

The Effect of Physical Activity on Body Image, Perceived Competence, and Anger Management among High School Students in Tehran

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ABSTRACT

Objective: The objective of this study was to examine the effect of physical activity on the factors of body image, perceived competence, and anger management among high school students in Tehran.

Methods and Materials: This research is applied in its aim and descriptive-correlational in nature, conducted in the field with active participation from the subjects. The statistical population of this study comprised all high school students in Tehran. A sample of 384 high school students in Tehran was selected through a multi-stage cluster random sampling method. Data collection was carried out using four standardized questionnaires: the Sharkey Physical Activity Questionnaire, the Body Image Questionnaire (Marsh, 1994), the Perceived Competence Scale (Jinks & Morgan, 1999), and the Anger Management Questionnaire (Hajati et al., 2016). The face and content validity of the questionnaires were confirmed by the supervising professor, and the reliability of the questionnaires was calculated using Cronbach's alpha coefficients, which were 0.85, 0.88, 0.91, and 0.87 for the physical activity, body image, perceived competence, and anger management questionnaires, respectively. Data analysis was conducted using descriptive statistics, Spearman's correlation coefficient, and structural equations modeling with PLS and SPSS software.

Findings: The results indicated a positive and significant relationship between physical activity and body image among high school students in Tehran. Additionally, the findings confirmed a positive and significant relationship between physical activity and perceived competence among these students. Furthermore, the results showed a positive and significant relationship between physical activity and anger management among high school students in Tehran.

Conclusion: The study concludes that physical activity positively influences body image, perceived competence, and anger management among high school students in Tehran.

Keywords: Physical activity, Body image, Perceived competence, Anger management.

1. Introduction

The physical condition of students during growth and adolescence is of particular importance, as these are the stages when the body undergoes development and formation. Therefore, if an individual's physical condition during childhood, adolescence, or early adulthood is abnormal, they may face physical and psychological issues later in life (Kies et al., 2010). Mental disorders can, in turn, impact the body's condition; for example, a person suffering from depression may feel weak and incapable due to cognitive disturbances and low self-esteem (lack of self-confidence and mental turmoil), which negatively affects their posture in various situations. Additionally, an individual's emotions can influence their muscle movements and posture (Dave & Hoyle, 2014). One of the psychological qualities related to students' self-confidence is body image. Each person has a mental image of their body, which is a key element in shaping their personality. Moreover, body self-concept encompasses an individual's feelings, behaviors, and values regarding their body and includes aspects such as the perception of appearance, awareness of internal bodily sensations, and subjective evaluation of bodily abilities. Therefore, body image refers to an individual's attitude towards themselves (Eskandarnejad & Ebrahimian, 2016; Eskandarnejad & Fathzadeh, 2017).

Body image is the perception that each person has of their physical body and, more importantly, encompasses all the thoughts and feelings they have when looking in the mirror or imagining themselves in their mind (Arkan et al., 2024). It is evident that everyone has a body image, but it is important to note that these feelings can be positive, negative, or a combination of both and can be influenced by individual and environmental factors. Having a positive body image significantly affects nearly all aspects of a person's life. When a person has a positive body image, they gradually realize that their sense of self-worth and self-esteem is not dependent on their physical appearance (Ashkinazi et al., 2024; Kiani Rad, 2024). Body image dissatisfaction among students is recognized as their negative and dysfunctional feelings and beliefs about their weight and body shape. Dissatisfaction with one's physical appearance, or body dissatisfaction, is a common experience among adolescent students that needs to be addressed by parents and teachers (Ahmadi, 2024; Frederick et al., 2017). Students should possess a positive attitude towards themselves and their surroundings and be motivated to strive for success because body image is one of the fundamental

factors in the optimal development of an individual's personality. Students who are aware of their abilities feel competent and confident, and a positive attitude towards oneself fosters hope for the future and vitality (Frisen & Holmqvist, 2010).

On the other hand, numerous studies have shown that exercise, besides being a valuable tool for maintaining physical health, is closely related to mental health, particularly in preventing the occurrence of psychological disorders. Exercise reduces anxiety and depression, enhances self-confidence, and strengthens self-concept. For children and adolescents, exercise provides a healthy outlet for releasing pent-up energy, which is both enjoyable and calming (Fuller-Tyszkiewicz et al., 2018). Participation in sports activities contributes to socialization, skill development, competence, and forming healthy relationships with peers (Gavin et al., 2010).

In a recent study in the United States, 65% of young people stated that sports prevented them from becoming addicted to alcohol and drugs (Gao et al., 2014). During intense physical activities, the secretion of endorphins increases, which explains why athletes feel a particular sense of pleasure and relaxation after exercising (Joseph et al., 2016). Additionally, numerous studies have shown that physical activity has a positive effect on mental health, particularly in preventing psychological disorders (LePage & Crowther, 2010).

The results showed that, in addition to physical inactivity and lethargy, these factors directly affect the mind, leading to mental fatigue and incapability, which ultimately keeps many students' mental abilities and talents untapped. Often, students reluctantly approach their books and try to compensate for the chronic lack of physical activity by overburdening their minds with various learning techniques, while a much simpler and healthier solution like exercise could ensure their health, increase their mental activity, and boost their enthusiasm for studying (Mond et al., 2011). For the brain to perform well in learning and retaining academic content, it must be supplied not only with sufficient nutrients and energy but also with clean, oxygen-rich blood (Moussally et al., 2016).

Another variable that is discussed in relation to students is the sense of competence. Competence refers to the degree to which an individual can perform job tasks skillfully. In psychological literature, this concept is related to Albert Bandura's social cognitive theory and includes the concepts of self-efficacy, personal mastery, and performance effort expectancy. Competent individuals feel capable and believe

they possess the necessary abilities to successfully accomplish tasks (Uusberg et al., 2018). The sense of competence is one of the components of self-concept, which refers to the process of becoming aware of one's characteristics, types of relationships with others, feedback on events, capacities, and abilities, and is focused on various cognitive, physical, and social domains (Valois et al., 2008).

On the other hand, one of the emotions that plays a significant and influential role in everyone's life, particularly in adolescents, is anger. Although anger is a natural phenomenon and, like other emotions, is a sign of health, wellness, and human feelings, it may arise from internal factors such as irrational thoughts, unrealistic expectations, and feelings of frustration, or external factors such as betrayal, being ignored, lack of consideration by others, or being insulted or violated (Webb et al., 2018). The harmful effects of anger can impact both the individual and those around them. "Uncontrolled anger" jeopardizes both personal well-being and health. The consequences of poor anger management extend beyond personal distress and the destruction of interpersonal relationships, as it is linked to general health impairment, maladjustment, and the detrimental outcomes of aggressive behavior (Valois et al., 2008). The inability to manage anger leads to personal distress, disruption in general health and interpersonal relationships, maladjustment, and the harmful consequences of aggressive behavior. Despite scientific advancements, anger remains a critical social issue among adolescents (Gao et al., 2014). Given the importance of students' lives, discussing these variables in their lives is crucial. The academic performance of learners throughout their education and ultimately achieving higher academic levels not only benefits the individual and their family but also has significant economic, social, and cultural advantages for society as a whole (Fuller-Tyszkiewicz et al., 2018). Policymakers, educators, and researchers agree that active participation in their academic activities and enjoying them will lead to more frequent experiences of academic success (Gavin et al., 2010). Therefore, conducting such research helps to identify the positive role of physical activity in various aspects of children's lives, providing valuable and useful information for the education system to plan appropriately and distribute resources and facilities equitably to take significant steps towards improving student performance quality.

2. Methods and Materials

2.1. Study Design and Participants

The present research is applied in nature and, in terms of method, is descriptive-correlational. The statistical population of this study included all high school students in Tehran. A total of 384 high school students in Tehran were selected as the sample using a multi-stage cluster random sampling method.

2.2. Measures

2.2.1. Physical Activity

This questionnaire consists of 5 questions aimed at determining individuals' levels of physical activity. The scoring is based on a 5-point Likert scale, ranging from 5 to 25. For example, individuals who score above 15 can be considered active. Higher scores indicate higher levels of physical activity in the respondent, and vice versa (Khorosh et al., 2009).

2.2.2. Body Image

This questionnaire is designed to reflect an individual's condition, feelings, and attitudes towards their body, containing 70 questions in this regard. Each of the 7 questions is scored on a scale from 1 to 6 (6 = strongly agree and 1 = strongly disagree), with some questions being reverse-scored (6 = strongly disagree and 1 = strongly agree). The total score on this questionnaire can range between a minimum and maximum, based on the 70 items measuring 11 dimensions, including health (8 questions), coordination (6 questions), physical activity (6 questions), body fat (6 questions), sports competence (6 questions), overall body (6 questions), appearance (6 questions), strength (6 questions), flexibility (6 questions), endurance (6 questions), and self-esteem (8 questions). Respondents rate each item on a six-point Likert scale, ranging from incorrect to correct. It should be noted that some items are reverse-scored; thus, each item is scored from 1 to 6. (Lotfi, Mohammadi, Sarabi, & Bagherzadeh, 2013). For example, a score of 1 means completely incorrect, and a score of 6 means completely correct. Questions 6, 17, 39, 40, 31, 45, 56, 67, 12, 23, 1, 33, 68, and 70 are reverse-scored, meaning a score of 6 indicates completely incorrect, and a score of 1 indicates completely correct. Therefore, the minimum score is 56, and the maximum score is 336 (Eskandarnejad & Ebrahimian, 2016; Eskandarnejad & Fathzadeh, 2017).

2.2.3. Perceived Competence

To measure students' perceived competence, the Jinks & Morgan (1999) scale was used. This scale includes 30 items and three subscales: talent, effort, and context. The items are rated on a four-point Likert scale, ranging from 4 (strongly agree) to 1 (strongly disagree), with items 4, 5, 15, 16, 19, 22, 20, and 23 being reverse-scored. The subscales of the Perceived Competence Scale include talent (items 1 to 10), effort (items 11 to 20), and context (items 21 to 30) (Sabzi & FouladChang, 2019).

2.2.4. Anger Management

The Anger Management Questionnaire by Hajati et al. (2016) contains 8 questions, with responses scored on a 5-

point scale, ranging from very good to very poor (Faryabi et al., 2021).

2.3. Data analysis

Data analysis was performed using Spearman's correlation coefficient and structural equation modeling with PLS and SPSS software.

3. Findings and Results

Table 1 presents the descriptive statistics of the research variables.

Table 1

Descriptive Statistics of Research Variables

Statistics/Variables	Mean	Standard Deviation	Minimum	Maximum
Physical Activity	16.43	2.37	5	25
Body Image	242.52	14.63	72	312
Perceived Competence	84.19	7.51	33	114
Anger Management	32.63	4.47	11	35

Table 2 examines the normality of the research variables. Based on Table 2, it can be concluded that variables with a significance level greater than 0.05 have a normal distribution, while those with a significance level less than 0.05 have a non-normal distribution. When the data are

normal, the use of parametric tests is permissible, and when the data are not normal, parametric tests are not allowed, and non-parametric tests should be used. Therefore, due to the non-normality of the data in this study, Spearman's correlation was used.

Table 2

Normality Test Results

Statistics/Variables	K-S Value	Significance Level	Distribution Normality Result
Physical Activity	0.415	0.002	Non-normal
Body Image	0.617	0.002	Non-normal
Perceived Competence	0.326	0.001	Non-normal
Anger Management	0.458	0.001	Non-normal

Spearman's correlation test was used to examine the relationships between the variables, and the results are presented below. The results in Table 3 indicate that the significance level of the relationship between physical activity and body image factors (sig = 0.001) is smaller than the predicted error margin ($\alpha = 0.05$). Therefore, the relationship between the variables is statistically significant. Since the calculated correlation coefficient is 0.599, it can be concluded with 95% confidence that there is a significant positive relationship between physical activity and body

image factors among high school students in Tehran. Thus, the higher the level of physical activity, the higher the body image scores of high school students in Tehran.

The results showed that the significance level of the relationship between physical activity and perceived competence factors (sig = 0.001) is smaller than the predicted error margin ($\alpha = 0.05$). Therefore, the relationship between the variables is statistically significant. Since the calculated correlation coefficient is 0.590, it can be concluded with 95% confidence that there is a significant

positive relationship between physical activity and perceived competence factors among high school students in Tehran. Thus, the higher the level of physical activity, the

higher the perceived competence scores of high school students in Tehran.

Table 3

Correlation Coefficients Between Physical Activity, Perceived Competence, and Anger Management

Variables	Correlation Coefficient	Significance Level
Talent	0.226	0.01
Effort	0.261	0.01
Context	0.289	0.01
Perceived Competence	0.590	0.01
Anger Management	0.704	0.001

The results in Table 3 indicate that the significance level of the relationship between physical activity and anger management (sig = 0.001) is smaller than the predicted error margin ($\alpha = 0.05$). Therefore, the relationship between the variables is statistically significant. Since the calculated correlation coefficient is 0.704, it can be concluded with 95% confidence that there is a significant positive relationship between physical activity and anger management among high school students in Tehran. Thus, the higher the level of physical activity, the higher the anger management scores of high school students in Tehran.

To examine the impact of a favorable risk-taking culture on psychological empowerment, the standardized

coefficient diagram, which represents the standardized estimate of factor loadings, is used. These values indicate the role of one variable on the dependent variable. Factor loadings range between -1 and 1. If the absolute value of the factor loading is less than 0.1, the relationship is considered weak and can be disregarded. Factor loadings between 0.1 and 0.6 are acceptable, and values greater than 0.6 are highly desirable.

As shown in the standardized coefficients, the t-values are 20.075, 15.985, and 17.780, which are higher than ± 1.96 . Therefore, physical activity has a positive and significant impact on body image, perceived competence, and anger management among high school students in Tehran.

Figure 1

Standardized Coefficients of Research Variables

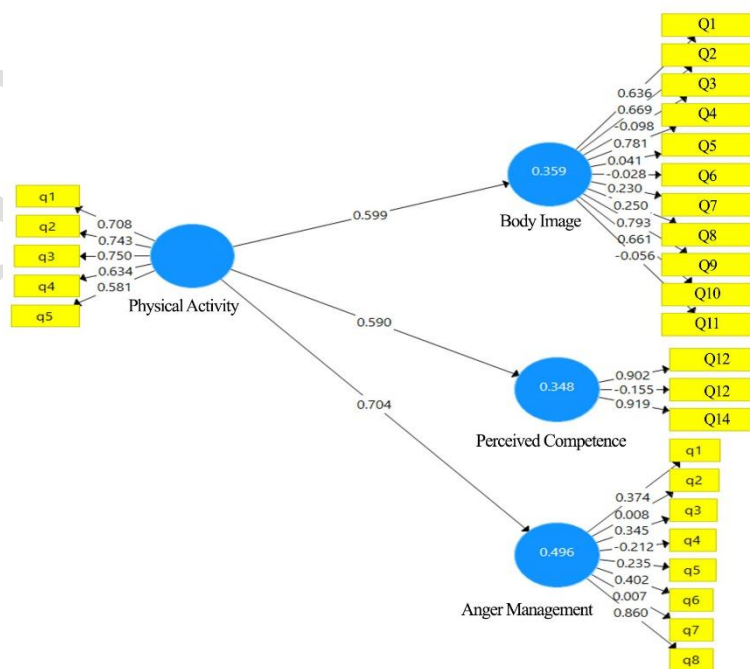
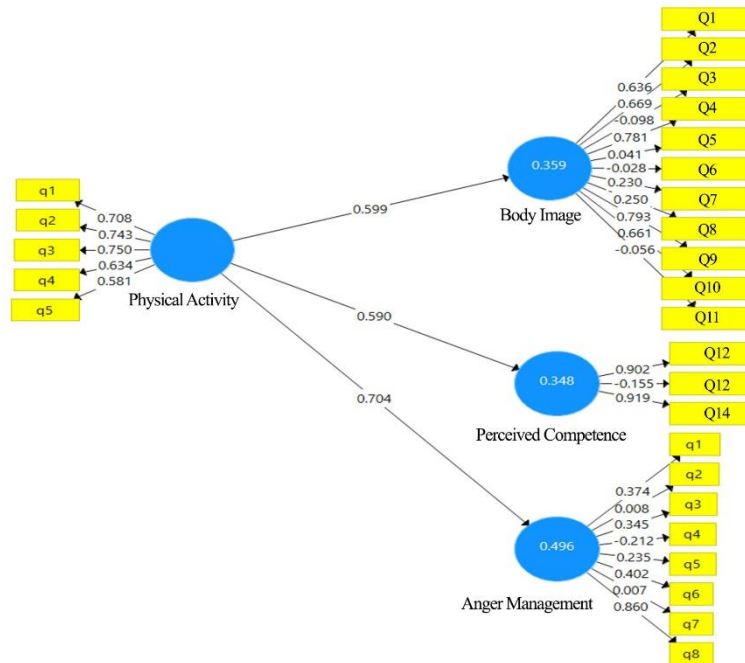


Figure 2

Z Coefficients Between Physical Activity and Variables of Body Image, Perceived Competence, and Anger Management



4. Discussion and Conclusion

The findings of the study indicated that physical activity has a positive and significant impact on the body image of high school students in Tehran. This result is consistent with the findings of Valois et al. (2008). Theoretically, it can be stated that in today's society, there is considerable sociocultural emphasis on physical attractiveness and fitness (Valois et al., 2008). Therefore, social factors such as visual media, normative pressures within the family and society, and societal standards and definitions of beauty also influence one's self-image (Frisen & Holmqvist, 2010). These results align with the classical social comparison theory, which suggests that individuals generally compare themselves to similar others (Uusberg et al., 2018). An individual's body image is related to their evaluative context, so the social comparison situation creates different patterns of self-evaluation in adolescents, leading them to focus more on their appearance during social comparison tasks, which can play a significant role in increasing body image disorders. Research suggests that the motivation for participating in sports includes appearance-related reasons (such as weight control), health, socialization, and stress management. The motivation to exercise may moderate the relationship between exercise and dissatisfaction with body

image and mood, which can help reduce identity crises (Uusberg et al., 2018).

The study's findings showed that physical activity has a positive and significant impact on the perceived competence of high school students in Tehran. These findings are consistent with the prior research (Joseph et al., 2016; Webb et al., 2018). Theoretically, it can be asserted that the relationship between physical activity and perceived competence is one of the important topics in the field of sports psychology and mental health. Perceived competence refers to an individual's ability to perform tasks and face various challenges and can have significant effects on mental health and self-confidence. Physical activity can positively influence perceived competence, increasing self-confidence, reducing anxiety and stress, enhancing the sense of accomplishment, and improving cognitive performance (Joseph et al., 2016; Webb et al., 2018). The extensive impact of physical activity on perceived competence can contribute to improving mental health and boosting self-confidence. Given this connection, it is recommended that individuals regularly engage in physical activity to benefit from its psychological advantages.

The study's findings indicated that physical activity has a positive and significant impact on anger management among high school students in Tehran. These findings are consistent with prior research (Dave & Hoyle, 2014). Theoretically, it can be stated that the relationship between physical activity

and anger management is a topic of interest in psychology and mental health. Scientific evidence and research suggest that physical activity can positively impact anger control and emotional regulation. Physical activity plays an essential role in controlling anger and improving mental health. By incorporating regular exercise into their daily routine, individuals can benefit from its physiological and psychological advantages and develop better skills for managing their emotions and anger (Uusberg et al., 2018).

5. Limitations & Suggestions

This study faced several limitations, including the reliance on self-reported data, which may be subject to social desirability bias, and the cross-sectional design, which does not allow for causal inferences. Additionally, the sample was limited to high school students in Tehran, which may not be representative of students in other regions or age groups. The study also did not account for potential confounding variables such as socioeconomic status, family background, or existing mental health conditions that could influence the results.

Future research should consider using a longitudinal design to explore the causal relationships between physical activity and the psychological variables studied. Expanding the sample to include diverse populations from different geographical regions, age groups, and socioeconomic backgrounds would enhance the generalizability of the findings. Additionally, future studies could explore the role of specific types of physical activities, their intensity, and duration on psychological outcomes, as well as the potential moderating effects of gender and cultural factors.

The findings of this study suggest that incorporating regular physical activity into school curricula could be a valuable strategy for enhancing students' psychological well-being, particularly in improving body image, perceived competence, and anger management. Educators and policymakers should consider developing and implementing programs that encourage physical activity among students, taking into account the diverse needs and preferences of different student groups. Additionally, mental health professionals could integrate physical activity into therapeutic interventions aimed at improving self-esteem and emotional regulation among adolescents.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

This article is derived from the first author's doctoral dissertation. All authors equally contributed to this article.

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