

Self-Esteem in Physical Education and Non-Physical Education

Students: A Multidimensional Comparative Study

¹ Ms. Megha Sharma, ² Dr. Ravi Kumar

¹Department of Physical Education, Guru Kashi University, Bathinda.

²Associate Professor, Department of Physical Education, Guru Kashi University, Bathinda.

Email Id: ¹meghasharm789@gmail.com, ²ravikumar.gahalawat@gmail.com

Accepted:20.07.2026 Published:10.08.2026 Page No. 129 – 136 DOI: 10.5281/zenodo.22123061

Abstract— *Self-esteem is a multidimensional psychological construct that is well-established and linked to mental health, academic persistence, and social functioning. Studies known to improve individuals' self-esteem are important, but only a few have compared students enrolled in actual Physical Education (PE) programs with those in non-physical education programs in India, particularly in the higher education sector. In this study, we compared our global and domain-specific self-esteem (athletic competence, physical appearance, social acceptance, and scholastic competence) between PE and non-PE postgraduate students. We also looked for differences and interaction effects by gender. A quantitative, cross-sectional comparative design was employed. Sixty postgraduate students from Rajasthan University (30 PE, 30 non-PE; 15 males and 15 females per group; aged 18–25 years) were selected via purposive sampling. Global self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), and domain-specific self-esteem was measured using four subscales of Harter's Self-Perception Profile for Adolescents (SPPA; Harter, 2012). Data were analysed using independent samples t-tests and two-way ANOVA at $\alpha = 0.05$. PE students scored significantly higher on global self-esteem ($M = 25.80$ vs. 23.60 ; $t = 4.21$, $p < 0.001$, $d = 1.09$), athletic competence ($d = 3.45$), physical appearance ($d = 1.42$), and social acceptance ($d = 1.25$). Non-PE students scored significantly higher on scholastic competence ($M = 21.50$ vs. 13.70 ; $d = 5.02$). Male students had higher*

global self-esteem than females ($M = 26.00$ vs. 23.40 ; $d = 1.39$). Two-way ANOVA confirmed significant main effects for both specialisation ($\eta^2 = 0.25$) and gender ($\eta^2 = 0.32$), but no significant interaction ($F = 0.32$, $p = 0.574$). Six of seven hypotheses were supported. Findings confirm the domain-specific nature of self-esteem and underscore the value of structured physical education for psychosocial development in higher education.

Keywords: *Self-Esteem; Physical Education; Rosenberg Self-Esteem Scale; Athletic Competence; Scholastic Competence; Gender Differences; Two-Way ANOVA; Indian Higher Education.*

I. INTRODUCTION

Among the most widely studied constructs in educational psychology are self-esteem and self-efficacy. It refers to an individual's overall subjective evaluation of their own worth. It is not simply a single feeling or sensation; it operates across different areas of life at the same time. The general view was captured by Rosenberg in 1965 and then extended into various domains by Harter in 2012. The main domains are scholastic competence, social acceptance, athletic competence, physical appearance, and behavioural conduct. The critical insight from this multidimensional framework is that people can feel highly capable with respect to one thing but not with respect to another, and that the things they value most are what they derive their overall worth from.

This domain-specific structure makes academic specialization a potentially powerful variable in self-esteem research. Students doing Physical Education courses spend their days learning about, training for, competing in and getting feedback on physical performance. Constant testing and reinforcement of self-worth in athletic and appearance domains. By contrast, humanities, social sciences, sciences, and commerce students anchor their self-evaluations mainly to cognitive performance – grades, analytical ability, and academic recognition. Physical activity is usually optional, unmarked, and socially irrelevant in their academic programme.

The connection between physical activity and self-esteem is well established. According to meta-analysis, there is a positive relationship between exercise participation and both global and physical esteem [1][2][3]. Despite that, most such research treats physical activity as a behavior rather than as a formal academic program. The academic aspect of PE is more rigorous, more evaluative, and more socialized than the recreational aspect. Public training, formal competitions, and constant assessment of skill and fitness create a qualitatively different self-esteem environment for PE students.

However, the literature does not all agree. Some (but not all) studies have found higher physical and global self-esteem among PE students [4],[5], while another study did not find any difference after controlling for prior activity or personality [6]. Gender makes it more complicated because females report less physical appearance satisfaction and lower global self-esteem than males consistently, and the gap widens during adolescence [7]. How PE enrolment differentially buffers versus exacerbates this gender gap, especially in Indian higher education systems, remains largely unexplored.

To address these gaps, the present study is designed on a focused comparative basis with 60 postgraduate students from Rajasthan University, divided equally by gender and by PE and non-PE programs. Measuring global self-esteem, in addition to four

dimension-specific self-esteem measures, offers a comprehensive picture of how academic specialization can shape students' self-perceptions, where each group excels, and whether these effects operate independently of gender.

II. REVIEW OF RELATED LITERATURE

Gonzalez Orozco [8] through an analysis of 450 adolescents found significant positive correlations of the frequency of physical activity with self-esteem ($r = 0.42$) and satisfaction with body image ($r = 0.38$).

According to research, body image partially accounted for the effect of physical activity on self-esteem, and female participants consistently reported lower self-esteem and greater body image dissatisfaction than males.

A longitudinal study of 2,066 children [9] revealed that sport type substantially shapes domain-specific self-esteem. Team sport participants demonstrated higher social acceptance and athletic competence than individual sport participants. Students in aesthetic sports (gymnastics, dance) showed lower athletic competence and social acceptance than non-aesthetic sport participants, reinforcing that the specific context of physical activity shapes self-perceptions, not merely its presence.

Gorospe and Ferrer [10] directly compared 161 college students using the Physical Self-Description Questionnaire, finding that PE majors scored significantly higher in sport competence, strength, endurance, and overall global physical self-concept. This study is most directly analogous to the present investigation and provided the basis for our primary hypotheses.

Research conducted by Sharma and Patel [11] on PE and non-PE university students in India revealed that PE students scored significantly higher on social acceptance and the quality of peer relationships. A mediation analysis indicated that social acceptance mediated the relationship between academic

specialization and self-esteem (indirect effect = 0.14, 95% CI = 0.06–0.22). This finding suggests that the team-based setting of PE programs facilitates peer networks that enhance self-worth.

Martinez and Thompson [12] investigated the differences between female sports science (n = 120) and humanities students (n = 120), where they found that the former reported significantly higher body image satisfaction (d = 1.72) and global self-esteem (d = 0.95). Notably, some sports science students reported experiencing body dissatisfaction concerning certain body parts. This suggests that intensive training does not completely insulate athletes from the body-related pressures instigated by the sociocultural context.

Ahmed and Khan [13] provide a useful counterpoint since their Pakistani samples found that PE students scored lower than non-PE students (M = 25.4 vs. 28.7) on the global RSES. Only on sport-specific measures did the PE students score higher. This implies that in cultural settings where academic performance is a more socially valued quality, global self-esteem may not be automatically favorable to the physically active person.

The meta-analysis by Anderson and Taylor [14], which synthesized 48 studies (N = 28,476), found that athletes had significantly higher global self-esteem than non-athletes (g = 0.41) with the largest effects for adolescents (g = 0.52), females (g = 0.48), and team sport participants (g = 0.49). The greater impact for females is especially important: structured physical activity may be particularly helpful for female students who usually start from a lower self-esteem baseline. Ekeland et al. [1] and Spence et al. [2] provided systematic support which shows that exercises effects are strongest in mastery-oriented, non-competitive settings of more than 12 weeks. Combining both studies, it is interpreted that students subjected to physical education will have higher physical and social self-esteem. However, it was observed that students, who are not subjected to

this discipline, will lead to higher scholastic competence.

III. OBJECTIVES AND HYPOTHESES

The study pursued seven objectives: (1) to compare global self-esteem between PE and non-PE students; (2–5) to compare athletic competence, physical appearance, social acceptance, and scholastic competence between groups; (6) to compare self-esteem between male and female students; and (7) to examine the interaction effect of academic specialisation and gender on global self-esteem.

Seven hypotheses were formulated. H₁: PE students have higher global self-esteem. H₂: PE students have higher athletic competence. H₃: PE students have higher physical appearance self-esteem. H₄: PE students have higher social acceptance. H₅: Non-PE students have higher scholastic competence. H₆: Male students have higher global self-esteem than females. H₇: There is a significant interaction between specialization and gender on global self-esteem.

IV. METHODOLOGY

4.1 Design and Participants

A quantitative, cross-sectional comparative design (ex-post facto) was employed. Sixty postgraduate students from Rajasthan University were selected through purposive sampling: 30 PE students (M.P.E.d programme) and 30 non-PE students (M.A./M.Sc. programmes). Each group comprised 15 males and 15 females, aged 18–25 years. Purposive sampling ensured balanced representation across groups and gender. Students with self-reported diagnosed mental health conditions or those outside the target age range were excluded. All participants provided written informed consent prior to data collection.

Table 1: Participant Characteristics by Group and Gender.

Group	Male (n)	Female (n)	Total (n)	Age Range	Programme

PE Students	15	15	30	18–25 years	M.P.E.d
Non-PE Students	15	15	30	18–25 years	M.A./M.Sc. (various)
Total	30	30	60	18–25 years	—

4.2 Instruments

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a ten-item, four-point Likert-scale measure (a 3 = Strongly Agree; a 0 = Strongly Disagree). The aggregate scores can range from 0 to 30. The ideal range is between 15 and 25, as anything below 15 indicates low self-esteem and anything above 25 indicates high self-esteem. The test-retest reliability coefficient was good ($r = 0.85$), as was the internal consistency ($\alpha = 0.88$).

The Self-Perception Profile for Adolescents (SPPA; Harter, 1988, 2012) comprised four subscales (6 items each): Athletic Competence, Physical Appearance, Social Acceptance, and Scholastic Competence.

The alternative-response format of items is structured so that one indicates low competence and four indicates high competence, and it aims to minimize social desirability. The internal consistency of the subscales ranges from $\alpha = 0.75$ to 0.85.

4.3 Procedure and Statistical Analysis

With the institution's permission and informed consent, the questionnaires were administered in classrooms over two weeks under the researcher's supervision. After screening the completed forms, we scored them as detailed in the respective manuals and entered the data into SPSS 26.0. All groups were characterized with descriptive statistics. Using independent-samples t-tests, comparisons were made between the PE and non-PE groups for each of the five self-esteem variables, and between males and females for global self-esteem. Overall self-esteem was analyzed by gender and specialization using a two-way ANOVA. G*Power software was

used to conduct power analyses for the significant effects. All test interpretations were done at level 0.05.

V. RESULTS AND DISCUSSION

5.1 Descriptive Statistics

Table 2: Descriptive Statistics for All Variables by Group (N = 60)

Variable	PE Group M (SD)	Non-PE Group M (SD)	Min–Max (PE)	Min–Max (Non-PE)
Global Self-Esteem	25.80 (2.10)	23.60 (2.00)	22–30	20–27
Athletic Competence	19.50 (2.23)	12.80 (1.65)	16–24	10–16
Physical Appearance	17.80 (2.20)	14.90 (1.85)	14–22	12–18
Social Acceptance	19.40 (1.77)	17.30 (1.60)	17–23	15–20
Scholastic Competence	13.70 (1.41)	21.50 (1.65)	11–16	19–24

The descriptive pattern is striking before any inferential test is applied. PE students consistently outperform non-PE students on all physical and social domains, while non-PE students lead scholastic competence by nearly 8 points. This profile is exactly what Harter's (2012) domain-specificity principle would predict: people build self-perceptions most powerfully within the domains they inhabit and practice daily.

5.2 Group Comparisons: PE vs. Non-PE

Table 3: Independent t-test Results — PE vs. Non-PE Students

Variable	Mean Diff.	t-value	df	p-value	Cohen's d	Effect	Hypothesis
Global Self-Esteem	+2.20 (PE?)	4.21	58	<0.001	1.09	Large	H ₀ ✓ Accepted
Athletic Competence	+6.70 (PE?)	13.25	58	<0.001	3.45	Very Large	H ₀ ✓ Accepted
Physical Appearance	+2.90 (PE?)	5.50	58	<0.001	1.42	Large	H ₀ ✓ Accepted
Social Acceptance	+2.10 (PE?)	4.86	58	<0.001	1.25	Large	H ₀ ✓ Accepted
Scholastic Competence	–7.80 (Non-PE?)	19.38	58	<0.001	5.02	Very Large	H ₀ ✓ Accepted

Each of the five comparisons was statistically significant at $p < 0.001$ and had large to very large effect sizes, confirming that these are real-world differences in self-perception, and not statistical artifacts.

The advantage of athletic competence for PE students ($d = 3.45$) is among the largest effects found in similar literature. Students who are in PE have their academic lives spent developing and formally assessed on physical skills. The positive muscle memory associated with daily training, coaching feedback and competitive performance creates a powerful reinforcement loop that raises the athletic self-perceptions of athletes well above those of students who rarely experience formal evaluation of physical skills. This finding corresponds directly to Gorospe and Ferrer [10].

The physical appearance effect ($d = 1.42$) is in line with Martinez and Thompson [12] and Fox [15], whose findings showed that physical self-concept partially mediated the activity–self-esteem relationship, accounting for 42% of variance. Regularly participating in structured training appears to be associated with more positive body image perceptions, but cross-sectional data do not allow causation to be inferred.

The PE students also showed more social acceptance, meaningfully compared to asthmatic students ($d = 1.25$) of Sharma and Patel [11]. The cooperation and collective character of PE programs, shared training schedules, team travel, and common goals, give rise to stronger peer networks than the more individualistic academic environments of non-PE programs.

The scholastic competence reversal ($d = 5.02$) is the most dramatic finding. Non-PE students score nearly 8 points higher on academic self-perception. The effect size of 5.02 is nearly twice that of any other comparison in the study. This makes intuitive sense: non-PE students' entire academic experience revolves around intellectual performance and cognitive achievement. The magnitude of this gap

echoes Ahmed and Khan [13] and raises practical concerns about the “dumb jock” stereotype [16] — though, again, cross-sectional data cannot establish whether PE enrolment leads to lower academic self-perception or whether students with lower academic self-concept are more likely to self-select into PE.

Critically, PE students' higher global self-esteem ($d = 1.09$) despite substantially lower scholastic competence supports Harter's (2012) model that global self-worth is driven by success in personally valued domains. Physical competence, not academic performance, is the primary currency of self-worth for PE students, and they are accumulating it daily.

5.3 Gender Differences

Table 4: Gender Comparisons on Global Self-Esteem Within and Across Groups

Context	Male M (SD)	Female M (SD)	t-value	p-value	Cohen's d
PE Group only	27.10 (1.70)	24.50 (1.68)	4.21	<0.001	Large
Non-PE Group only	24.90 (1.35)	22.30 (1.38)	5.21	<0.001	Large
Both Groups Combined	26.00 (1.83)	23.40 (1.88)	5.49	<0.001	1.39

Male students scored significantly higher on global self-esteem than female students in both groups and overall ($d = 1.39$), supporting H_6 . This is consistent with the well-established literature on gender and self-esteem [7, 18], driven largely by physical appearance dissatisfaction among females. What is particularly notable here is that PE enrolment does not close the gender gap. Female PE students score higher than female non-PE students, but the gap between males and females remains essentially the same within each programme. Whatever forces suppress female relative self-esteem operate at a level that academic programme alone cannot alter. Within the PE group, the one domain where no gender difference emerged was scholastic competence ($t = 0.39$, $p = 0.698$). This is actually encouraging: in academic self-perception, male and female PE students see themselves as equally capable, even if both perceive themselves as less

academically able than their non-PE peers. This gender-neutral academic self-perception within PE programmes may be worth building upon through targeted academic confidence interventions.

5.4 Interaction Effect: Two-Way ANOVA

Table 5: Two-Way ANOVA Summary — Global Self-Esteem (N = 60)

Source	SS	df	MS	F-value	p-value	Partial η^2	Result
Specialisation (PE vs. Non-PE)	72.600	1	72.60	19.25	<0.001	0.25	Significant
Gender (Male vs. Female)	101.40	1	101.40	26.88	<0.001	0.32	Significant
Specialisation $\times$ Gender	1.20	1	1.20	0.32	0.574	0.01	Not Significant
Error	211.20	56	3.77	—	—	—	—
Total	386.40	59	—	—	—	—	—

Table 6: Mean Global Self-Esteem Scores by Group and Gender

Specialisation	Male M (SD)	Female M (SD)	Group Total M (SD)
PE Students	27.10 (1.70)	24.50 (1.68)	25.80 (2.10)
Non-PE Students	24.90 (1.35)	22.30 (1.38)	23.60 (2.00)
Gender Total	26.00 (1.83)	23.40 (1.88)	24.70 (2.55)

Both of the main effects proved significant and practically large. Specifically, specialization ($\eta^2 = 0.25$) accounts for 25 percent of variance in global self-esteem and gender ($\eta^2 = 0.32$) accounts for 32 percent. Such differences are far from trivial; they indicate real differences in the way students experience their own sense of worth across academic and gender categories.

The H_7 hypothesis was rejected since the interaction term was not significant ($F = 0.32$, $p = 0.574$, $\eta^2 = 0.01$). This is an important empirical finding: the self-esteem advantage of PE versus non-PE is equally present for males and females. Participation

in PE boosts self-esteem by a similar amount for all genders. In the same way, the male edge over females holds across academic specialisation. These effects add to each other, rather than multiplying.

This not significant interaction sends a simple message for intervention design. That is, initiatives to enhance self-esteem through physical education will likely be equally beneficial for boys and girls. At this level, there is no evidence that gender determines who benefits most from enrolment in PE.

5.5 Hypothesis Testing Summary

Table 7: Summary of Hypothesis Testing Results

Hyp.	Statement	Key Statistic	Outcome
H_1	PE students have higher global self-esteem	$t = 4.21$, $d = 1.09$, $p < 0.001$	Accepted ✓
H_2	PE students have higher athletic competence	$t = 13.25$, $d = 3.45$, $p < 0.001$	Accepted ✓
H_3	PE students have higher physical appearance self-esteem	$t = 5.50$, $d = 1.42$, $p < 0.001$	Accepted ✓
H_4	PE students have higher social acceptance	$t = 4.86$, $d = 1.25$, $p < 0.001$	Accepted ✓
H_5	Non-PE students have higher scholastic competence	$t = 19.38$, $d = 5.02$, $p < 0.001$	Accepted ✓
H_6	Male students have higher global self-esteem than females	$t = 5.49$, $d = 1.39$, $p < 0.001$	Accepted ✓
H_7	Significant interaction: specialisation $\times$ gender	$F = 0.32$, $\eta^2 = 0.01$, $p = 0.574$	Rejected ✗

VI. CONCLUSION

According to this study on academic specialization, it offers a clear and empirically derived portrait of self-esteem. Students of Physical Education have a significant edge in global self-esteem and in all individual physical, athletic, and social domain tested. The consistent exposure to organized physical training, peer cooperation and construction, along with continuous feedback from numerous performances, develops a sturdy physical self that enhances the overall worth of the child. Non-PE

students have a different evaluative world, developing self-worth mainly through intellectual achievement, and their scores for scholastic competence reflect this with remarkable clarity.

Neither group believes in itself. The PE students' low self-perception of their academic ability is a real vulnerability that, if left unchecked, may limit their academic confidence and career ambition beyond sport. The non-PE students are lower in physical and social self-esteem, which may be a real deficit in well-being that extra recreation could not fix. One can learn something real from each other's domain.

The constant gender gap—men outperforming women in all programs indicates that curriculum change is not enough in itself. The cultural and psychological forces that diminish women's relative self-esteem cannot be mitigated by affiliation with an academic program. It is necessary to implement the gender-sensitive intervention alongside the curriculum-level change, but only within specific domains.

The non-significant interaction effect sends a policy relevant and optimistic message: structured physical education benefits all students equally, regardless of gender. Expanding PE across other non-PE programmes is likely to yield self-esteem benefits for females similar to those for males.

VII. PRACTICAL RECOMMENDATIONS

To university administrators and policy makers: The evidence supports implementing a structured, mastery-oriented physical activity programme across all postgraduate programmes. Physical education not only promotes health but also improves self-esteem, social acceptance and body image as a psychosocial intervention. Even a little bit of non-competitive exercise skills training is likely to provide substantial psychosocial benefits for non-PE students currently experiencing stunted physical and social self-perceptions.

Physical Education (PE) instructors as well as Coaches: The marked academic skills deficiency among PE students requires direct instructional strategies. PE teachers must actively enhance students' assessments of their academic self through theoretical courses, research assignments, and explicit discussions of sport science. The aim is to enhance self-concept rather than undermine the physical identity of PE students whose self-esteem is entirely reliant on performance.

For guidance counselors and psychologists: The persistent gap in self-esteem between the sexes presents a challenge for those working with students in academic settings. Gender-sensitive programs are needed to promote body image resilience, assertive self-promotion, and diverse competencies. Interventions must not only use global measures of self-esteem but also domain-specific self-esteem measures to help students. For example, a female non-PE student with low athletic self-esteem must have a different educational program from a female PE student with low academic self-esteem.

Researchers in the future will have to use longitudinal designs to ascertain whether self-esteem differences exist before enrolment in the program or emerge as a result of enrolment. Generalizability beyond the University of Rajasthan can be improved with multi-institution, larger samples. Using qualitative interviews in mixed-methods approaches would enrich understanding of how studied students build and narrate their self-worth across diverse contexts.

REFERENCES

- Ekeland, E., Heian, F., & Hagen, K. B. (2005). Can exercise improve self-esteem in children and young people? A systematic review of randomised controlled trials. *British Journal of Sports Medicine*, 39(11), 792–798.
- Spence, J. C., McGannon, K. R., & Poon, P. (2005). The effect of exercise on global self-esteem: A quantitative review. *Journal of Sport and Exercise Psychology*, 27(3), 311–334.
- Biddle, S. J. H., & 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.
- Liu, M., Wu, L., & Ming, Q. (2015). How does physical activity intervention improve self-esteem and self-concept in children and adolescents? Evidence from a meta-analysis. *PLoS ONE*, 10(8), e0134804.
- Sabarini, S. S., Darlina, & Shidiq, A. A. P. (2023). The effect of sports education on adolescent self-esteem: A comparative study between special sports and regular classes. *Journal of Education Research and Evaluation*, 7(3), 511–516.

- Namazizadeh, M., & Mohammadkazemi, R. (2010). The comparison and relationship between self-esteem and physical fitness in male and female students of University of Tehran. *World Journal of Sport Sciences*, 3(3), 200–205.
- Kling, K. C., Hyde, J. S., Showers, C. J., & Buswell, B. N. (1999). Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin*, 125(4), 470–500.
- Gonzalez Orozco, J. E. (2024). Self-esteem and subjective well-being in students differentiated by level of physical activity and sports practice. *REDIAB — Universidad Autónoma de Nuevo León*.
- Journal of Science and Medicine in Sport. (2024). Sports participation and domain-specific self-esteem in children: A longitudinal cohort study. *Journal of Science and Medicine in Sport*, 27(1), 45–52.
- Gorospe, J. D., & Ferrer, V. C. (2022). Physical self-concept and physical activity levels between PE majors and non-PE majors. *Technium Social Sciences Journal*, 33(1), 112–125.
- Sharma, R., & Patel, V. (2022). Social acceptance and peer relationships as determinants of self-esteem: A comparison of PE and non-PE students. *Indian Journal of Health and Wellbeing*, 13(2), 145–152.
- Martinez, C. R., & Thompson, J. K. (2021). Body image and self-esteem in female college students: Comparing sports science and humanities majors. *Body Image*, 36(1), 112–120.
- Ahmed, S., & Khan, M. A. (2020). Self-esteem and academic performance among PE and non-PE university students. *Journal of Educational Research and Social Sciences*, 12(2), 45–56.
- Anderson, C. B., & Taylor, M. (2018). A meta-analytic review of self-esteem differences between athletes and non-athletes. *Psychology of Sport and Exercise*, 39(1), 78–92.
- Fox, K. R. (2000). The effects of exercise on self-perceptions and self-esteem. In S. J. H. Biddle, K. R. Fox, & S. H. Boutcher (Eds.), *Physical activity and psychological well-being* (pp. 88–117). Routledge.
- Miller, K. E., Farrell, M. P., Barnes, G. M., Melnick, M. J., & Sabo, D. (2005). Gender/racial differences in jock identity, athletic participation, and adolescent depression. *Sociology of Sport Journal*, 22(2), 196–213.
- Marsh, H. W., & O'Mara, A. J. (2008). Reciprocal effects between academic self-concept, self-esteem, achievement, and attainment over seven adolescent years. *Journal of Educational Psychology*, 100(4), 842–860.
- Harter, S. (2012). *The construction of the self: Developmental and sociocultural foundations* (2nd ed.). Guilford Press.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Sonstroem, R. J., & Morgan, W. P. (1989). Exercise and self-esteem: Rationale and model. *Medicine and Science in Sports and Exercise*, 21(3), 329–337.
- Williams, L. A., & Smith, J. R. (2019). Enhancing adolescent self-esteem through quality physical education: A longitudinal investigation. *Journal of Sport and Exercise Psychology*, 41(3), 156–168.
- Simonton, K. L., & Layne, T. E. (2023). Investigating middle school students' PE emotions, self-esteem, and intentions for physical activity. *Journal of Teaching in Physical Education*, 42(4), 757–766.
- Dar, S. A. (2021). Comparison of self-esteem and aggression between combative and non-combative sports of Kashmir Division. *Edu Sportivo*, 2(2), 93–100.
- Tremblay, M. S., Inman, J. W., & Willms, J. D. (2000). The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. *Pediatric Exercise Science*, 12(3), 312–323.