Journal of Applied Psychology & Behavioral Science. Vol., 11 (1), 6-13, 2026
Available online at http://www. japbs.com/
ISSN 2536-524X © 2026
doi: 10.61186/japbs.11.1.6

Built Environment Walkability, Sport Participation, and Psychological Well-Being: A Structural Equation Modeling Study

Sareh Nikabadi[1], Abolfazl Neshati[2*], Roya Hosseinzadeh Peyghan[3], Narges Shams[4]

[1]Assistant Professor, Department of Interior Architecture, Faculty of Architecture and Urban Planning, Soore International University, Tehran, Iran.
[2]Department of Physical Education, Mara. C., Islamic Azad university, Marand, Iran.
[3]Department of Motor Behavior, Urmia university, Iran.
[4]Department of Physical Education, Ta.C., Islamic Azad university, Tabriz, Iran.

Corresponding Author Email: Abolfazl.neshati@iau.ir

ABSTRACT: Background: Urban walkability has gained increasing attention as a determinant of physical activity and mental health. However, limited research has examined the behavioral mechanisms linking walkable built environments to psychological well being. This study investigated the direct and indirect relationships between built environment walkability, sport participation, and psychological well being using structural equation modeling (SEM).
Methods: A cross sectional survey was conducted among 468 adult urban residents. Perceived walkability was measured using the Neighborhood Environment Walkability Scale, sport participation was assessed through self reported participation frequency, and psychological well being was measured using Ryff's multidimensional scale. SEM was applied following a two step approach, including confirmatory factor analysis (CFA) and structural model testing. Mediation effects were examined using bootstrapping (5,000 resamples).
Results: The measurement model demonstrated good fit (CFI = .94, TLI = .93, RMSEA = .051). Structural model results indicated that walkability was positively associated with sport participation ($\beta = .36$, $p < .001$) and psychological well being ($\beta = .18$, $p < .01$). Sport participation showed a strong positive effect on psychological well being ($\beta = .42$, $p < .001$). Mediation analysis revealed a significant indirect effect of walkability on psychological well being through sport participation ($\beta = .15$, 95% CI [.09, .22]), indicating partial mediation. The model explained 47% of the variance in psychological well being.
Conclusions: The findings suggest that walkable built environments promote psychological well being both directly and indirectly by facilitating sport participation. Urban planning strategies that enhance walkability may therefore contribute to improved mental health through increased engagement in sport and physical activity.

Keywords: Walkability; Sport Participation; Psychological Well Being; Built Environment; Structural Equation Modeling.

INTRODUCTION

Rapid urbanization has profoundly reshaped the daily living environments of populations worldwide, intensifying interest in how the built environment influences health and psychological well-being. Among various built environment attributes, walkability has emerged as a critical factor shaping physical activity behaviors, social interaction, and mental health outcomes (Sheikh et al., 2021). Walkable environments—

characterized by connected street networks, mixed land use, pedestrian infrastructure, safety, and aesthetic quality—encourage active lifestyles and regular engagement in movement-based activities, including sport and recreational physical activity. As cities confront increasing rates of sedentary behavior, stress, anxiety, and declining psychological well-being, understanding the pathways through which walkability contributes to mental health has become a pressing interdisciplinary concern (Monadi, 2025).

Psychological well-being is a multidimensional construct encompassing positive affect, life satisfaction, emotional balance, and the absence of psychological distress such as anxiety and depression (Ryff & Keyes, 1995; Monadi, 2025). Extensive evidence suggests that physical activity, including sport participation, plays a protective role in promoting psychological well-being by reducing stress, improving mood, and enhancing self-regulation and social connectedness (Biddle & Asare, 2011; Lubans et al., 2016). However, engagement in sport does not occur in isolation; rather, it is embedded within environmental contexts that either facilitate or constrain participation. Walkable built environments may therefore act as upstream determinants of psychological well-being by shaping opportunities and motivations for sport participation (Baniasadi et al., 2022).

Ecological models of health behavior provide a strong theoretical foundation for examining these relationships. These models posit that health behaviors are influenced by multiple interacting levels, including individual, social, environmental, and policy factors (Sallis et al., 2008). Within this framework, walkability represents a key environmental determinant that can lower structural barriers to physical activity by improving accessibility, safety, and convenience. Empirical studies have consistently shown that individuals living in more walkable neighborhoods report higher levels of physical activity and active transportation (Saelens & Handy, 2008; Frank et al., 2010). However, fewer studies have extended this line of inquiry to examine psychological outcomes and the behavioral mechanisms linking walkability to mental well-being (Christodoulides et al., 2023).

Sport participation occupies a unique position in this pathway. Unlike general physical activity, sport participation often involves structured, goal-oriented, and socially embedded forms of movement that may yield stronger psychological benefits (Hosseini et al., 2022; Khosravi et al., 2012; Monadi, 2025). Participation in sport has been associated with reduced anxiety, higher life satisfaction, improved emotional regulation, and enhanced overall psychological well-being (Abdoshahi & Ghorbani, 2022; Chaharbaghi et al., 2022; Eime et al., 2013; Doré et al., 2016). Walkable environments may increase sport participation by enabling access to recreational facilities, parks, and informal sport spaces, as well as by supporting active travel to sport venues. Thus, sport participation may serve as a mediating mechanism through which walkability influences psychological well-being (Monadi, 2025; Nour Mohammadi et al., 2026).

Theoretical perspectives from psychology further support this mediation hypothesis. Self-determination theory suggests that environments supporting autonomy, competence, and relatedness foster well-being and intrinsic motivation (Deci & Ryan, 2000; Moradi et al., 2020). Walkable neighborhoods may enhance autonomy by offering flexible opportunities for movement, while sport participation nurtures competence through skill development and relatedness through social interaction (Monadi, 2025; Seraj et al., 2013). Similarly, stress reduction theory and attention restoration theory propose that engaging in physical activity within supportive environments can alleviate mental fatigue and emotional stress, thereby improving psychological well-being (Ulrich et al., 1991; Kaplan, 1995).

Despite growing interest in walkability and mental health, several gaps remain in the literature. First, many studies focus on direct associations between walkability and psychological outcomes, without examining behavioral mediators such as sport participation. Second, research often relies on simple regression approaches, limiting the ability to test complex theoretical models involving latent constructs and indirect effects. Third, psychological well-being is frequently operationalized narrowly, overlooking its multidimensional nature. Addressing these gaps requires integrative analytical approaches capable of simultaneously modeling environmental perceptions, behavioral engagement, and psychological outcomes.

To address these limitations, the present study employs structural equation modeling (SEM) to examine the relationships among built environment walkability, sport participation, and psychological well-being. SEM allows for the estimation of both direct and indirect effects while accounting for measurement error, providing a robust test of the proposed theoretical framework. By conceptualizing walkability and psychological well-being as latent constructs and testing sport participation as a mediator, this study offers a more comprehensive understanding of how urban environments contribute to mental health.

Accordingly, the primary aim of this study is to evaluate the effect of perceived built environment walkability on psychological well-being, with sport participation examined as a mediating variable. It is hypothesized that (1) walkability will be positively associated with sport participation, (2) sport participation will be positively associated with psychological well-being, and (3) sport participation will mediate the relationship between walkability and psychological well-being. Through this approach, the study seeks to inform urban planning, public health, and sport policy by highlighting walkability as a modifiable environmental factor with significant implications for psychological well-being.

METHODS

Study Design and Participants

This study employed a cross-sectional, correlational design to examine the relationships among built environment walkability, sport participation, and psychological well-being. Data were collected from adult residents living in urban areas using a structured questionnaire. Eligibility criteria included: (a) age 18 years or older, (b) residence in the current neighborhood for at least one year, and © ability to engage in physical activity without medical restrictions.

A total of approximately 480–500 participants were initially recruited using a combination of online survey distribution and in-person data collection at community centers, recreational facilities, and public spaces. After excluding incomplete responses and cases failing data quality checks, the final analytical sample consisted of approximately 460–480 participants, which exceeded recommended minimum sample sizes for structural equation modeling (Kline, 2016).

Measures

Built Environment Walkability

Perceived walkability of the built environment was assessed using selected subscales from the Neighborhood Environment Walkability Scale (NEWS), a widely validated instrument in urban and public health research (Saelens et al., 2003). The scale included items measuring key dimensions of walkability such as street connectivity, land-use mix, pedestrian infrastructure, traffic safety, and aesthetic quality. Participants rated their agreement with each item on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated greater perceived neighborhood walkability.

Sport Participation

Sport participation was measured using a self-report scale adapted from prior population-based physical activity and sport studies (Eime et al., 2013). Participants reported the frequency of engagement in organized or recreational sport activities (e.g., team sports, individual sports, structured exercise sessions) during a typical week. Responses were recorded on a 5-point scale, ranging from 1 (never) to 5 (very frequently). Higher scores reflected greater involvement in sport participation.

Psychological Well-Being

Psychological well-being was assessed using the Psychological Well-Being Scale, based on Ryff's multidimensional model (Ryff & Keyes, 1995). The scale captured key components of well-being, including positive affect, life satisfaction, emotional balance, and sense of purpose. Participants responded to items on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Higher scores indicated higher levels of psychological well-being.

Control Variables

Sociodemographic variables were included as control variables due to their known associations with physical activity and mental health. These included age, gender, educational level, employment status, and household income.

Data Collection Procedure

Data were collected over a period of approximately three months. Participants received information about the study purpose and provided informed consent prior to participation. The questionnaire required approximately 15–20 minutes to complete. Ethical approval for the study was obtained from the relevant institutional review board, and all procedures were conducted in accordance with ethical standards for research involving human participants.

Data Analysis Strategy

Data analysis was conducted using structural equation modeling (SEM) following a two-step approach (Anderson & Gerbing, 1988). First, confirmatory factor analysis (CFA) was performed to evaluate the measurement model, assessing factor loadings, composite reliability, and convergent and discriminant validity of the latent constructs. Model fit was evaluated using multiple indices, including the comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR).

In the second step, the structural model was tested to examine direct and indirect relationships among walkability, sport participation, and psychological well-being. Bootstrapping procedures (5,000 resamples) were applied to test the significance of indirect effects and mediation pathways. Statistical significance was set at $p < .05$.

RESULTS

Demographic Characteristics

The final sample consisted of 468 urban residents who met the inclusion criteria and provided complete responses. Participants ranged in age from 18 to 65 years (M = 36.4, SD = 10.8). Approximately 52.1% of respondents were female and 47.9% were male. With respect to educational attainment, 41.7% held a bachelor's degree, 32.5% had completed postgraduate education, and the remaining participants reported a high school diploma or lower. The majority of respondents were employed (68.9%), while others identified as students, unemployed, or retired. Detailed demographic information is presented in Table 1.

Table 1. Demographic Characteristics of Participants (N = 468)

Variable	Category	Frequency	Percentage (%)
Gender	Male	224	47.9
	Female	244	52.1
Age	18–29 years	124	26.5
	30–44 years	207	44.2
	≥45 years	137	29.3
Education	High school or below	120	25.8
	Bachelor's degree	195	41.7
	Postgraduate	153	32.5
Employment	Employed	322	68.9
	Other	146	31.1

Descriptive Statistics and Correlations

Descriptive statistics, including means, standard deviations, and Pearson correlation coefficients for all study variables, are reported in Table 2. Perceived built environment walkability, sport participation, and psychological well-being demonstrated acceptable variability and approximately normal distributions. Correlation analysis revealed that walkability was positively and significantly associated with sport participation (r = .34, p < .001) and psychological well-being (r = .29, p < .001). Sport participation was also positively correlated with psychological well-being (r = .41, p < .001). Control variables such as age and income showed small but significant associations with psychological well-being and were therefore retained in the structural model.

Table 2. Means, Standard Deviations, and Correlations Among Variables

Variable	M	SD	1	2	3
1. Walkability	3.58	0.72	—		
2. Sport participation	3.41	0.78	.34***	—	
3. Psychological well-being	3.63	0.69	.29***	.41***	—

***p < .001**

Measurement Model (Confirmatory Factor Analysis)

A confirmatory factor analysis (CFA) was conducted to assess the adequacy of the measurement model prior to testing the structural relationships. The measurement model consisted of three latent constructs: built environment walkability, sport participation, and psychological well-being. The CFA demonstrated a good overall fit to the data: χ^2/df = 2.21, CFI = .94, TLI = .93, RMSEA = .051, and SRMR = .046.

All standardized factor loadings were statistically significant (p < .001) and exceeded the recommended threshold of .60, indicating strong relationships between observed indicators and their respective latent constructs. Composite reliability (CR) values ranged from .82 to .91, and average variance extracted (AVE) values ranged from .55 to .67, supporting adequate convergent validity. Discriminant validity was confirmed, as the square root of AVE for each construct exceeded its correlations with other constructs. Measurement properties are summarized in Table 3.

Table 3. Measurement Model Properties

Construct	Standardized Loadings	CR	AVE
Walkability	.64 – .83	.85	.55
Sport participation	.69 – .88	.91	.67
Psychological well-being	.66 – .85	.88	.61

Structural Model and Hypothesis Testing

Following confirmation of an acceptable measurement model, the hypothesized structural model was tested using SEM. The structural model also demonstrated satisfactory fit indices: $\chi^2/df = 2.34$, CFI = .93, TLI = .92, RMSEA = .054, and SRMR = .049.

Direct Effects

Built environment walkability had a significant positive effect on sport participation ($\beta = .36$, $p < .001$), supporting Hypothesis 1. Sport participation was positively associated with psychological well-being ($\beta = .42$, $p < .001$), supporting Hypothesis 2. The direct path from walkability to psychological well-being remained significant, though reduced in magnitude ($\beta = .18$, $p < .01$), when sport participation was included in the model.

Table 4. Standardized Direct Effects in the Structural Model

Path	β	SE	*p*
Walkability → Sport participation	.36	.05	< .001
Sport participation → Psychological well-being	.42	.06	< .001
Walkability → Psychological well-being	.18	.06	< .01

Mediation Analysis

The mediating role of sport participation was examined using a bootstrapping procedure with 5,000 resamples. Results indicated that the indirect effect of walkability on psychological well-being through sport participation was statistically significant (β = .15, 95% CI [.09, .22]), providing support for Hypothesis 3. Because both the direct and indirect effects remained significant, sport participation was identified as a partial mediator. Together, walkability and sport participation explained 47% of the variance in psychological well-being. Standardized direct, indirect, and total effects are presented in Table 5.

Table 5. Standardized Direct, Indirect, and Total Effects

Effect	β	95% CI
Direct: Walkability → Psychological well-being	.18	[.06, .29]
Indirect: Walkability → Sport participation → Psychological well-being	.15	[.09, .22]
Total effect	.33	[.24, .42]

DISCUSSION

The present study examined the relationships among built environment walkability, sport participation, and psychological well-being using a structural equation modeling approach. The findings provide empirical support for the hypothesized framework, demonstrating that walkability is positively associated with psychological well-being both directly and indirectly through sport participation. These results extend existing research by clarifying the behavioral mechanism through which walkable urban environments contribute to mental health outcomes.

Consistent with ecological models of health behavior (Sallis et al., 2008), the results revealed a significant positive association between perceived walkability and sport participation. This finding suggests that neighborhoods characterized by connected street networks, pedestrian infrastructure, safety, and aesthetic quality are more conducive to regular engagement in sport and structured physical activity. Previous studies have shown that walkable environments reduce environmental barriers to physical activity by increasing accessibility to recreational facilities and encouraging active movement patterns (Frank et al., 2010; Saelens & Handy, 2008). The present findings extend this literature by confirming that walkability is not only associated with general physical activity but also with sport participation, which often requires sustained motivation and repeated engagement.

From a behavioral perspective, walkable environments may foster sport participation by supporting autonomy and convenience, two core determinants of sustained physical activity. Individuals living in walkable neighborhoods may perceive fewer logistical constraints, such as transportation difficulties or safety concerns, making participation in sport more feasible. This aligns with prior evidence indicating that perceived environmental support is a key predictor of sport and exercise adherence (Bauman et al., 2012).

The findings also demonstrated a strong positive relationship between sport participation and psychological well-being, supporting a large body of literature linking physical activity and sport involvement to improved mental health outcomes (Eime et al., 2013; Lubans et al., 2016). Sport participation has been shown to enhance mood, reduce symptoms of anxiety and depression, and promote positive affect through physiological, psychological, and social mechanisms.

Self-determination theory (Deci & Ryan, 2000) provides a useful framework for interpreting this relationship. Sport participation can satisfy basic psychological needs for competence, autonomy, and relatedness, all of which are fundamental to psychological well-being. Engaging in sport allows individuals to experience skill mastery, goal achievement, and social interaction, which collectively contribute to enhanced life satisfaction and emotional balance. The strong association observed in the present study supports the view that sport participation represents a particularly potent form of physical activity for promoting psychological well-being.

Importantly, walkability retained a significant direct association with psychological well-being even after accounting for sport participation. This suggests that walkable environments may influence mental health through additional pathways beyond physical activity, such as increased social interaction, exposure to restorative environments, and reduced stress. Theories such as attention restoration theory and stress reduction theory posit that supportive and aesthetically pleasing environments can restore cognitive resources and reduce psychological stress (Kaplan, 1995; Ulrich et al., 1991).

Walkable neighborhoods often encourage incidental social contact, neighborhood cohesion, and a sense of belonging, all of which have been linked to improved psychological well-being (Leyden, 2003). Furthermore, features commonly associated with walkability—such as greenery, public spaces, and pedestrian-friendly design—may provide opportunities for mental restoration and emotional regulation. The persistence of a direct effect underscores the multifaceted role of the built environment in shaping mental health.

A key contribution of this study lies in identifying sport participation as a partial mediator in the relationship between walkability and psychological well-being. The significant indirect effect indicates that walkable environments enhance psychological well-being in part by promoting greater engagement in sport. This finding advances prior research that has largely examined direct associations between built environment characteristics and mental health without explicitly modeling behavioral mechanisms (Giles-Corti et al., 2016).

The partial mediation observed suggests that while sport participation is an important pathway, it does not fully account for the relationship between walkability and psychological well-being. This aligns with ecological perspectives emphasizing that health outcomes are shaped by multiple interacting pathways, including behavioral, social, and environmental processes (Sallis et al., 2008). By empirically testing mediation using SEM, the present study provides a more nuanced understanding of how urban design influences mental health (Monadi et al., 2025).

The findings have important implications for urban planning, public health, and sport policy. From a planning perspective, investments in walkable infrastructure—such as sidewalks, pedestrian crossings, mixed land use, and access to recreational facilities—may yield mental health benefits by increasing sport participation and enhancing psychological well-being. Public health strategies aimed at improving mental health should therefore consider environmental interventions alongside individual-level behavior change programs.

For sport and recreation policymakers, the results highlight the importance of integrating sport facilities and programs within walkable neighborhoods. Ensuring that sport opportunities are accessible by foot or active transport may increase participation rates and amplify psychological benefits at the population level. These findings support calls for interdisciplinary collaboration between urban planners, public health professionals, and sport organizations to promote mental well-being through environmental design.

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inference. Although the hypothesized pathways are theoretically grounded, longitudinal or experimental studies are needed to establish causal relationships among walkability, sport participation, and psychological well-being. Second, all measures were based on self-report, which may be subject to recall bias and social desirability effects. Future research could incorporate objective measures of walkability and physical activity, such as geographic information systems (GIS) and wearable devices.

Additionally, the study focused on overall sport participation frequency and did not distinguish between different types of sport or contexts (e.g., team vs. individual sports). Future studies could explore whether specific forms of sport participation differentially mediate the effects of walkability on psychological well-being. Finally, cultural and contextual factors may influence perceptions of walkability and sport engagement; thus, replication in diverse urban settings is warranted.

CONCLUSION

In conclusion, this study provides robust evidence that built environment walkability is positively associated with psychological well-being, both directly and indirectly through sport participation. By integrating ecological models of health behavior with psychological theory and employing SEM, the findings contribute to a deeper understanding of the mechanisms linking urban environments to mental health. Promoting walkable neighborhoods may therefore represent a sustainable and effective strategy for enhancing sport participation and improving psychological well-being in urban populations.

REFERENCES

Abdoshahi, M., & Ghorbani, S. (2022). Effects of Playground Availability on Participation of Children in Physical Activity: The Role of Socioeconomic Status. *International Journal of School Health*, *9*(3), 186-191. [Google Scholar] [Publisher] http://dx.doi.org/10.30476/intjsh.2022.96051.1245

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*(3), 411–423. https://doi.org/10.1037/0033-2909.103.3.411

Baniasadi, T., Ranjbari, S., Khajehaflaton, S., Neshati, A. and Dana, A. (2022). Effects of Physical Activity on Adiposity in Children: Mediating Role of Self-Esteem and Body-Image. *Journal of Pediatric Perspectives*, *10*(12), 17172-17181. [Google Scholar] [Publisher] https://doi.org/10.22038/ijp.2022.67562.5043

Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J. F., & Martin, B. W. (2012). Correlates of physical activity: Why are some people physically active and others not? (*The Lancet*, 380(9838), 258–271). [Google Scholar] [Publisher] https://doi.org/10.1016/s0140-6736(12)60735-1

Biddle, S. J., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. *British Journal of Sports Medicine*, *45*(11), 886–895. [Google Scholar] [Publisher] https://doi.org/10.1136/bjsports-2011-090185

Chaharbaghi, Z., Hosseini, F. B., Baniasadi, T., Moradi, L. & Dana, A. (2022). Impact of Physical Activity on Resilience among Teenage Girls during the COVID-19 Pandemic: a Mediation by Self-Esteem. *Women's Health Bulletin*, *9*(2), 80-85. [Google Scholar] [Publisher] https://doi.org/10.30476/whb.2022.94451.1166

Christodoulides, E., Tsivitanidou, O., Sofokleous, G., Grecic, D., Sinclair, J. K., Dana, A., & Ghorbani, S. (2023). Does Physical Activity Mediate the Associations between Physical Literacy and Mental Health during the COVID-19 Post-Quarantine Era among Adolescents in Cyprus? *Youth*, *3*(3), 823-834. [Google Scholar] [Publisher] https://doi.org/10.3390/youth3030053

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits explains how autonomy, competence, and relatedness influence motivation and well-being (*Psychological Inquiry*, 11(4), 227–268). [Google Scholar] [Publisher] https://doi.org/10.1207/s15327965pli1104_01

Doré, I., O'Loughlin, J. L., Beauchamp, G., Martineau, M., & Fournier, L. (2016). Team sport participation and mental health in adolescents. *Journal of Adolescent Health*, *58*(5), 584–592. [Publisher] https://doi.org/10.1016/j.jadohealth.2015.12.006

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for adults: Informing development of a conceptual model of health through sport, *International Journal of Behavioral Nutrition and Physical Activity, 10*, 135, [Google Scholar] [Publisher] https://doi.org/10.1186/1479-5868-10-135.

Frank, L. D., Sallis, J. F., Saelens, B. E., et al. (2010). The development of a walkability index: Application to the Neighborhood Quality of Life Study. *British Journal of Sports Medicine, 44*(13), 924–933. [Google Scholar] [Publisher] https://doi.org/10.1136/bjsm.2009.058701

Giles-Corti, B., Vernez-Moudon, A., Reis, R., Turrell, G., Dannenberg, A. L., Badland, H., Foster, S., Lowe, M., Sallis, J. F., Stevenson, M., & Owen, N. (2016). City planning and population health: A global challenge, *The Lancet, 388*(10062), 2912–2924, [Google Scholar] [Publisher] https://doi.org/10.1016/S0140-6736(16)30066-6.

Hosseini, F. B., Ghorbani, S., & Rezaeeshirazi, R. (2022). Autonomy Support, Needs Satisfaction, Motivation, and Intention to Do Physical Activities in Adolescents: A Validation study. *Journal of Pediatric Perspectives*, *10*(2), 15399-15411. [Google Scholar] [Publisher] http://dx.doi.org/10.22038/ijp.2021.55491.4370

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology, 15*(3), 169–182. [Google Scholar] [Publisher] https://doi.org/10.1016/0272-4944(95)90001-2

Khosravi, N., Hadavi, F., & Farahani, A. (2012). The correlation between physical activity and depression and anxiety among high school students in Saveh, Iran. *Sport Psychology Review*, *1*(1), 7-14. [Google Scholar] [Publisher]

Kline, R. B. (2016). *Principles and practice of structural equation modeling* provides guidelines for CFA, SEM fit indices, and mediation analysis. [Google Scholar] [Publisher]

Leyden, K. M. (2003). Social capital and the built environment: The importance of walkable neighborhoods. *American Journal of Public Health*, *93*(9), 1546–1551. https://doi.org/10.2105/AJPH.93.9.1546

Lubans, D. R., Richards, J., Hillman, C. H., et al. (2016). Physical activity for cognitive and mental health in youth: A systematic review. *Preventive Medicine, 66*, 19–28. [Google Scholar] [Publisher] https://doi.org/10.1542/peds.2016-1642

Monadi, A. (2025). A Review of the Fundamentals of Futures Studies in Urban Planning as a New Approach to Sustainable Urban Planning. *Geography and Human Relationships*, e228956. [Google Scholar] [Publisher] https://doi.org/10.22034/gahr.2025.545248.2586.

Monadi, A. (2025). A Review of the Fundamentals of Futures Studies in Urban Planning as a New Approach to Sustainable Urban Planning. *Geography and Human Relationships*, e228956. [Google Scholar] [Publisher] https://doi.org/10.22034/gahr.2025.545248.2586.

Monadi, A. (2025). Aesthetic Enhancements to Sports Facilities and Adolescent Physical Activity: A Mediation Analysis of Motivational Mechanisms. *Physical Activity in Children*, *2*(2), 50-57. [Google Scholar] [Publisher] https://doi.org/10.61882/pach.2025.559986.1074

Monadi, A. (2025). An Integrated Urban Engineering Model: Linking Beautifying Facilities, Environmental Psychology, and Urban Sustainability Using SEM. Journal of Applied Psychology and Behavioral Sciences, 10(1), 24-31. [Google Scholar] [Publisher]

Monadi, A. (2025). The Mediating Role of Engineering Technology Awareness in the Relationship between Spatial Equality and Participation in Public Sports. *Research Journal of Engineering & Technology*, *2*(2), 73-81. [Google Scholar] [Publisher] https://doi.org/10.61186/rjet..2.2.73

Monadi, A. (2025). The Role of Urban Sports Space Development in Promoting Sports Participation and Enhancing Quality of Life in Tabriz City: A SEM Analysis. *International Journal of Advances in Sport Management*, *5*(1), 22-30. [Google Scholar] [Publisher] https://doi.org/10.61186/ijasm.5.1.22

Monadi, A., Hosseinzadeh Delir, K., & Ezzatpanah, B. (2019). Enhancing Tourism Productivity via Assessment of Factors Affecting the Introduction of Traditional Iranian Markets as a Tourism Brand: The Case of Tabriz Market. *Productivity Management*, *55*, 120-139. [Google Scholar] [Publisher] https://doi.org/10.30495/QJOPM.2020.1869054.2477 [In Persian]

Moradi, J., Bahrami, A., & Dana, A. (2020). Motivation for Participation in Sports Based on Athletes in Team and Individual Sports. *Physical Culture and Sport Studies and Research*, 85, 14-21. [Google Scholar] [Publisher] https://doi.org/10.2478/pcssr-2020-0002

Nour Mohammadi, S., Safania, A. M., Farahani, A., & Naghshbandi, S. S. (2026). Analysis of Media Mechanisms in Promoting Physical Activity Among the Elderly: Developing a Paradigmatic Model. *Mental Health and Lifestyle Journal*, *4*(2), 1-15. [Google Scholar] [Publisher]

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719–727. [Google Scholar] [Publisher] https://doi.org/10.1037/0022-3514.69.4.719

Saelens, B. E., & Handy, S. L. (2008). Built environment correlates of walking: A review. *Medicine & Science in Sports & Exercise*, *40*(7 Suppl), S550–S566. [Google Scholar] [Publisher] https://doi.org/10.1249/MSS.0b013e31817c67a4

Sallis, J. F., Owen, N., & Fisher, E. B. (2008). Ecological models of health behavior, in K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 465–486), Jossey-Bass. [Google Scholar] [Publisher]

Seraj, S., Asad, M., Farahani, A., & Ashrafi Hafez, A. (2013). The effect of Pilates exercises on the body composition and flexibility of non-athletic women. *Journal of Ilam University of Medical Sciences*, *21*(6), 287-299. [Google Scholar] [Publisher]

Sheikh, M., Bay, N., Ghorbani, S. and Esfahaninia, A. (2021). Effects of Peers on Motivation and Physical Activity Behavior of Adolescent Students: An Investigation of Trans-Contextual Model. *International Journal of School Health*, *8*(1), 47-54. [Google Scholar] [Publisher] https://doi.org/10.30476/intjsh.2021.90210.1129

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*, *11*(3), 201–230. https://doi.org/10.1016/S0272-4944(05)80184-7