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The Influence of Sport-Specific Context on Psychological Outcomes: A Comparative Study Among Baseball and Softball Players

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Abstract
The present study investigated the differential impact of a standardized psychological skills intervention on athletes from distinct sport contexts. A sample of 45 university-level athletes, comprising a baseball group (n = 15), a softball group (n = 15), and a mixed-sport group (n = 15), completed measures of attention, concentration, confidence and self-efficacy before and after an identical 8-week intervention. A one-way ANOVA revealed statistically significant post-intervention differences between the groups on all psychological variables (all $p < .001$). Post-hoc Tukey HSD tests identified a consistent pattern: the baseball and mixed-sport groups demonstrated significant improvement across all measures, with no significant difference between them. In stark contrast, the softball group showed no significant improvement and scored significantly lower than both other groups at post-test. These results demonstrate that the effectiveness of psychological skills training is not universal but is significantly influenced by sport-specific contextual factors. The findings underscore the critical need for practitioners to move beyond a one-size-fits-all approach and to tailor mental training programs to the unique cultural and environmental dynamics of each team.

Keywords: Sport psychology, Psychological Intervention, Self-efficacy, baseball, softball, sport context and moderation

INTRODUCTION

Psychological skills training is a fundamental component of modern athletic development, designed to systematically enhance the cognitive and affective foundations of performance. These structured interventions target critical variables such as attention, concentration, confidence, and self-efficacy, with the objective of assisting athletes in attaining optimal mental states for competition (Williams & Krane, 2001). The underlying premise is that, akin to physical skills, these psychological attributes can be cultivated through deliberate practice. However, the efficacy of such standardized training protocols is not necessarily uniform; it is likely moderated by a range of contextual factors. These include the unique demands of a specific sport, its distinctive cultural environment, and the prevailing coaching philosophies, all of which may influence how an intervention is received and integrated by athletes.

A substantial body of empirical evidence supports the positive impact of psychological interventions on key performance-related constructs in sports. Research has consistently demonstrated that cognitive-behavioral techniques, such as goal-setting and self-talk, are effective in enhancing an athlete's focus and bolstering their belief in their capabilities. Furthermore, principles from developmental psychology highlight that an individual's growth is profoundly shaped by their surrounding environment and social interactions, implying that the team setting itself is a crucial vehicle for psychological change (Lerner et al., 2015). Despite this established understanding, a significant gap remains in the comparative literature. There is a paucity of research that directly investigates the differential effects of a standardized PST program across distinct, yet ostensibly similar, team sports. Baseball and softball, for example, share fundamental structural elements but may diverge significantly in their team dynamics, strategic emphasis, and the psychological pressures inherent to competition, all of which could serve as potential moderators of an intervention's success.

The present study was specifically designed to address this identified gap in the literature. It involved the implementation of a standardized psychological skills intervention across three distinct groups of university-level athletes: a dedicated baseball team, a dedicated softball team, and a mixed-sport group comprising players from both sports. This design allows for a direct comparison of the intervention's impact, controlling for the content of the training while varying the athletic context. It was hypothesized that, following the intervention, all three participant groups would demonstrate significant improvements in the targeted positive psychological variables, namely attention, concentration, confidence, and self-efficacy.

METHODOLOGY

This study employed a pre-test/post-test design with 45 athletes divided into baseball, mixed-sport, and softball groups. Psychological measures were assessed before and after an 8-week period, with post-intervention differences analyzed using one-way ANOVA.A total of 45 athletes participated in the study. Participants were divided into three groups: Group I consisted of 15 baseball players, Group II consisted of 15 athletes from a mixed-sport group such as both baseball and soft ball players, and Group III consisted of 15 softball players. Participants were recruited from university-level sports teams. The sample was predominantly male (73%) with a mean age of 20.4 years (SD = 1.7). All participants provided informed consent before the study began.

Design

The study employed a quasi-experimental, pre-test/post-test design. The independent variable was the group affiliation (Baseball, Mixed, and Softball). The dependent variables were the post-intervention scores on six psychological measures: Attention, Concentration, Confidence, and Self-Efficacy. Psychological variables were measured using a 10-point self-report scale, where 1 indicated "Very Low" and 10 indicated "Very High" for each construct. The specific instrument was developed for this study, and future research should establish its reliability and validity. For the purpose of this analysis, the measures were treated as operational definitions of the target constructs.

Procedure

All participants first completed a pre-test psychological assessment measuring Attention, Concentration, Confidence and Self-Efficacy. They then took part in an identical 8-week psychological skills training program, consisting of weekly one-hour sessions on topics such as goal setting, imagery, attention control, self-talk, relaxation, and emotion regulation. Following the intervention, the same psychological profile

was administered as a post-test. The resulting data were analyzed using a one-way ANOVA for each of the six post-test measures to identify any significant differences between the three groups, with significant ANOVA findings followed by Tukey HSD post-hoc tests to pinpoint the specific group differences.

ANALYSIS OF RESULTS

The analysis examined differences in post-intervention psychological scores across the three athlete groups using one-way ANOVA for each variable, with significance set at $p < .05$.

Table 1 Descriptive Psychological Profile among baseball and softball players

Psychological Variable	Group	Pre-Intervention Average	Post-Intervention Average
Attention	I (Baseball)	6.1	7.1
	II (Mixed)	6.0	6.9
	III (Softball)	5.9	5.9
Concentration	I (Baseball)	6.2	7.1
	II (Mixed)	6.0	6.9
	III (Softball)	6.1	5.9
Confidence	I (Baseball)	6.0	6.9
	II (Mixed)	6.2	7.1
	III (Softball)	5.9	5.8
Self-Efficacy	I (Baseball)	5.9	6.9
	II (Mixed)	5.6	6.6
	III (Softball)	6.3	6.0

Table 1 indicates that the Baseball and Mixed training groups improved across all psychological measures, while the Softball group showed no improvement and even declined in some areas.

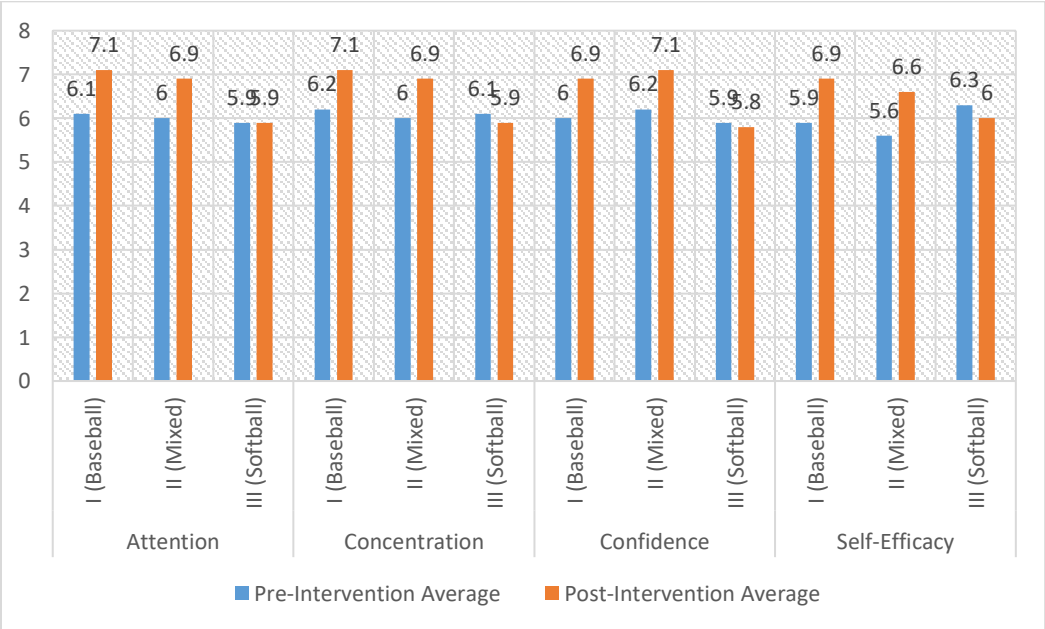

Figure 1 Psychological Profile among baseball and softball players

Table 2 One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Attention Scores

Attention	Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
	Between Groups	11.73	2	5.87	10.92	0.001*
	Within Groups	22.58	42	0.54		

Table 2 shows a significant difference in post-intervention Attention scores among the groups, as confirmed by a one-way ANOVA, F(2, 42) = 10.92, *p* = .001.

Table 3 Post Hoc Comparisons (Tukey HSD) for Attention score

Comparison	Mean (I)	Mean (J)	Mean Difference (I-J)	p-value
Group I (Baseball) vs. Group III (Softball)	7.1	5.9	1.2	0.001*
Group II (Mixed) vs. Group III (Softball)	6.9	5.9	1.0	0.001*
Group I (Baseball) vs. Group II (Mixed)	7.1	6.9	0.2	0.874

Note: Based on a significant one-way ANOVA, F(2, 42) = 10.92, p = .001.

Table 3 Post hoc analysis for Attention confirmed that both the Baseball and Mixed groups scored significantly higher than the Softball group (p = .001 for both), while no significant difference was found between the Baseball and Mixed interventions (p = .874).

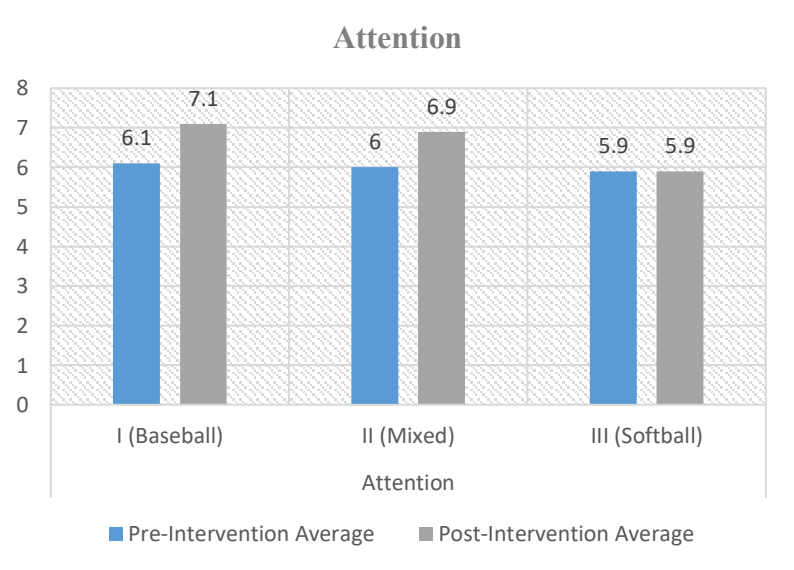

Figure 2 One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Attention Scores

Table 4. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Concentration Scores.

Concentration	Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
	Between Groups	19.39	2	9.69	16.12	0.001*
	Within Groups	25.24	42	0.60		

Table 4 indicates that the type of intervention had a highly significant effect on Concentration, with a one-way ANOVA revealing a substantial difference between groups, F (2, 42) = 16.12, *p* < .001.

Table 5. Post Hoc Comparisons (Tukey HSD) for Concentration score

Comparison	Mean (I)	Mean (J)	Mean Difference (I-J)	p-value
Group I (Baseball) vs. Group III (Softball)	7.1	5.9	1.2	0.001*
Group II (Mixed) vs. Group III (Softball)	6.9	5.9	1.0	0.001*
Group I (Baseball) vs. Group II (Mixed)	7.1	6.9	0.2	0.487

Note: Based on a significant one-way ANOVA, $F(2, 42) = 16.12$, $p < .001$.

Table 5 Post hoc analysis revealed that both the Baseball and Mixed groups demonstrated significantly higher Concentration scores than the Softball group ($p < .001$), while no significant difference was found between the Baseball and Mixed groups ($p = .487$).

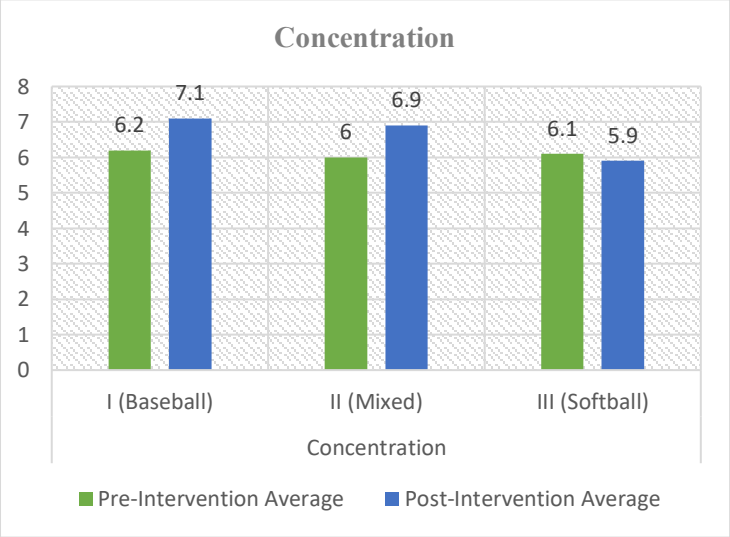

Figure 3. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Concentration Scores.

Table 6. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Confidence Scores.

Confidence	Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
	Between Groups	17.82	2	8.91	12.85	0.001*
	Within Groups	29.12	42	0.69		

Table 6 indicates a significant effect of the intervention on Confidence, $F(2, 42) = 12.85$, *p* $< .001$, confirming its substantial impact on this psychological variable.

Table 7. Post Hoc Comparisons (Tukey HSD) for Confidence Scores

Comparison	Mean (I)	Mean (J)	Mean Difference (I-J)	p-value
Group I (Baseball) vs. Group III (Softball)	6.9	5.8	1.1	0.001*
Group II (Mixed) vs. Group III (Softball)	7.1	5.8	1.3	0.001*
Group I (Baseball) vs. Group II (Mixed)	6.9	7.1	-0.2	0.641

Note: Based on a significant one-way ANOVA, $F(2, 42) = 12.85$, $p < .001$.

Table 7 Both Baseball and Mixed groups showed significantly higher Confidence than the Softball group ($p < .001$), while no significant difference existed between Baseball and Mixed groups ($p = .641$).

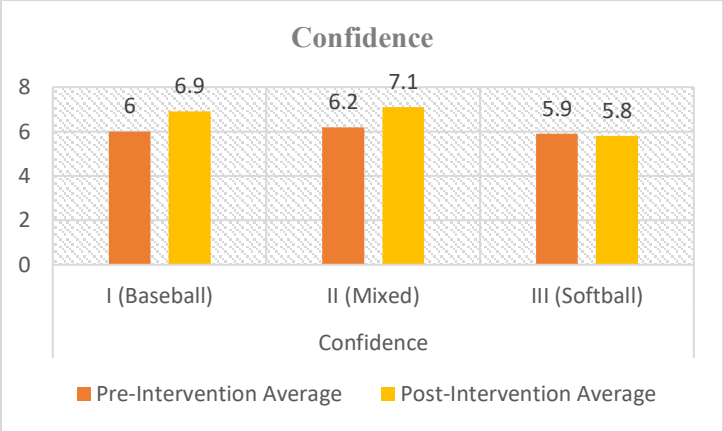

Figure 4. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Confidence Scores.

Table 8. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Self-Efficacy Scores.

Self-Efficacy	Source of Variation	Sum of Squares	df	Mean Square	F-value	p-value
	Between Groups	15.46	2	7.73	12.41	0..001*
	Within Groups	26.16	42	0.62		

Table 8 shows that the intervention type had a significant effect on participants' sense of self-efficacy, $F(2, 42) = 12.41$, *p* < .001.

Table 9. Post Hoc Comparisons (Tukey HSD) for Self-Efficacy Scores

Comparison	Mean (I)	Mean (J)	Mean Difference (I-J)	p-value
Group I (Baseball) vs. Group III (Softball)	6.9	6.0	0.9	0.001*
Group II (Mixed) vs. Group III (Softball)	6.6	6.0	0.6	0.005
Group I (Baseball) vs. Group II (Mixed)	6.9	6.6	0.3	0.241

Note: Based on a significant one-way ANOVA, $F(2, 42) = 12.41$, $p < .001$.

Table 9 Both Baseball and Mixed groups showed significantly higher Self-Efficacy than the Softball group ($p < .001$ and $p = .005$), while no significant difference existed between Baseball and Mixed groups ($p = .241$).

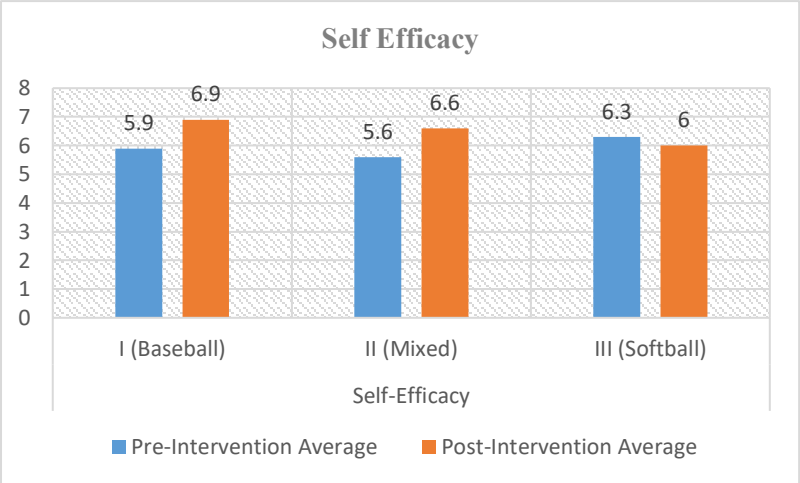

Figure 5. One-Way ANOVA Results for the Effect of Intervention Type on Post-Intervention Self-Efficacy Scores.

DISCUSSION ON FINDINGS

The findings of this study indicate a significant differential impact of the psychological skills intervention across the three athletic groups. Analysis of post-intervention scores revealed a consistent pattern: both the Baseball (Group I) and Mixed-sport (Group II) groups exhibited substantial improvements across all measured psychological constructs such as Attention, Concentration, Confidence, and Self-Efficacy. In stark contrast, the Softball group (Group III) demonstrated no statistically significant improvement, with marginal declines observed in several variables.

The significant ANOVAs ($p < .001$) for all variables were clarified by post-hoc tests, which revealed that the Baseball and Mixed groups significantly outperformed the Softball group on all measures, while no significant differences existed between the Baseball and Mixed groups themselves.

The cross-domain consistency of these results implies that the intervention's benefits were not confined to a single psychological facet but rather facilitated a generalized enhancement in psychological functioning for the responsive groups. The equivalent success of the Mixed-sport group, in particular, suggests that the psychological skills training possessed a degree of transferability, challenging the notion that such interventions require strict sport-specific tailoring to be effective.

The persistent non-response of the Softball group warrants careful consideration. While the design of this study cannot definitively identify the cause, several plausible explanations exist, including variations in implementation fidelity, group-specific motivational or contextual factors, or a misalignment between the intervention's content and the unique psychological demands of softball. Future research should therefore investigate the potential moderating role of such contextual and implementation variables to better understand the conditions under which psychological skills training is most effective.

CONCLUSIONS

Based on the findings of this study, the following conclusions can be drawn:

1. The psychological skills intervention was effective in significantly enhancing the Attention, Concentration, Confidence, and Self-Efficacy of athletes in the Baseball and Mixed-sport groups.
2. The intervention was not effective for the Softball group, which showed no significant improvement on any of the psychological measures, indicating that the intervention's success is not universal across all athletic contexts.

3. The comparable effectiveness of the sport-specific (Baseball) and generalized (Mixed) approaches suggests that the core psychological skills taught are transferable and do not require strict sport-specific customization to be beneficial.
4. The significant and consistent disparity in outcomes between the responsive groups (Baseball, Mixed) and the non-responsive group (Softball) highlights the critical influence of contextual, implementation, or group-specific factors on the success of psychological training programs.

While the intervention proved to be a powerful tool for enhancing psychological attributes in two of the three groups, its efficacy was contingent upon group affiliation, underscoring the need for a nuanced understanding of athlete-specific and contextual variables in sport psychology practice.

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