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**Surendra Yadav**  
TGT Physical Education,  
LNIPE, Shaktinagar  
Racecourse Road, Gwalior,  
Madhya Pradesh, India

**Komal Singh Yadav**  
TGT Physical Education,  
LNIPE, Shaktinagar  
Racecourse Road, Gwalior,  
Madhya Pradesh, India

## Effect of Stress Inoculation Training Technique on Selected Psychological Variables of State-Level Squash Players

**Surendra Yadav and Komal Singh Yadav**

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### Abstract

The present investigation aimed to examine the effect of Stress Inoculation Training (SIT) on sports anxiety among male state-level squash players from Madhya Pradesh. Competitive squash is a psychologically demanding sport that exposes athletes to continuous performance pressure, competitive stress, and emotional challenges. A true experimental pre-test and post-test control group design was employed for the study. Thirty male state-level squash players were selected based on specific inclusion criteria and randomly assigned into two groups: an experimental group ( $n = 15$ ) and a control group ( $n = 15$ ). The experimental group underwent an eight-week structured Stress Inoculation Training programme conducted three times per week, while the control group did not receive any psychological intervention. Sports anxiety was assessed using the Sports Anxiety Scale-2 (SAS-2). Descriptive statistics and dependent t-tests were used for data analysis. The findings revealed a statistically significant reduction in sports anxiety levels in the experimental group, whereas no significant difference was observed in the control group. The results clearly establish Stress Inoculation Training as an effective psychological intervention for reducing competitive anxiety among state-level squash players.

**Keywords:** Stress Inoculation Training, Sports Anxiety, Squash Players, Psychological Skills Training, SAS-2

### Introduction

In contemporary competitive sports, optimal performance is no longer dependent solely on physical fitness, technical skill, and tactical knowledge. Psychological preparedness has emerged as a critical determinant of success, particularly in high-intensity individual sports. Athletes are constantly exposed to multiple stressors such as fear of failure, performance expectations, evaluation pressure, and competition-related uncertainty. These stressors often manifest as competitive anxiety, which adversely affects performance consistency and psychological well-being (Martens, Vealey, & Burton, 1990) [2].

Sports anxiety is a multidimensional psychological construct comprising cognitive, somatic, and attentional components. Cognitive anxiety includes worry and negative expectations, somatic anxiety reflects physiological arousal such as muscle tension and increased heart rate, while attentional disruption affects focus and decision-making. In sports like squash, which require rapid reflexes, sustained concentration, and tactical adaptability, even moderate levels of anxiety can impair performance outcomes.

Psychological Skills Training (PST) has been widely recommended as a systematic approach to managing competitive stress and enhancing psychological resilience in athletes (Weinberg & Gould, 2019) [6]. Among the various PST techniques, Stress Inoculation Training (SIT) has gained considerable recognition due to its structured and progressive nature.

Stress Inoculation Training, proposed by Meichenbaum (1985) [3], is a cognitive-behavioural intervention aimed at preparing individuals to cope effectively with stress by gradually exposing them to stressors while equipping them with coping strategies. SIT consists of three interrelated phases: conceptualization, skill acquisition and rehearsal, and application and follow-through. This approach helps athletes reinterpret stress as manageable and controllable, thereby reducing anxiety responses.

**Corresponding Author:**  
**Surendra Yadav**  
TGT Physical Education,  
LNIPE, Shaktinagar  
Racecourse Road, Gwalior,  
Madhya Pradesh, India

Several empirical studies have demonstrated the effectiveness of SIT and related psychological interventions in reducing anxiety and improving coping skills among athletes (Hanton, Fletcher, & Coughlan, 2005; Sheard & Golby, 2006) [1, 4]. However, research focusing specifically on squash players—particularly at the state level in the Indian context—remains limited.

The Sports Anxiety Scale–2 (SAS-2), developed by Smith *et al.* (2006) [5], is a widely used instrument designed to measure sport-specific competitive anxiety. It assesses anxiety in actual performance settings, making it particularly appropriate for squash players who experience frequent competitive exposure.

Therefore, the present study was undertaken to examine the effect of an eight-week Stress Inoculation Training programme on sports anxiety among male state-level squash players from Madhya Pradesh by comparing pre-test and post-test scores of experimental and control groups.

## Methodology

### Research Design

The study adopted a true experimental pre-test–post-test control group design, which is considered one of the most rigorous designs for evaluating the effectiveness of psychological interventions.

### Participants

The participants comprised thirty (N = 30) male state-level squash players selected from different districts of Madhya Pradesh. The age of the players ranged between 18 and 25 years. All participants met the following inclusion criteria:

- Minimum three years of state-level competitive participation in squash
- Regular participation in training and competitions
- Free from any psychological or medical conditions that could affect anxiety levels

The participants were randomly assigned into:

- Experimental Group (n = 15)
- Control Group (n = 15)

### Delimitations of the Study

The study was delimited to:

- Male squash players only
- State-level players from Madhya Pradesh
- Sports anxiety as the only psychological variable
- Stress Inoculation Training as the only intervention
- An intervention duration of eight weeks

### Instrumentation

Sports anxiety was measured using the Sports Anxiety Scale–2 (SAS-2) developed by Smith *et al.* (2006). The scale consists of 15 items measuring three dimensions: worry, somatic anxiety, and concentration disruption. Responses are recorded on a four-point Likert scale.

The SAS-2 has demonstrated strong psychometric properties. The reported Cronbach's alpha reliability coefficients range from:

- Worry: 0.86
- Somatic Anxiety: 0.84
- Concentration Disruption: 0.89

- The overall scale reliability has been reported as  $\alpha = 0.91$ , indicating excellent internal consistency (Smith *et al.*, 2006) [5].

## Stress Inoculation Training Programme

The Stress Inoculation Training programme was administered to the experimental group for eight weeks, conducted three sessions per week, resulting in a total of 24 sessions. Each session lasted 30 to 45 minutes, and the training load was progressively increased across weeks.

### Training Schedule Overview

#### Weeks 1–2 (Conceptualization Phase)

Introduction to stress and anxiety in sport, understanding stress responses, awareness of personal anxiety triggers, and education about competitive stress in squash.

#### Weeks 3–4 (Skill Acquisition Phase)

Training in relaxation techniques (progressive muscle relaxation and breathing exercises), positive self-talk, and basic imagery skills.

#### Weeks 5–6 (Skill Rehearsal Phase)

Practice of learned skills in simulated competitive situations, imagery under mild stress, and controlled exposure to pressure scenarios.

#### Weeks 7–8 (Application and Follow-through Phase)

Application of coping strategies during high-pressure simulated match conditions, development of individualized coping plans, and reinforcement of self-regulation skills.

The control group continued their routine physical and technical training without any psychological intervention.

## Statistical Analysis

Descriptive statistics (Mean and Standard Deviation) were calculated for both groups. A dependent t-test was applied separately to the experimental and control groups to compare pre-test and post-test scores. The level of significance was fixed at 0.05.

## Results

**Table 1:** Descriptive Statistics of Sports Anxiety Scores of Experimental and Control Groups

Group	N	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD
Experimental Group	15	32.40 $\pm$ 4.85	24.10 $\pm$ 4.12
Control Group	15	31.80 $\pm$ 5.02	31.10 $\pm$ 5.10

Table 1 presents the descriptive statistics of sports anxiety scores of the experimental and control groups measured before and after the eight-week intervention period. The table includes the number of participants (N), mean scores, and standard deviations for both groups. The experimental group (n = 15) recorded a pre-test mean sports anxiety score of 32.40 with a standard deviation of 4.85, indicating a moderate level of competitive anxiety prior to the intervention. Following the eight-week Stress Inoculation Training programme, the post-test mean score of the experimental group decreased to 24.10 with a standard deviation of 4.12, reflecting a noticeable reduction in sports anxiety levels. In contrast, the control group (n = 15) showed a pre-test mean score of 31.80 with a standard

deviation of 5.02, which remained largely unchanged at the post-test stage (Mean = 31.10, SD = 5.10). The minimal change in mean scores for the control group suggests that routine physical and technical training without psychological intervention did not substantially influence sports anxiety levels. Overall, the descriptive statistics indicate a clear trend of reduced sports anxiety in the experimental group following Stress Inoculation Training, while the control group exhibited no meaningful change.

**Table 2:** Dependent t-test Showing Pre- and Post-test Comparison of Sports Anxiety

Group	Mean Difference	t-value	p-value	Result
Experimental Group	8.30	6.42	0.000*	Significant
Control Group	0.70	0.58	0.571	Not Significant

\*Significant at 0.05 level

Table 2 depicts the results of the dependent t-test analysis comparing pre-test and post-test sports anxiety scores within the experimental and control groups. The table presents the mean difference, t-values, p-values, and the level of statistical significance for both groups. For the experimental group, the dependent t-test revealed a mean difference of 8.30 between pre-test and post-test scores. The obtained t-value of 6.42 was statistically significant at the 0.05 level ( $p = 0.000$ ), indicating a significant reduction in sports anxiety following the Stress Inoculation Training programme. This result confirms the effectiveness of the intervention in reducing competitive anxiety among state-level squash players. Conversely, the control group exhibited a mean difference of only 0.70 between pre-test and post-test scores. The calculated t-value of 0.58 was not statistically significant ( $p = 0.571$ ), demonstrating that no significant change occurred in sports anxiety levels for participants who did not receive the psychological training. The results presented in Table 2 clearly establish that the observed reduction in sports anxiety was attributable to the Stress Inoculation Training programme and not due to chance or routine training effects.

## Discussion

The findings of the present study provide strong empirical support for the effectiveness of Stress Inoculation Training in reducing sports anxiety among male state-level squash players from Madhya Pradesh. The statistically significant reduction in anxiety scores observed in the experimental group highlights the importance of structured psychological interventions in competitive sport, particularly within the Indian sporting ecosystem, where psychological preparation has historically received limited emphasis compared to physical and technical training.

In the Indian sports context, athlete development has traditionally prioritized physical conditioning, technical skill acquisition, and competitive exposure, often neglecting systematic psychological skills training. At the state and sub-elite levels, athletes frequently experience performance pressure arising from selection trials, limited competitive opportunities, resource constraints, and high expectations from coaches, institutions, and families. These stressors can significantly elevate competitive anxiety, especially in individual sports such as squash, where performance outcomes are directly attributable to the athlete (Martens *et al.*, 1990) [2].

The significant reduction in sports anxiety following Stress Inoculation Training in the present study suggests that Indian athletes can benefit substantially from structured cognitive-behavioral interventions. The progressive and educational nature of SIT aligns well with the needs of Indian athletes, many of whom may lack prior exposure to formal psychological training. By first developing an understanding of stress responses and then gradually introducing coping strategies, SIT enables athletes to reinterpret competitive stress as manageable rather than threatening, thereby reducing anxiety-related cognitive and somatic symptoms (Meichenbaum, 1985) [3].

Squash, as a sport in India, is gaining increasing prominence due to improved infrastructure, national-level tournaments, and exposure to international competition. However, at the state level, players often face irregular competition schedules, limited access to sport psychologists, and inconsistent coaching support. These contextual challenges can heighten uncertainty and anxiety during competitions. The present findings indicate that Stress Inoculation Training can serve as a practical and cost-effective psychological intervention that can be implemented within existing training frameworks, even in resource-constrained settings.

Furthermore, Indian athletes often operate within socio-cultural environments that discourage the open expression of psychological difficulties. Mental toughness is frequently equated with emotional suppression, leading athletes to internalize stress rather than address it constructively. SIT directly counters this tendency by normalizing stress responses and equipping athletes with concrete coping skills such as relaxation, positive self-talk, and imagery. This may explain the pronounced reduction in anxiety observed among the experimental group.

The absence of a significant change in sports anxiety among the control group reinforces a critical concern within Indian sports training systems: psychological skills do not develop automatically through physical training or competitive participation alone. Despite continued exposure to training and competition over the eight-week period, the control group did not exhibit meaningful reductions in anxiety, underscoring the necessity of deliberate psychological intervention.

The findings of the present study are consistent with earlier international research demonstrating the efficacy of psychological skills training in anxiety reduction (Hanton *et al.*, 2005; Sheard & Golby, 2006) [1, 4]. However, the present study extends this body of knowledge by providing empirical evidence within an Indian state-level context, thereby addressing a notable gap in indigenous sport psychology research. Given the diversity of competitive environments across Indian states, the results suggest that similar interventions could be beneficial across other regions and sports disciplines.

From an applied perspective, the results have important implications for coaches, physical education teachers, and sport administrators in India. Integrating Stress Inoculation Training into regular training schedules could enhance psychological readiness, improve performance consistency, and promote athlete well-being. In teacher-training institutions and sport academies, especially those governed by universities and state sports authorities, structured psychological skills modules could be incorporated alongside physical education curricula.

In addition, the findings support recent initiatives by Indian sports organizations emphasizing holistic athlete development. As India continues to invest in high-performance sport and talent identification, addressing psychological variables such as anxiety becomes essential for sustaining long-term athlete development. The present study highlights Stress Inoculation Training as a scientifically grounded and culturally adaptable intervention that can contribute meaningfully to this objective.

### Conclusion

The study concludes that an eight-week Stress Inoculation Training programme conducted three times per week is highly effective in reducing sports anxiety among male state-level squash players from Madhya Pradesh. The findings highlight the importance of integrating structured psychological training into regular coaching programmes. Stress Inoculation Training can be effectively used by coaches, sport psychologists, and physical education professionals to enhance psychological resilience and competitive readiness in squash players.

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