2	Adjusted R^2	RMSE
M_1	0.100	0.010	-0.003	28.24

Note. **M_1 includes RE (mean centering), PA (mean centering), RE (mean centering):PA (mean centering)**

ANOVA						
Model		Sum of Squares	Df	Mean Square	F	P
M_1	Regression	1845	3	614.9	0.771	.511
	Residual	184232	231	797.5		
	Total	186077	234			

Note. **M_1 includes RE (mean centering), PA (mean centering), RE (mean centering):PA (mean centering)**

Coefficients								
							Collinearity Statistics	
Model		Unstandardized	Standard Error	Standardized	t	p	Tolerance	VIF
M_1	RE (mean centering)	-0.008	0.330	-0.012	-0.025	.980	0.951	1.052
	PA (mean centering)	-7.675×10^{-5}	3.575×10^{-4}	-0.112	-0.215	.830	0.853	1.172
	RE (mean centering) ✻ PA (mean centering)	6.812×10^{-5}	4.668×10^{-5}	0.763	1.459	.146	0.834	1.199

Collinearity Diagnostics						
				Variance Proportions		
Model	Dimension	Eigenvalue	Condition Index	PA (mean centering)	RE (mean centering) ✻ PA (mean centering)	RE (mean centering)
M_1	1	1.504	1.000	0.215	0.232	0.127
	2	0.879	1.308	0.172	0.042	0.841
	3	0.617	1.561	0.613	0.725	0.031

A moderation regression analysis was conducted to examine whether physical activity moderates the relationship between regulatory effort and happiness. The overall model was not significant, $F(3, 231) = 0.771$, $p = .511$, explaining only 1.0% of the variance in happiness ($R^2 = .010$). Neither regulatory effort ($\beta = -.012$, $p = .980$) nor physical activity ($\beta = -.112$, $p = .830$) significantly predicted happiness. The interaction term between regulatory effort and physical activity was also not significant ($\beta = .763$, $p = .146$), indicating that physical activity did not moderate the relationship between regulatory effort and happiness.

Table 4. Linear Modelling

Regression Slopes and Intercept						
		95% Confidence Interval			95% Confidence Interval	
Variables	Value	Lower	Upper	Standardized Slope (β)	Lower β	Upper β
(Intercept)	21.76	18.00	25.52	0.00	0.00	0.00
RE	0.16	0.05	0.26	0.23	0.08	0.39
PA	0.00	0.00	0.00	1.11	0.41	1.81

Note. **Confidence intervals computed 95% Confidence Intervals. All estimates are conditional estimates.**

A linear modeling analysis was conducted to estimate the conditional effects of regulatory effort and physical activity on happiness. The intercept indicated an expected happiness score of 21.76 when predictors were held constant. Regulatory effort showed a positive conditional association with happiness ($\beta = .23$, 95% CI [.08, .39]), whereas physical activity demonstrated a stronger positive conditional effect ($\beta = 1.11$, 95% CI [.41, 1.81]). These findings suggest that higher levels of behavioral engagement, reflected in physical activity, were associated with greater happiness beyond baseline levels.

Table 5. Independent Samples T-Test

Independent Samples T-Test			
	U	Df	P
HAPP	6304		.045
RE	6613		.007
PA	7349		< .001

Note. **Mann-Whitney U test.**

Due to violations of normality assumptions, non-parametric Mann–Whitney tests were conducted. Significant differences between groups were observed for happiness (U = 6304, p = .045), regulatory effort (U = 6613, p = .007), and physical activity (U = 7349, p < .001). This indicates that the compared groups differed consistently across emotional, regulatory, and behavioral indicators.

Table 6. Assumption Checks

Test of Normality (Shapiro-Wilk)		
Residuals	W	P
HAPP	0.967	< .001
RE	0.991	.148
PA	0.724	< .001

Note. **Significant results suggest a deviation from normality.**

Normality was assessed using the Shapiro–Wilk test. Happiness and physical activity deviated from normality (p < .001), whereas regulatory effort met normality assumptions (p = .148). Given the large sample size, subsequent analyses were considered robust to these deviations.

Discussion

This study examined the relationship between physical activity and happiness and explored the role of emotion regulation within this association. The findings demonstrated that physical activity was positively associated with happiness, supporting previous literature indicating that individuals who engage in regular physical activity tend to report higher subjective well-being (An et al., 2020; Iwon et al., 2021; Zhang & Chen, 2019). Even relatively small amounts of activity have been linked to improved affective states and life satisfaction, suggesting that behavioral engagement itself contributes to positive psychological functioning rather than merely reflecting pre-existing well-being.

The regression results further confirmed that physical activity significantly predicted happiness, although the explained variance was small. This finding aligns with prior research emphasizing that happiness is a multidimensional construct shaped by numerous psychological and social factors beyond behavioral habits alone (An et al., 2020; Mahindru et al., 2023). Physical activity therefore appears to function as one contributing factor among many determinants of well-being rather than a dominant explanatory variable.

Emotion regulation showed a positive zero-order association with happiness, consistent with studies highlighting its importance for psychological adjustment and well-being (Chen et al., 2022; Kamilah & Rahmasari, 2023; Tian et al., 2021). However, its predictive role diminished when physical activity was simultaneously considered. This pattern suggests that emotion regulation does not independently explain happiness in the present model but instead shares overlapping variance with behavioral engagement. In other words, individuals who are behaviorally active may experience improved affective states regardless of differences in regulatory capacity.

Contrary to theoretical expectations, the moderation analysis indicated that emotion regulation did not significantly alter the relationship between physical activity and happiness. This result implies that the psychological benefits of physical activity occur relatively consistently across individuals, rather than

depending on regulatory ability. Previous literature has shown mixed findings regarding the role of emotion regulation in behavioral well-being relationships (Nie et al., 2025; Potoczny et al., 2025), and the present study supports the interpretation that emotion regulation may operate as a general well-being factor rather than a conditional amplifier of activity-related happiness.

Additional analyses revealed group differences in physical activity, emotion regulation, and happiness. These findings are in line with earlier studies reporting demographic variations in behavioral engagement and psychological well-being (Nie et al., 2025). However, these differences do not alter the central conclusion that physical activity maintains a direct association with happiness independent of regulatory processes.

Several limitations should be considered. First, the cross-sectional design prevents causal inference, and future longitudinal or experimental research is required to determine directional pathways. Second, reliance on self-report measures may introduce recall bias and social desirability effects. Third, the sample consisted of university students, limiting generalizability to broader populations.

Despite these limitations, the findings provide practical implications. Programs aimed at improving well-being may benefit from prioritizing accessible and sustainable physical activity participation. While emotion regulation remains an important psychological skill, the present results suggest that promoting behavioral engagement alone may already yield measurable improvements in happiness. Therefore, interventions focusing on consistent activity habits may represent an efficient approach for enhancing well-being at the population level.

Overall, this study indicates that physical activity contributes to happiness primarily as a direct behavioral factor, whereas emotion regulation represents a related but not determining psychological component. These findings highlight the importance of distinguishing between correlates of well-being and mechanisms explaining it, contributing to a more precise understanding of how everyday behaviors support psychological health.

Conclusion

This study found that physical activity was positively associated with happiness, indicating that individuals who engage more frequently in physical activity tend to report slightly higher levels of happiness. However, the relatively small effect size suggests that physical activity represents only one of many contributing factors within the broader multidimensional structure of well-being.

Emotion regulation was related to happiness at the correlational level but did not independently predict happiness nor alter the relationship between physical activity and happiness when analyzed simultaneously. These findings indicate that the psychological benefits of physical activity appear to occur relatively consistently across individuals rather than depending on differences in regulatory capacity.

Overall, the results suggest that behavioral engagement in physical activity functions as a general contributor to happiness, whereas emotion regulation represents a related psychological characteristic rather than a determining mechanism explaining how physical activity influences well-being.

Author contribution statement

Fikri Alvian (A, C, D): Involved in study design, data analysis and preparation and final editing of manuscript for publication.
Rania Azzahra Nur Imani (A, B, D): Involved in study design, data collection on and manuscript preparation.
Nabila Rachman (A, C, D): Involved in data collection and data analysis
Kususanto Ditto Prihadi (D): Final editing of manuscript for publication.

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