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A Psychological Model of Self-Reported Physical Health in Insufficiently Active Adults: The Roles of Mindfulness, Body Image, and Perceived Social Acceptance

Ezzatolah. Kordmirza Nikoozadeh¹, Mojgan. Agahheris², Afagh. Saleh^{*1}, Maryam. Abdolkarimy Nazary¹

¹ Department of Psychology, Payame Noor University, Tehran, Iran

² Professor in Health Psychology, Department of Psychology, Payame Noor University, Tehran, Iran

Corresponding author email address: afagh_saleh@yahoo.com

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ABSTRACT

This study aims to test a cross-sectional structural model linking mindfulness and perceived social acceptance with self-reported physical health, directly and indirectly through body image, among insufficiently active adults. This descriptive-correlational study included 400 adults aged 18–59 years in Tehran, Iran, recruited through multistage cluster sampling in 2026. Insufficient physical activity was defined as <600 MET-min/week on the International Physical Activity Questionnaire–Short Form. Mindfulness, body image, perceived social acceptance, and self-reported physical health were assessed using questionnaires. The hypothesized pathways were tested using structural equation modeling in SPSS and AMOS; indirect effects were evaluated with 5,000 bootstrap resamples. Body image was the strongest direct correlate of physical health ($\beta = .43$). Mindfulness and perceived social acceptance were positively associated with body image ($\beta = .39$ and $\beta = .32$, respectively), and both had smaller direct associations with physical health ($\beta = .18$ and $\beta = .13$). The standardized indirect effects through body image were .168 (95% CI [.120, .224]) for mindfulness and .138 (95% CI [.094, .188]) for social acceptance. The model accounted for 34% of the variance in body image and 48% of the variance in physical health and showed acceptable fit ($\chi^2/df = 2.18$, CFI = .941, TLI = .933, RMSEA = .055, SRMR = .052). In this cross-sectional sample, mindfulness and perceived social acceptance were associated with better self-reported physical health partly through more favorable body image. Longitudinal research using objective health and activity measures is required before causal or intervention claims can be made.

Keywords: body image; mindfulness; perceived social acceptance; physical inactivity; self-reported physical health; structural equation modeling

Introduction

Insufficient physical activity is a major public-health concern. In 2022, approximately 31% of adults worldwide—about 1.8 billion people—did not meet recommended activity levels, increasing their risk of cardiovascular disease, type 2 diabetes, some cancers, and impaired physical functioning (Strain et al., 2024; Taheri et al., 2023; World Health Organization, 2024). Physical inactivity, defined as not meeting activity guidelines, should be distinguished from sedentary behavior, which refers to waking behavior performed while sitting, reclining, or lying with very low energy expenditure. The present study operationalized eligibility using insufficient activity (<600 MET-min/week), not objectively measured sedentary time.

Differences in perceived physical health are not fully explained by activity, age, sex, or body mass index. Attention to bodily sensations, evaluations of appearance and bodily functioning, and social experiences may shape health behavior and self-rated health. Mindfulness—purposeful, present-focused, and nonjudgmental attention—may facilitate earlier recognition of fatigue, tension, pain, and prolonged sitting and support more deliberate self-care choices. Research on lifestyle behaviors has similarly shown that lower physical activity often co-occurs with less favorable sleep, dietary, and health outcomes, reinforcing the need to study physical activity within a broader biopsychosocial framework (Taheri et al., 2023; Yagmaee et al., 2023).

Mindfulness may also support a more adaptive relationship with the body by reducing self-criticism, rumination, and appearance-based judgment. Brief mindfulness meditation has attenuated the adverse effects of idealized social-media imagery on body appreciation, self-esteem, and mood (Hooper et al., 2024). In physically active young adults, mindful monitoring and acceptance of the body mediated associations between physical activity and positive body image (Jankauskiene & Baceviciene, 2024).

Body image encompasses perceptions, thoughts, emotions, and behaviors concerning appearance, size, health, fitness, and bodily functionality. Positive body image includes appreciation, acceptance, and respect for bodily capabilities, whereas negative body image can involve dissatisfaction, shame, social comparison, and fear of evaluation. Body image and activity may be reciprocally related: favorable body perceptions may facilitate engagement, whereas appearance-related anxiety may promote avoidance (Mahdifar et al., 2024; Matheson et al., 2025).

Perceived social acceptance refers to feeling respected, valued, included, and free from humiliating judgment. Although distinct from social support, it overlaps with belongingness and validation. Support from family and friends is longitudinally associated with physical activity (Smith et al., 2023), and social support may also relate to activity through body-image perceptions (Gao et al., 2025).

Most relevant studies have considered mindfulness, body image, or social factors separately and have frequently focused on adolescents, athletes, students, or clinical groups. The present study therefore tested whether mindfulness, body image, and perceived social acceptance were associated with self-reported physical health in insufficiently active adults and whether body image statistically mediated the associations of mindfulness and social acceptance with physical health. Given the cross-sectional design, the hypothesized arrows represent theory-driven associations rather than demonstrated causal effects.

Methodology

Study Design and Participants

This applied, descriptive-correlational study used structural equation modeling. The target population comprised adults aged 18–60 years living in Tehran, Iran, in 2026. Tehran was divided into geographical clusters; health centers, cultural centers, universities, government organizations, and community centers were then selected within clusters. Individuals attending or working at selected sites were screened and invited if eligible.

Of 430 distributed questionnaires, 418 were returned. Eighteen records were excluded because of incomplete responses, invariant response patterns, or multivariate outlying values, leaving 400 participants for analysis. Sample-size planning was based on model complexity, the number of direct and indirect paths, anticipated missingness, and the need for stable SEM estimates (Kline, 2023).

Eligibility required age 18–60 years, Persian literacy, residence in Tehran, informed consent, independent questionnaire completion, and <600 MET-min/week on the IPAQ-SF. Exclusion criteria included acute physical illness, severe mobility restriction, a medical condition directly limiting activity, self-reported severe psychiatric disorder, medication causing marked movement restriction or somnolence, pregnancy, professional sport participation, or regular organized exercise. Cases were removed for withdrawal, >10% missing questionnaire responses, implausible response patterns, or multivariate outlying values.

Measures

Physical Activity. Insufficient activity was screened with the International Physical Activity Questionnaire–Short Form (IPAQ-SF), using <600 MET-min/week as the eligibility threshold (Craig et al., 2003).

Mindfulness. The 39-item Five Facet Mindfulness Questionnaire measures observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience (Baer et al., 2006). Higher total scores indicate greater dispositional mindfulness.

Body Image. The 69-item Multidimensional Body–Self Relations Questionnaire assesses appearance, fitness, health orientation/evaluation, satisfaction with body areas, and weight-related attitudes (Cash, 2000). Because some health-evaluation content may overlap with the outcome, this potential construct contamination is considered a limitation.

Perceived Social Acceptance. Perceived social acceptance was assessed with a 33-item Persian Perceived Social Acceptance Questionnaire. Items are rated on a Likert-type scale and summed, with higher scores indicating a stronger subjective sense of being accepted, respected, valued, and included in social relationships. In the present sample, internal consistency was high (Cronbach's $\alpha = .90$; McDonald's $\omega = .91$).

Self-Reported Physical Health. Physical health was assessed using the Physical Component Summary of the 12-Item Short Form Health Survey (SF-12 PCS). The SF-12 provides a norm-based summary of perceived physical functioning, role limitations due to physical problems, bodily pain, and general health. Higher scores indicate better perceived physical health (Ware et al., 1996). In the present sample, scores ranged from 30.24 to 70.68 ($M = 47.28$, $SD = 8.36$), with Cronbach's $\alpha = .84$ and McDonald's $\omega = .85$.

Procedure and Ethics

Eligible participants received written information about the study and provided written informed consent before completing the questionnaires. Participation was voluntary, withdrawal was permitted without penalty, and responses were de-identified before analysis. The procedures followed the ethical principles of the Declaration of Helsinki and the research requirements of Payame Noor University.

Statistical Analysis

Analyses were performed in SPSS and AMOS. Data were screened for missingness, multivariate outliers, univariate distribution, and multicollinearity. Missingness was <2% and was handled using expectation–maximization. Reported skewness ranged from –0.18 to 0.46, kurtosis from –0.41 to 0.58, variance-inflation factors from 1.24 to 1.87, and tolerance from 0.53 to 0.81. The measurement and structural models were evaluated using χ^2/df , CFI, TLI, IFI, RMSEA, and SRMR.

Indirect effects were estimated with 5,000 bootstrap resamples and 95% confidence intervals. Statistical tests were two-sided with $\alpha = .05$.

Research Findings

Participant Characteristics

The analytic sample included 224 women (56.0%) and 176 men (44.0%), with a mean age of 34.72 years ($SD = 9.18$; range, 18–59). Mean BMI was 27.31 kg/m^2 ($SD = 4.12$), mean sitting time was 8.21 h/day ($SD = 1.74$), and mean activity was 438.65 MET-min/week. Overall, 59.0% were married, 53.5% had an associate or bachelor's degree, 48.5% had overweight, and 22.5% had obesity.

Table 1. Descriptive Statistics and Internal Consistency

Variable	Min	Max	M	SD	α	ω
Mindfulness	76	175	126.84	16.92	.88	.89
Body image	1.84	4.58	3.19	0.51	.91	.92
Perceived social acceptance	86	202	151.36	20.48	.90	.91
Self-reported physical health	30.24	70.68	47.28	8.36	.84	.85

Note. α = Cronbach's alpha; ω = McDonald's omega.

Bivariate Correlations

Table 2. Correlations Among Study Variables

Variable	1	2	3	4
1. Mindfulness	—			
2. Body image	.47***	—		
3. Social acceptance	.36***	.44***	—	
4. Physical health	.42***	.55***	.39***	—

Note. *** $p < .001$. Coefficients are Pearson correlations.

Model Fit

Table 3. Fit Indices for the Measurement and Structural Models

Model	χ^2	df	χ^2/df	CFI	TLI	IFI	RMSEA	SRMR
Measurement	729.18	344	2.12	.945	.936	.945	.053	.049
Structural	767.36	352	2.18	.941	.933	.942	.055	.052

Note. CFI = comparative fit index; IFI = incremental fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; TLI = Tucker–Lewis index.

Direct and Indirect Associations

Table 4. Direct Structural Paths

Predictor	Outcome	B	SE	β
Mindfulness	Body image	.012	.002	.39
Social acceptance	Body image	.008	.001	.32
Mindfulness	Physical health	.089	.024	.18
Body image	Physical health	7.042	.849	.43
Social acceptance	Physical health	.053	.020	.13

Table 5. Standardized Indirect Effects Through Body Image

Predictor	Outcome	Indirect effect	Bootstrap SE	95% CI
Mindfulness	Physical health	.168	.026	[.120, .224]
Social acceptance	Physical health	.138	.024	[.094, .188]

Mindfulness and social acceptance explained 34% of the variance in body image. Mindfulness, body image, social acceptance, and the reported covariates jointly explained 48% of the variance in physical health. BMI ($\beta = -.21$), sitting time ($\beta = -.11$), and chronic disease ($\beta = -.17$) were negatively associated with physical health; age and sex were reportedly nonsignificant.

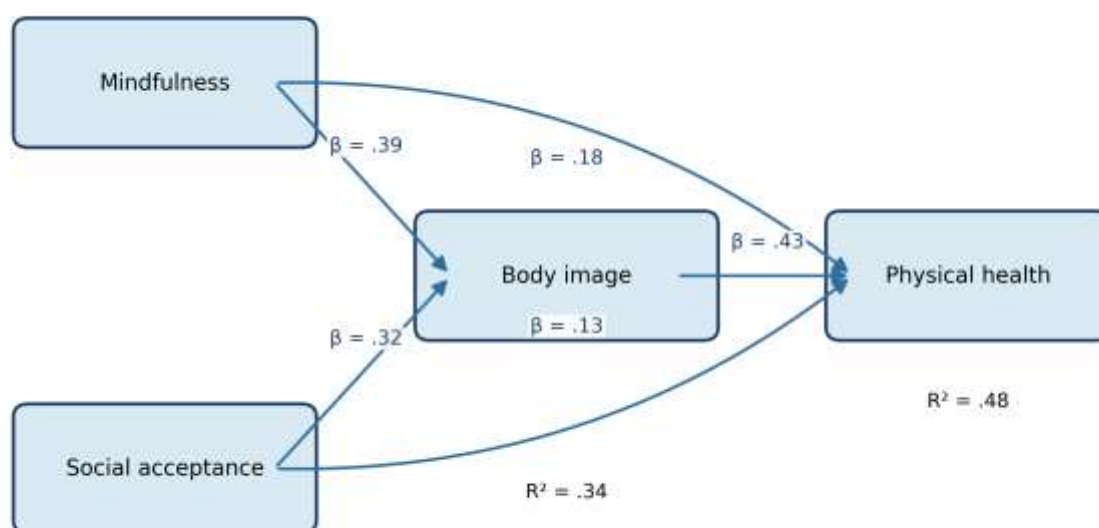


Figure 1. Standardized coefficients for the hypothesized structural model. Coefficients represent cross-sectional associations and do not establish causality.

Discussion

The hypothesized model showed acceptable fit, and body image had the strongest direct association with self-reported physical health. Mindfulness and perceived social acceptance were associated with physical health both directly and indirectly through body image. However, the cross-sectional and self-report design prevents conclusions about temporal order, causation, or intervention effectiveness.

The association between mindfulness and body image is compatible with evidence that nonjudgmental attention can reduce appearance-focused self-criticism and support body appreciation. Brief mindfulness practice has improved body appreciation following exposure to idealized imagery (Hooper et al., 2024), and mindful body monitoring and acceptance have been linked with positive body image during physical activity (Jankauskiene & Baceviciene, 2024). The present indirect effect is consistent with—but does not prove—a pathway in which mindfulness relates to health partly through body evaluation.

Perceived social acceptance was also associated with more favorable body image and physical health. Social environments that reduce ridicule, appearance comparison, and conditional acceptance may lessen body shame and activity avoidance. Prior evidence links social support with physical activity over time (Smith et al., 2023), while recent structural work suggests that some sources of support may relate to activity through body-image perceptions (Gao et al., 2025). These constructs should nevertheless remain distinct: acceptance, support, and social desirability are not interchangeable. Related work by Taheri and colleagues also supports examining physical activity together with psychological and lifestyle conditions rather than as an isolated behavior (Taheri et al., 2023).

Body image had the largest direct coefficient, but this result requires particular caution. The MBSRQ includes fitness and health evaluation/orientation content that may overlap with a SF-12 physical-component outcome. Shared method variance and item-content overlap can inflate correlations and structural paths. Confirmatory analyses that remove health-related MBSRQ components and that use objective health and activity indicators are needed.

Practical Implications

The findings justify further investigation of health-promotion approaches combining gradual activity, mindful body awareness, body functionality and appreciation, and nonjudgmental social environments. They do not demonstrate that such interventions improve health. Intervention recommendations should therefore be framed as testable implications rather than clinical efficacy claims.

Limitations

The cross-sectional design precludes causal inference and permits plausible reverse or reciprocal pathways. All principal constructs were self-reported, increasing common-method, recall, and social-desirability bias. Recruitment was confined to Tehran, and details needed to establish probability sampling were incomplete. Physical inactivity was screened by self-report. The wide MBSRQ construct may overlap with the physical-health outcome. The social-acceptance measurement was based on a Persian self-report instrument and should be replicated with independently validated measures. Measurement invariance across sex, age, and BMI groups was not reported, and covariate estimates were incomplete.

Conclusion

Among insufficiently active adults in Tehran, mindfulness and perceived social acceptance were associated with better self-reported physical health partly through more favorable body image. These results support body image as a plausible statistical mediator, not a proven causal mechanism. Replication using longitudinal or experimental designs, clearly validated measures, objective physical-activity and health indicators, and preregistered analyses is warranted.

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All authors contributed to the conception and design of the study. Afagh Saleh coordinated data collection and drafted the manuscript. Ezzatollah Kordmirza Nikoozadeh and Mojgan Agahheris supervised the study and contributed to methodology and interpretation. Maryam Abdolkarimy Nazary contributed to data management, analysis, and manuscript revision. All authors reviewed and approved the final manuscript.

Authors' Contributions

Authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

AI use statement

Artificial intelligence tools were used only to support language editing, translation refinement, formatting, and consistency checks. The authors take full responsibility for the accuracy of the data, analyses, interpretations, citations, and final content of the manuscript.

Ethical Considerations

All participants provided written informed consent. Study procedures followed the Declaration of Helsinki and the institutional research requirements of Payame Noor University.

Transparency of Data

Reasonable requests for research materials should be directed to the corresponding author, subject to university policies and participant confidentiality.

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