



Effects of Team Sports on Self-Esteem in Adolescents

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ABSTRACT

The purpose of this study was to evaluate the long-term effects of participation in team sports on the development of self-esteem in adolescents (varying in age from 10 to 18 years old). The study placed a special focus on the mediating role of perceived sport competence (PSC). A total of 1,358 individuals from three distinct age groups (ten to twelve, thirteen to fifteen, and sixteen to eighteen) had their information collected over the course of a period of two years. There is a positive association between participating in a team sport and enhancing one's sense of self-worth, according to research. Additionally, the models of skill development and self-enhancement are both strengthened by PSC, which serves as a mediator in this interaction for the purpose of enhancing both models. In accordance with the skill-development model, early experiences with team sports are responsible for the formation of basic confidence. This model is reinforced by the fact that PSC had the biggest impact on the youngest cohort. According to the self-improvement model, on the other hand, the PSC had a more significant influence on the development of future participation in team sports among teenagers (those between the ages of 13 and 15). Based on these results, it is clear that team sports play a significant part in the development of adolescents' self-esteem by enhancing their judgements of their own ability and by providing them with opportunities for continuous engagement.

Keywords: Team sports, Adolescents, Self-esteem, Perceived sport competence, Skill development, Self-enhancement, Youth development, Longitudinal study, Sport psychology, Psychological well-being

INTRODUCTION

The adolescent years are a key period of development because of the fast changes that take place in a person's physical, emotional, and social lives. During this formative period, a person's self-esteem, which can be described as their overall evaluation of their own worth, has a substantial

influence on a number of aspects of their life, including their mental health, academic success, and social functioning. Research has shown that low self-esteem is linked to a variety of issues, including anxiety, depression, substance abuse, and poor academic performance. Therefore, it is essential for adolescents to increase their self-esteem because of this connection. It is becoming more important for educators and academics to uncover the factors that contribute to the formation of a positive self-concept in young people. This is because of the relevance of the developmental job that they are doing. Participation in team sports is one of these aspects that has garnered a lot of attention in recent instances.

When adolescents take part in team sports, they are exposed to a unique environment that is good to their health on several levels, including the physical, emotional, and psychological aspects. When compared to solo sports, team sports emphasise the importance of aspects such as cooperation, communication, shared goals, and mutual support among those participating. These influences, which contribute to the formation of a sense of belonging and social connection, are necessary for the development of a strong sense of self-concept. A number of the many beneficial features of working in a team, such as the ability to achieve, learn to lead, be noticed by their peers, and believe in their own skills, contribute to an increase in the self-esteem of adolescents. Playing in a team on a consistent basis can contribute to the development of essential life qualities such as tenacity, self-confidence, and a growth mindset.

According to a substantial body of empirical research, there is a favourable correlation between the participation in team sports and enhanced levels of self-esteem in adolescents. Nevertheless, the mechanisms that underlie this link are, in spite of this, rather complicated. One of the most essential characteristics is perceived sport competence, which may also be interpreted as confidence in one's own athletic abilities. When young people have faith in their athletic capabilities, they are more likely to develop a positive self-image, which in turn helps them feel more confident throughout their lives. Based on the findings of a longitudinal research, the benefits of participating in team sports may change across the various phases of development. It would seem that older adolescents are more likely to respond positively to social reinforcement and success, while younger adolescents are more likely to profit from the growth of their skills.

Within this context, the purpose of the present study is to explore how the participation of adolescents in team sports affects their self-esteem, especially with regard to the role that perceived athletic competence plays as a mediator in this relationship. When working to build youth programs that employ sports as a tool to promote healthy mental health and identity development among adolescents, parents, teachers, and politicians may benefit from a greater knowledge of these dynamics. These programs are designed to help improve the mental health of teenagers.

OBJECTIVES

1. To investigate the link over time between team sports engagement and the growth of self-esteem in teenagers between the ages of 10 and 18.

2. To examine how team sports participation and teenage self-esteem are related, and how perceived sport competence mediates this connection

RESEARCH METHODOLOGY

Participants and Procedures

In order to investigate how participating in team sports affects the growth of self-esteem in Indian teenagers, the current research used a longitudinal cohort methodology. Three rounds of data collection were conducted:

- **T1:** Year 1
- **T2:** Year 2
- **T3:** Year 3

Despite the fact that it does not provide evidence of a direct connection, this design was successful in identifying characteristics that were connected with teenagers' self-esteem and their engagement in sports before those factors changed over time. Through the intentional selection of three initial age cohorts—ten, thirteen, and sixteen years—the study endeavoured to acquire a broad representation of adolescents (those between the ages of ten and eighteen years). Students were chosen in line with typical educational milestones in India, such as the transition from primary to upper primary in the fifth grade and the commencement of the secondary school board tests in the tenth grade. This was done in order to reduce the amount of students that dropped out of the sample.

The participants were recruited from public and private schools located in urban and semi-urban parts of Uttar Pradesh and Delhi. This was done to guarantee that there was a diverse range of socioeconomic backgrounds and geographical locations. A method of stratified random sampling that consisted of many steps was used by the researchers. The first step consisted of selecting elementary, middle, and high schools that were comprised of a proportion of public and private institutions that were equal in size. In the second stage, courses were chosen according to a random selection from each institution. As part of the third stage, we established a target of 500 students for each age group. One thousand three hundred and fifty-eight students were included in the final sample, and their distribution was as follows:

- **Primary school (10–12 years):** 465 students
- **Middle school (13–15 years):** 439 students
- **Senior secondary (16–18 years):** 454 students

Data was gathered during school hours in winter and spring from 2022 to 2024 with school administration clearance. English-Hindi bilingual field researchers distributed questionnaires in this study. Participants' questions were answered immediately to avoid confusion. Children, parents, and school officials given informed consent. The study was approved by [Your University/Institute Name]'s Institutional Ethics Committee and followed ICMR medical research guidelines in India. 1,174 students at T1, 85 percent, 1,152 at T2, 85 percent, and 1,164 at T3 86 percent participated in the survey. Individual sample t-tests were performed to compare the

number of complete responders ($n = 920$) against those missing at least one wave ($n = 438$). At baseline, full respondents had a significant advantage in sport activity ($t(1356) = 8.92, p < .001$), but not in reported sport competence or self-esteem at T1. The baseline age averaged 13.8 years with a 2.4-year standard deviation. Male enrolment in academic programs with a focus on sports or technology may explain the somewhat larger gender distribution in the evaluated schools (59% vs. 41%). Over 85% of participants were Hindi-speaking, generally Indian; the rest came from various linguistic and geographical origins.

Measures

Self-Esteem and Perceived Sport Competence

We used a Hindi-English bilingual version of Harter's (1985) Self-Perception Profile for Children (SPPC), which has been culturally customised, to evaluate:

- **Self-Esteem (SE):** 3 items (e.g., *"I am happy with the way I am"*)
- **Perceived Sport Competence (PSC):** 3 items (e.g., *"I am very good at sports"*)

A Likert scale of five points was used in order to provide a score to each of the issues, with 1 indicating strong disagreement and 5 indicating strong agreement. The questionnaire was translated and back-translated by two different multilingual professionals in order to ensure that it is conceptually and linguistically equivalent in both Hindi and English. We determined that the internal consistency was good across all waves by using Cronbach's alpha (standard error = .74-.80; probability standard deviation = .80-.86). In a pilot research with thirty students, the test-retest reliability was shown to be very consistent over a period of ten days (standard error: $rtt = .88$; probability standard deviation: $rtt = .95$).

Sport Participation

Two variables were utilised to create a latent factor to measure team sport participation (SP):

1. Weekly hours spent playing the student's chosen team sport (e.g., football, volleyball, kabaddi, cricket).
2. The total hours spent in structured team sports, such as school clubs or community leagues. Participants recorded their weekly participation between February and May, taking seasonal fluctuations into account. Without organised sports, people were classified as "0 hours/week." Each person's average weekly engagement score was determined. This assessment method was adapted from sport psychology and used to Indian education.

DATA ANALYSIS

When doing the analysis of the data, Mplus (Version 8.3) and IBM SPSS (Version 25) were used. Descriptive statistics were computed for three variables: self-esteem (SE), perceived sport competence (PSC), and team sport participation (SP) across three distinct age groups (10–12, 13–15, and 16–18 years). These data were generated at three distinct time periods (T1, T2, and T3). A one-way analysis of variance was used in order to make a comparison between the average levels of SP, PSC, and SE that were encountered by the different age groups. Mplus was used to evaluate both cross-sectional and longitudinal correlations between the latent components. This

was done after taking into consideration the possibility of measurement precision error. Both a skill development model for skill development (SP T1 → PSC T2 → SE T3) and a self-enhancement model for self-enhancement (SE T1 → PSC T2 → SE T3) were the two sets of mediation models that were studied. The estimation of the indirect effects was carried out via the use of mediation analysis, which employed bias-corrected bootstrapping with 5,000 resamples. The multigroup analysis was used in order to verify for measurement invariance and investigate the structural route differences that exist across different age groups. The approach that was used to address the issue of missing data was referred to as Full Information Maximum Likelihood (FIML). The Chi-square statistic, the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were some of the model fit metrics that showed a successful fit. For the purpose of this evaluation, a CFI value of 0.95 or higher and an RMSEA value of 0.06 or less were used.

RESULT

Descriptive statistics

At each of the three time points, a sizeable majority of the sample participated in at least one activity; however, the number of individuals who participated in organised sports decreased throughout the course of the study (61 percent at time point T1, 59 percent at time point T2, and 52 percent at time point T3). At time point T1, the average number of hours at which individuals engaged in organised sports was 5.13 (± 4.06), whereas at time point T2, the average was 5.89 (± 4.91), and at time point T3, the average was 5.98 (± 4.89). Out of the 45 sports that the athletes participated in, football accounted for forty percent, equestrian activities for nine percent, ice hockey for six percent, floor ball for five percent, and golf for five percent. The descriptive statistics for the primary variables that were measured for each of the three waves (T1-T3) are shown in Table 1. These variables include self-esteem (SE), perceived sport competence (PSC), and sport participation (SP).

Table 1: Three-wave descriptive statistics for sport participation (SP), perceived sport competence (PSC), and self-esteem (SE) across three age groups.

Variable	Age Group	n	Mean (M)	Standard Deviation (SD)
SP (T1)	10–12 years	465	2.12	2.61
	13–15 years	439	3.44	4.37
	16–18 years	454	2.33	4.26
SP (T2)	10–12 years	465	2.62	3.73
	13–15 years	439	3.44	5.03
	16–18 years	454	1.92	3.77
SP (T3)	10–12 years	465	2.73	4.18
	13–15 years	439	2.90	4.52
	16–18 years	454	1.82	4.03
PSC (T1)	10–12 years	388	2.69	1.04
	13–15 years	391	3.14	1.09
	16–18 years	392	3.08	1.11
PSC (T2)	10–12 years	413	2.78	1.10

	13–15 years	389	3.17	1.14
	16–18 years	348	3.16	1.10
PSC (T3)	10–12 years	405	2.77	1.19
	13–15 years	398	3.00	1.20
	16–18 years	360	3.00	1.12
SE (T1)	10–12 years	388	3.87	0.82
	13–15 years	391	3.73	0.84
	16–18 years	392	3.66	0.80
SE (T2)	10–12 years	412	3.74	0.83
	13–15 years	389	3.71	0.87
	16–18 years	349	3.78	0.80
SE (T3)	10–12 years	405	3.74	0.87
	13–15 years	398	3.65	0.91
	16–18 years	360	3.79	0.86

Table 2: Perceived Sport Competence (PSC) Mediates SP and Self-Esteem (SE)

Model	Group	SP T1 → PSC T2a path)	PSC T2 → SE/SP T3b path)	Total Effect c	Direct Effect c'	Indirect Effect aβ [SE])	95% CI
Skill- Development Model (SP T1 → PSC T2 → SE T3)	Full sample	0.15** (0.02)	0.36** (0.04)	0.04** (0.01)	-0.01 (0.01)	0.05 (0.01)**	(0.04– 0.07)
	10–12 yrs	0.25*** (0.03)	0.43*** (0.06)	0.09*** (0.03)	-0.02 ^a (0.03)	0.11 (0.02)*** ^a	(0.08– 0.19)
	13–15 yrs	0.15*** (0.02)	0.33*** (0.05)	0.05*** (0.01)	0.00 ^a (0.02)	0.05 (0.01)*** ^b	(0.03– 0.08)
	16–18 yrs	0.13*** (0.02)	0.32*** (0.06)	0.03*** (0.01)	-0.01 ^a (0.01)	0.04 (0.01)*** ^b	(0.02– 0.06)
Self- Enhancement Model (SE T1 → PSC T2 → SP T3)	Full sample	0.59** (0.06)	1.30** (0.15)	0.98** (0.18)	0.21 (0.20)	0.77 (0.11)**	(0.57– 1.01)
	10–12 yrs	0.61*** (0.10)	1.05*** (0.24)	0.76*** (0.34)	0.12 ^a (0.39)	0.64 (0.18)*** ^a	(0.21– 0.96)
	13–15 yrs	0.63*** (0.10)	1.62*** (0.21)	1.23*** (0.33)	0.21 ^a (0.35)	1.02 (0.20)*** ^a	(0.52– 1.37)
	16–18 yrs	0.61*** (0.11)	1.22*** (0.22)	0.78*** (0.30)	0.03 ^a (0.31)	0.75 (0.19)*** ^a	(0.38– 1.25)

Model 1: Skill-development – SP T1 → PSC T2 → SE T3

Model 2: Self-enhancement – SE T1 → PSC T2 → SP T3

a/b Subscripts: Groups not sharing subscripts differ significantly at $p < .05$ (Wald Chi-Square Test).

All values significant unless otherwise noted. Bootstrap based on 5000 resamples.

Adj. R^2 for DV:

Age 10–12: SP T3 = .07; SE T3 = .24

Age 13–15: SP T3 = .25; SE T3 = .17

Age 16–18: SP T3 = .14; SE T3 = .16

Differences between age groups at T1, T2 and T3

We can see the descriptive data for SP, PSC, and SE for each of the three waves (T1-T3) broken down by age group in Table 1. These datasets are presented in a table format. There were significant differences in SP across the age groups in T1, T2, and T3 ($F(2,1357)=15.38$, $p < .001$, $F(2,1357)=14.61$, $p < .001$, and $F(2,1357)=8.51$, $p < .001$, respectively). These findings were seen across all three time points. A statistically significant difference ($p < .05$) was seen between the 16–18 year olds and the 13–15 year olds at both time points T1 and T2. There was a statistically significant difference in the level of activity between the age groups of 10–12 and 13–15 years old at T3 compared to the age group of 16–18 years old ($ps < .05$). The groups exhibited a significant difference in terms of PSC at time points T1, T2, and T3, with $F(2,1170)$ equalling 19.38, 15.41, and 5.30, respectively, and at a significance level of $p < .001$. When compared to the age groups of 13–15 and 16–18 years, the youngest group, which consisted of individuals aged 10–12, had a lower PSC at each of the three waves ($ps < .05$). At the first time point (T1), there were significant differences in SE across the age groups ($F(2,1170)=6.77$, $p < .001$), but at the second and third time points (T2 and T3), that was not the case. When compared to the age group of 16–18 years, the older age group of 10–12 years had significantly higher SE at the first time point ($p < .001$).

T1, T2, and T3 cross-sectional correlations between latent components

The model that incorporated the latent components of SP, PSC, and SE at each of the three waves achieved a satisfactory level of fit for the data collected from all three age groups. There was a moderate correlation between SP and PSC ($rs = .32$ – $.54$, $ps < .001$), whereas there was a weak link between SP and SE ($rs = .07$ – $.28$, $ps < .001$). This was seen throughout all three waves from the study. To summarise, the results indicated that there was a moderate to strong correlation between the linkages between the PSC and the SE ($rs = .66$ – $.44$, $p < .001$).

Perceived sport competence mediates

Table 3: Skill-Development and Self-Enhancement Models: Perceived Sport Competence (PSC) Mediates Across Age Groups

Model	Age Group	SP/SE T1 → PSC T2 β , p-value)	PSC T2 → SE/SP T3 β , p-value)	Indirect Effect(95% CI)	Direct Effect(c' path, p-value)	Wald (Between Groups) Chi ²
Skill-Development (SP T1 → PSC T2 → SE T3)	10–12 yrs	0.25**, $p < .001$	0.43**, $p < .001$	0.11 (0.08–0.19)	–0.02, ns	vs 13–15: 7.18**, $p < .01$ vs 16–18: 11.26**, $p < .01$

	13–15 yrs	0.15**, $p < .001$	0.33**, $p < .001$	0.05 (0.03–0.08)	0.00, ns	vs 16–18: ns
	16–18 yrs	0.13**, $p < .001$	0.32**, $p < .001$	0.04 (0.02–0.06)	–0.01, ns	—
Self-Enhancement (SE T1 → PSC T2 → SP T3)	10–12 yrs	0.61**, $p < .001$	1.05**, $p < .001$	0.64 (0.21–0.96)	0.12, ns	vs 13–15: 3.88*, $p < .05$
	13–15 yrs	0.63**, $p < .001$	1.62**, $p < .001$	1.02 (0.52–1.37)	0.21, ns	vs 16–18: ns
	16–18 yrs	0.61**, $p < .001$	1.22**, $p < .001$	0.75 (0.38–1.25)	0.03, ns	—

Both skill-development and self-enhancement models fit data well, with consistent factor loadings and intercepts across age groups in multigroup mediation models ($\chi^2(49) = 146.67, p < .001$; CFI = .974; RMSEA = .066 (90% CI = .054 to .079) and self-enhancement models ($\chi^2(49) = 101.44, p < .001$; CFI = .983; RMSEA = .049 (90% CI = .035 to .062)). Comparing models with and without limitations, CFI drops were smaller than .01. Thus, the subsequent research used limited models and validated mediation models with good measurement invariance. PSC (at T2) mediates the associations between SP (at T1) and SE (at T3) in the skill-development and self-enhancement mediation models across all age groups, as shown in Table 3. The skill-development and self-enhancement models had favourable and statistically significant benefits across all three age groups.

This supports the mediational theories for skill-development and self-enhancement efforts since there was a complete impact from SP at T1 to SE at T3 (via PSC at T2) and from SE at T1 to SP at T3. After PSC was added to the model, the independent variables (SP at T1 for the skill-development model and SE at T1 for the self-enhancement model) had no direct effects on the dependent variables. The skill-development model reveals that SP at T1 significantly affects PSC at T2 across all age groups ($\gamma = .13$ – $.25, ps < .001$), with the strongest effect on the 10–12 age group (Wald chi square (1) = 7.18, $p < .01$) and 16–18 year group (Wald chi square (1) = 11.26, $p < .01$). Significant effects of PSC at T2 on SE at T3 were seen across all age groups ($\beta = .32$ – $.43, ps < .001$). The bootstrap results demonstrated statistically significant indirect effects of PSC at T2 for all age groups since the confidence intervals did not include 0. The indirect effects of PSC were more significant in the 10–12 age group (95% CI = 0.08–0.19) compared to the 13–15 and 16–18 age groups (95% CI = 0.02–0.06, Wald chi square (1) = 8.07, $p < .01$), as SP at T1 had stronger effects on PSC at T2 and PSC at T2 had stronger effects on SE at T3. SE at T1 significantly impacted PSC at T2 across all age groups ($\beta = .61$ – $.63, ps < .001$) and was equivalent in the self-enhancement model. Significant effects of PSC at T2 on SP at T3 were seen across all age groups ($\beta = 1.05$ – $1.62, ps < .001$). The effect was significantly higher for 13–15 year olds compared to 10–12 year olds (Wald chi square (1) = 3.88 $p < .05$). Bootstrapping demonstrated that PSC had significant indirect effects at T2 for all age groups, with confidence intervals outside 0.

These data imply that skill-developmentally, larger PSC at T2 predicts more positive SE at T3 when SP is higher at T1. SE at T1 predicts higher SP at T3 for self-improvement from T1 to T3 via increased PSC at T2.

DISCUSSION

The primary objective of this study was to investigate the ways in which self-esteem (SE), perceived sport competence (PSC), and engagement in team sports (SP) are related to one another throughout the course of time among adolescents attending Indian schools. This objective was accomplished via the use of the skill-development and self-enhancement frameworks. Over the course of the early (years 10–12), middle (ages 13–15), and late adolescent (ages 16–18) stages of development, we focused on the mediating role of the prefrontal cortex (PSC). As a result of the obsession that adolescents have with group dynamics, peer pressure, and social identity, this study took a new look at structured team sports. As a result, the focus shifted away from individual athletics and general physical training. The levels of SP, PSC, and SE that were observed varied according to the age group that was being studied. Changes in priorities, increasing academic pressure, and more specialisation or withdrawal from extracurricular activities all contributed to a noticeable fall in involvement in team sports throughout late adolescence. This decline occurred after the level of engagement in team sports reached its highest point during the middle adolescent years (13–15 years). This trend, which places a focus on the formative years of adolescence, is consistent with previous studies conducted in both Western and Indian contexts.

Adolescents' self-evaluations in areas associated to sports tend to become more stable and realistic as they acquire experience and maturity, which may explain why older adolescents reported larger levels of perceived athletic ability. In spite of the fact that early adolescents (those between the ages of 10 and 12) initially reported higher SE, this may have been due to the fact that they were less threatened by social pressure and competitive comparison. On the other hand, SE did not adhere to a consistently occurring pattern. The cross-sectional connections provided support for the small direct link that exists between team sports and self-esteem. This finding is consistent with the findings of prior research, which suggested that the effect of sports on self-esteem is often indirect and influenced by intermediate characteristics such as perceived competence. Participation in behaviours alters one's conceptions of oneself in regard to some domains (such as one's skill in a sport), which in turn effect more generalised self-evaluations (such as one's self-esteem), providing validity to the hierarchical model of self-concept. For example, one perceives themselves differently depending on whether or not they are proficient in a sport.

When looking at the relationship between participation in team sports and self-esteem through the lens of the PSC, the indirect route was found to be the most significant in the age group of 10–12 years old. This suggests that early involvement in team sports does a better job of fostering competence sentiments, which in turn contribute to self-esteem from the perspective of skill

development. This might be due to the fact that early adolescents put a larger importance on sports and have less areas of ability that effect their feeling of self-worth. Additionally, it could be due to the fact that social comparisons are less relevant to them.

On the other side, the self-enhancement model was more prevalent among teenagers (defined as those between the ages of 13 and 15). This model proposes that increasing self-enhancement (SE) leads to higher engagement in sports via enhanced personal social competence (PSC). Teenagers are more self-aware than they were when they were younger, and they are more susceptible to the comments of their contemporaries. They tend to remain in team sports for longer periods of time, which may be an indication that they are searching for an environment in which they may flourish both socially and physically. Individuals who score higher on the SE scale tend to stay in team sports for longer. What this indicates is that individuals are becoming more self-sufficient and are deliberating about whether or not to engage depending on their own capabilities. The significance of perceived competence as a mediator between self-esteem and team sports is brought to light by these findings; however, the degree to which this link is present fluctuates during the phases of adolescence. As a person matures and develops, it undergoes significant transformations in connection to their social surroundings, their self-perception, and several other developmental marks and milestones.

CONCLUSION

According to the findings of the study, the participation in team sports may have the potential to increase the self-esteem of adolescents; however, this impact is mostly attributable to the fact that PSC develops as a consequence of playing these games. In spite of the fact that the level of engagement of the PSC in mediation varied depending on the age group, it was always present. Due to the fact that PSC had a more substantial influence in translating sport engagement into greater self-esteem for younger teens, it is possible that early involvement in team sports may be particularly beneficial for emotional development. People who are self-assured have a self-reinforcing loop that starts in the middle of adolescence. This is the time when self-esteem becomes a better predictor of sustained engagement in sports via perceived ability. In light of these findings, it is abundantly evident that programs that are intended to increase the confidence of adolescents via the sports they participate in need to do more than just promote participation; they also need to assist young people in developing healthy self-perceptions of their own competence. It is important for coaches, instructors, and lawmakers to be aware of the fact that team sports have good impacts on mental health that extend beyond those that are caused by physical activity. In the future, research should also study the ways in which gender norms, financial standing, and geographical access all have an influence on these dynamics. This should be done while taking into consideration the vast cultural variety that existing in India. To address the developmentally fragile and socially positioned link between team sports, perceived competence, and self-esteem, it is required to adapt strategies for varied adolescent groups and situations. This is necessary in order to address the relationship.

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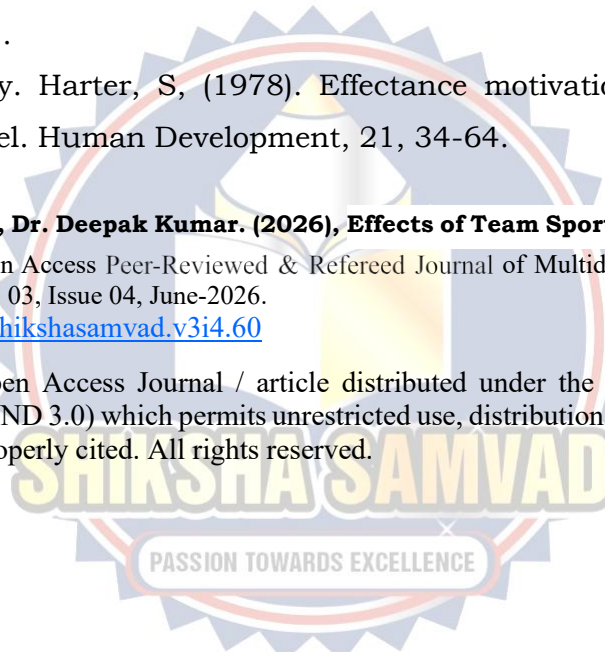
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