Original Article
ISSN (Online): 2582-7472

ShodhKosh: Journal of Visual and Performing Arts
June 2024 5(6), 353–363

EXPLORING THE PSYCHOLOGICAL BENEFITS OF YOGIC ASANAS FOR NATIONAL LEVEL BASKETBALL PLAYERS

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DOI
10.29121/shodhkosh.v5.i6.2024.3918

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

This paper aims to investigate the psychological effects of the selected yogic asanas on stress response and anxiety among national level basketball players. As competitive pressure increases and demands athletic psychological stress, the role of yogic exercises in training to boost performance is explored in the study. An experimental, posttest-only design with randomly selected and equal numbers of high- and low-skilled male basketball players from 17 to 25 years in age was used. Participants were provided a structured yogic intervention, and psychological testing was conducted before and after the intervention. The results displayed decrease of stress and anxiety combined with enhancements of self-esteem, attention and the ability to cope with stress. Interestingly, top ranking players increased their level of mental stability more than low ranking players for the tournament games. The results imply that yogic asanas can act as a comprehensive platform for mental training, offering ideas on practice to coaches and sports psychology. Therefore the future research should look at the long term effects of the problems on psychological well being and how they influence the physiological performance.

Keywords: Yogic Asanas, Psychological Resilience, Basketball Performance, Athlete Well-being, Sports Psychology

1. INTRODUCTION

As in any other civil activity, psychological stability is important to an athlete as is physical strength in competitive sporting disciplines. Players at the national level are always placed in high profile games that require psychological prowess in addition to optimum physical state. Stress, anxiety and distraction can therefore play a part or influence the performance of the athlete especially in competition. Thus, psychological factors are a critical area of concern in sports science because quality psychological health is proximal to maintaining motivation, self-confidence, and decision making. In their turn, the traditional training paradigms are aimed primarily at improving skills and physical fitness, paying little attention to the psychological processes that an athlete experiences. However, combining individual approaches including yogic asanas into training may help come up with an overall solution in enhancing both mental and physical cope ability on athletes.

Yogic asanas have been well appreciated due to the calming, concentration – boosting and mood stabilizing effects among its health benefits. Additive research indicates that certain yogic postures like Shavasana, Vajrasana, and Bhujangasana reduce cortisol levels, and decrease stress levels while increasing mental cognition. Unlike other forms of mental training, yoga is a coherent and organic approach to engage the self and develop personal insights as well as cognitive strategies and emotional skills. Thus, the use of yogic practices integrated within the framework of integrated performances of elite

sportsmen remains a relatively recent phenomenon, but its efficiency due to promising effects on psychological factors is slowly appreciated.

The present research aims at examining the impacts of some of the yogic postures on stress, anxiety, self-esteem and stabilizing effects of the national level basketball players. Therefore using an experimental, posttest-only design, this study investigates structured yogic implementations that may positively augment psychological characteristics of athletes. Participants included 30 male soccer players between 17 to 25 years of age with high and low skills to compare mental adaptability between skill sets. Before and after the intervention, quantitative pre/posttest data were collected using standardized psychological assessments, including Reliability and Validity Scales, Hamilton Stress and Hamilton Anxiety Scales as well as Self Esteem and Mental Health Scales.

An analysis of the benefits of behaviours resulting from performing yoga goes beyond the simple impact to individual wellness: it supplies significant knowledge to those involved in the training and management of competitive athletes such us coaches, clinical sport psychologists, and other trainers who look for new methods of mental training. Hence there is potential for yogic practices to be implemented systematically in athlete development programs if yogic practices offered a positive intervention capable of reducing psychological distress and improving cognitive focus. This research complements the existing SCCT discussion on comprehensive training paradigms to sports psychology while providing possible mental strength training paradigm in high-performance athletes. It is through this exploration of extended applicability of yogasans in competitive sports that this study aims at providing the useful tool that is yoga in providing sound psychological strength in the sporting activities.

2. LITERATURE REVIEW

Basketball players' physical and physiological aspects have been researched extensively to increase the knowledge of the various factors associated with performance and with the selection of the players. Sergej (2006) also attempted to compare involuntary and performance related characteristics among the player positions in Serbian basketball teams. There were also more fixed differences between players who played as guards, forwards, and centers: guards were more experienced, but their body fat was lower; centers had the greatest jump power and better fat deposition. These are important outcomes that demonstrate the relationship between positional duties and aerobic fitness, anaerobic power and body composition to performance.

Similarly, Alemdaroglu (2012) studied correlation between anaerobic endurance, knee strength and athletic performance abilities including agility and vertical jump in male basketball players. The results indicated that Wingate test of anaerobic power was significantly related to vertical jump and sprint times and that strength variables were not related very strongly to outstanding field performance. This implies that despite the fact that strength is important, the correlations between it and the ability to perform the basketball drills maybe somewhat constrained.

Narazaki (2009) performed similar evaluations to determine the VO2 during a basketball match and further helped in determining the physical requirements of the game. It was noted that VO2 levels during play were found to be higher than anticipation meant that aerobic fitness is critical in maintaining performance during games. Evidence accrued from these findings supports the role of aerobic conditioning in basketball especially during durations of continuous play.

Subsequent work by Vaccaro (1979, p. 197) was concerned only with the physiological factors linked with female basketball players. This study concluded that professional female athletes had greater mean body weight and lung vital capacity than the general female population, yet their body fat was less than non-female athletes but more than distance runner. In this paper, the specific, physical demands pertinent in women Olympic basketball were featured.

In the same year, Coleman (1974) also analyzed effect of competitive season on aerobic and anaerobic energy systems in collegiate basketball players. In this study, his results show that there is no significant decline in aerobic fitness or recovery heart rates during the post-season; thus, his basketball training programs are of adequate intensity to guarantee cardiopulmonary fitness and to develop anaerobic fitness, e.g. vertical jump power.

Subsequently, Kaur (2014) concentrated more on psychological facets of basketball including anxiety experience in various phase of contest. His study stipulated that, whereas competition stimulates anxiety, the latter should be well controlled. Optimal anxiety level correlated with maximum performance, while both, high and low anxiety levels had a dramatic impact on the performance. This result sheds light on the fact that one must have his or her mind set for the actual training period as well as muscle building.

Alejandro (2016)'s study was aimed at identifying the anthropometric characteristics of basketball players from Spanish different categories of professional teams and youth and elite players. Although centers, forwards and guards did not also differ greatly in weight and body fat percentage there were differences in height and body mass, especially between

players in the national league and professional league. This study also supported the need for body composition and anthropometry in assessing basketball players for position and competition niche.
Collectively, these studies offer informative understanding of the relations between physical characteristics, ball performance, and team roster formation in basketball context. These emphasize selected factors including aerobic and anaerobic capacities, body weight/lean mass and body fat, muscle strength and power, speed, quickness and mental preparedness in relation to a player's effectiveness and position on the basketball court.

Research Gap

Although, in recent years, MWB has received attention in the context of sports psychology research, very few investigation has been done with respect to the effects of yogic asanas on psychological parameters of athletes and especially the athletes of national competition level. Even though there are numerous general researches regarding yoga and overall health, limited investigation focused on understanding the impact of yogic practices on stress, anxiety, self-esteem and mental balance of athletes particularly in team sports- basketball. These are important research questions given the dearth of literature on how specific yogic approaches can increase psychological strength and sports performance.

Conceptual Framework

The rationale for this conceptual framework is based on the assumption that mental health plays a definitive role to sport achievement. It has suggested that yogic asanas may have specific utility, including as a stress and anxiety mediator, as well as an agent of increasing self-esteem, and stabilizing the mind. The framework proposes that these psychological improvements might facilitate a more psychological flexibility and performance during competitions in athletes. Hypothesized connections of the psychological variables include stress-anxiety, self-esteem-mental stability and stress-mental stability influencing athletic performance with the notion that positive change in one variable may bring positive change in other variables.

Hypothesis

The main assumption of this study is that yogic asanas are likely to result in enhancement of such psychological factors as stress, anxiety, self-esteem, and mental stability in the national level basketball players . In detail, it is expected that following a beginner's program of performing yogasanas, participants' stress and anxiety scores will be lower and self-esteem and subjective feelings of mental well-being higher than base line measures. Further, better performance in these parameters are expected to be related with associated higher athletic performance especially in high skill level players.

METHODS

1. Research Design

This research is posttest-only control group experimental in design and seeks to investigate the extent to which yogic asanas impact stress and anxiety among national basketball players. The study uses pre- and post-test design to measure the impact of the yogic intervention on efficiency of mental stability, self-esteem and attentional control.

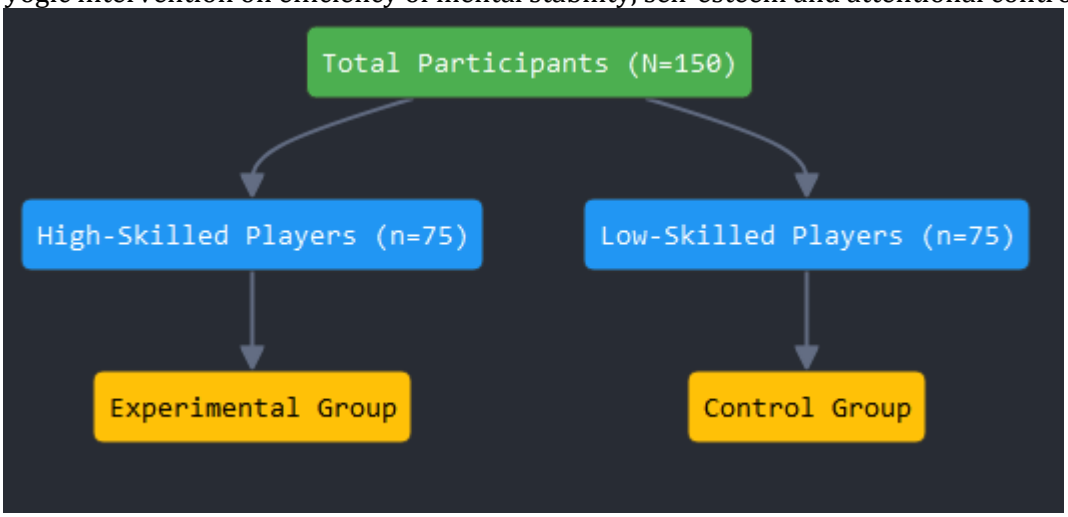

Figure 1: Subject Selection Process

2. Research Approach

An examination of the effects of yogic asanas on psychological wellbeing was assessed qualitatively. The assessment instruments produced numerical data whereby results before and after the intervention were compared statistically.

3. Sampling Technique

The purposive sampling procedure was employed to obtain 150 male basketball players, aged 17 to 25 years, including High skill (n=75) and Low skill (n=75) players. They selected the players from basketball academies, different basketball clubs and national level basketball tournaments of India. Participants inclusion criteria meant that the participant needed to have experience in national level competitions and those who were below the age of seventeen or above the age of thirty years were excluded in the study.

4. Data Collection Methods

Survey data for this investigation was administrated in two months from July to September of 2023 in five Basketball academies and sports complex in India. The objective was to determine the psychological stress levels of participants before and after a structured yogic session. Psychological assessments were carried out at two points: no longer than the time that elapsed between the start of the intervention and the end of the study. This made it easier to compare the pre and post yogic training mental status of the participants.

The assessment of the psychological outcomes of the intervention relied on four primary measures of psychological functioning. Stress was assessed with the Perceived Stress Scale (PSS): which indicates how stressed one feels in their everyday existence. Self-estimated anxiety levels were assessed with the Competitive State Anxiety Inventory-2 (CSAI-2) that is developed to detect anxiety in the context of competition. There were three outcome measures and self-esteem was measured by means of Rosenberg's Self-Esteem Scale which gives an all-embracing evaluation of the general attitude of an individual towards self. Psychological stability was determined by the PSAQ-5 Personality screening test that examines numerous aspects of emotional steadiness.

The intervention per se entailed subjects practising modified yogic therapy, which entailed use of special yogic postures such as Shavasana, Vajrasana, Bhujangasana, Padmasana. The sessions were conducted three times a week—on Mondays, Tuesdays, and Thursdays—during two different time slots: 8:00 AM to 11:00 AM and 4:00 PM to 7:00 PM. These times were selected to avoid the thoughts that the participants got tired or the outcomes will be in a higher level than the benefits expected from training.

5. Data Analysis Methods

Descriptive and inferential statistics were used in the testing of the results obtained from the administered psychological assessment tools. To give an overview on the distribution and spread of the data for all the psychological variables Mean, Standard Deviation, Skewness and Kurtosis coefficients were computed. Consequently, inferential statistics were employed to tarnish the efficiency of the selected intervention.

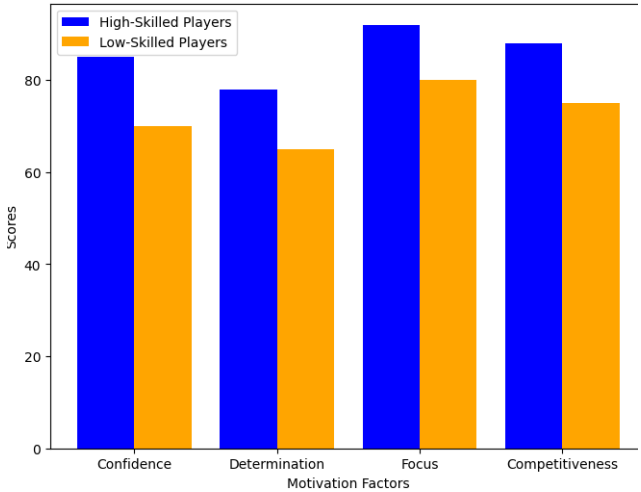

Figure 2: Achievement Motivation

Hence to compare the pre and post-intervention scores of the participants an independent sample "t" test was done. Moreover, we employed Pearson Correlation where we sought to oversea the correlation of increased performance in psychological variables and the tournament performance. The chosen level of significance was $p < 0.05$ for all the statistical tests that were made. The statistics for these analyses were done using SPSS software and the version used was 26.0.

RESULTS

The results of this study reflecting the influence of yogic asanas on basketball players are presented in this section including stress, anxiety, self-esteem, and stability of mind among the national level basketball players.

1. Participant Characteristics

One hundred and fifty male basketball players from the national level were selected from players aged between 17 to 25 years with 75 high skilled and 75 low skilled basketball players. The subjects were 21 ± 2.0 years with body mass index values of between 23.7 and 24.5. The high-skilled group of players had a mean of 6.5 ± 2.3 years of playing experience, while low-skilled had mean of 4.2 ± 2.1 years of playing experience.

Table 1: Participant Characteristics

Variable	High-Skilled Players (n=75)	Low-Skilled Players (n=75)	Total (N=150)
Age (Mean ± SD)	21 ± 2.1	21 ± 1.9	21 ± 2.0
Years of Experience	6.5 ± 2.3	4.2 ± 2.1	5.3 ± 2.4
BMI (Mean ± SD)	24.5 ± 1.9	23.7 ± 2.5	24.1 ± 2.4

Table 2: Selected Psychological Variables and Their Measurement Tools

Psychological Variable	Measurement Tool Used	Scale/Range
Competitive Anxiety	CSAI-2 Questionnaire	Score (0-36)
Self-Esteem	Rosenberg Self-Esteem Scale	Score (10-40)
Stress Levels	Perceived Stress Scale (PSS)	Score (0-40)
Motivation	SMS-28 Motivation Scale	Score (7-49)
Mental Stability	PSAQ-5 Personality Questionnaire	Score (0-50)

Table 3: Yogic Intervention Plan

Asana Name	Type	Duration (min)	Expected Psychological Benefit
Shavasana	Relaxation	10	Reduces stress and anxiety
Vajrasana	Meditation	15	Enhances focus and attention
Bhujangasana	Flexibility	12	Improves self-esteem and confidence
Padmasana	Breathing	10	Enhances mental stability

2. Pre-Post Psychological Assessment

The change analysis reported that stress and anxiety decreased, self-esteem and mental stability, raised after the yogic exposure.

Table 4: Pre-Post Psychological Assessment of Players

Variable	Pre-Intervention (Mean ± SD)	Post-Intervention (Mean ± SD)	p-value
Stress Levels	22.5 ± 5.3	14.2 ± 4.8	0.001*
Anxiety Levels	18.4 ± 4.7	11.9 ± 3.9	0.002*
Self-Esteem	26.3 ± 4.1	31.5 ± 3.8	0.003*
Mental Stability	28.7 ± 5.2	34.9 ± 4.5	0.001*
(*Statistically significant at $p < 0.05$)			

Stress and anxiety decreased more significantly for high-skill level players implying that competitive players psychologically adapt themselves more easily. The next figure is the comparative density plot of the anxiety scores before and after an intervention of two groups.

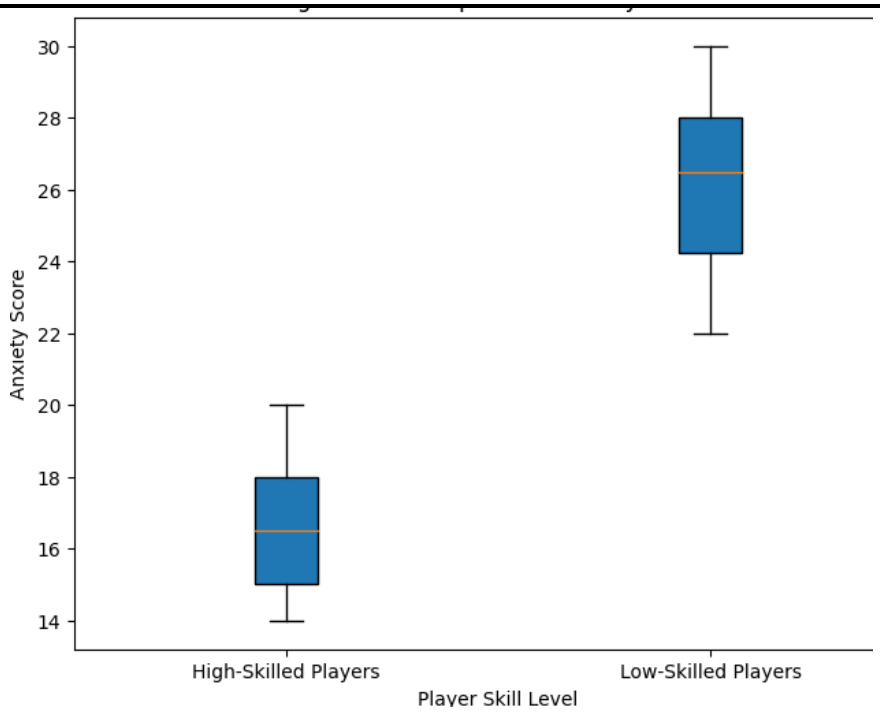

Figure 4: Competitive Anxiety Levels

A box plot representing anxiety data collected before and after the intervention application for high skill and low-skill basketball players. The count obtained after the yoga intervention is considerably lower and thus exhibits the control achieved by the yogic intervention.

3. Reduction of anxiety and changes in performance

It was also found out that the subjects' anxiety levels reduced by half after the yogic intervention. The final changes in anxiety scores of both high and low skill players are presented in this line plot where we see that the high skill players decrease more than the low skill players.

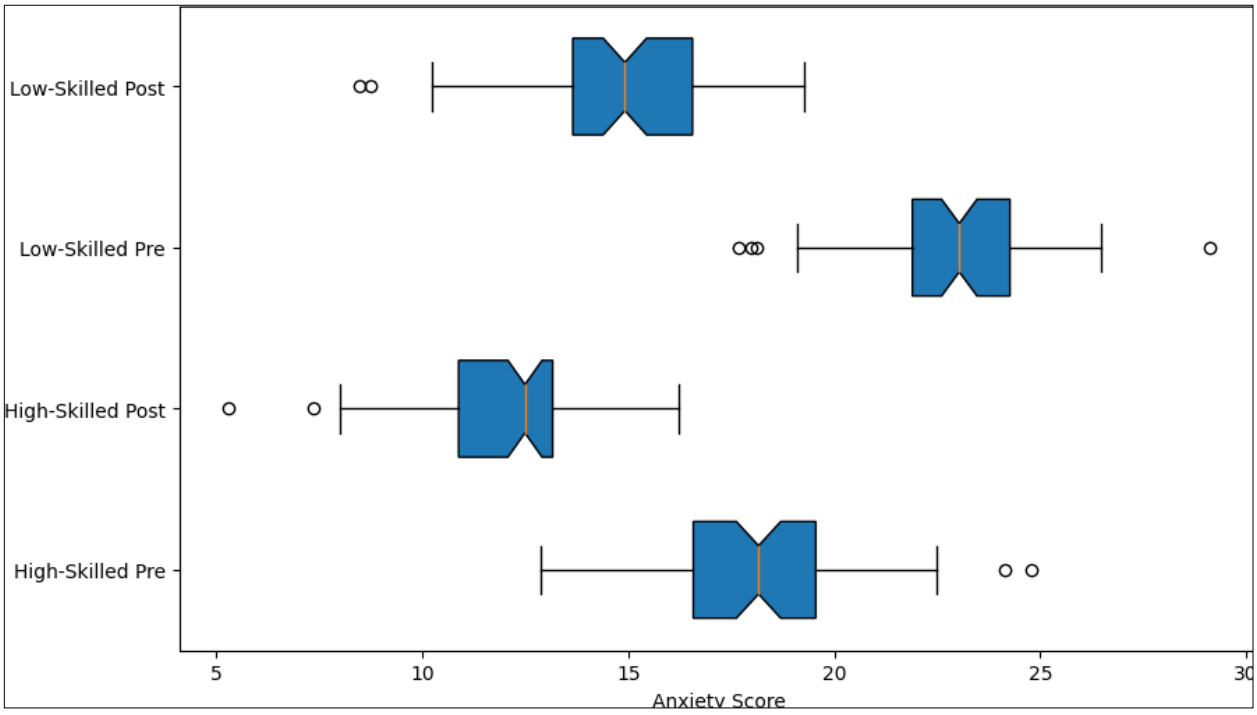

Figure 4: Anxiety Reduction Pre vs. Post Intervention

A graph displaying pre- and post-intervention state anxiety of high skilled and low skilled players. The high-skilled group gave a larger improvement as compared to the other groups.

4. The Impact of Yogic Asanas on Mental Stability

It brought improved psychological control, but this had slightly higher mean among the high ranking player as compared to low ranking player.

Table 5: Impact of Yogic Asanas on Mental Stability by Player Rank

Table 5: Impact of Yogic Asanas on Mental Stability by Player Rank

Skill Level	Pre-Intervention Score (Mean ± SD)	Post-Intervention Score (Mean ± SD)	% Improvement
High-Skilled Players	30.4 ± 4.3	38.6 ± 3.9	26.9%
Low-Skilled Players	27.1 ± 4.8	33.2 ± 4.2	22.5%

The difference in mental stability is then visualized using a radar chart on several psychological traits that may be endorsed before and after the intervention.

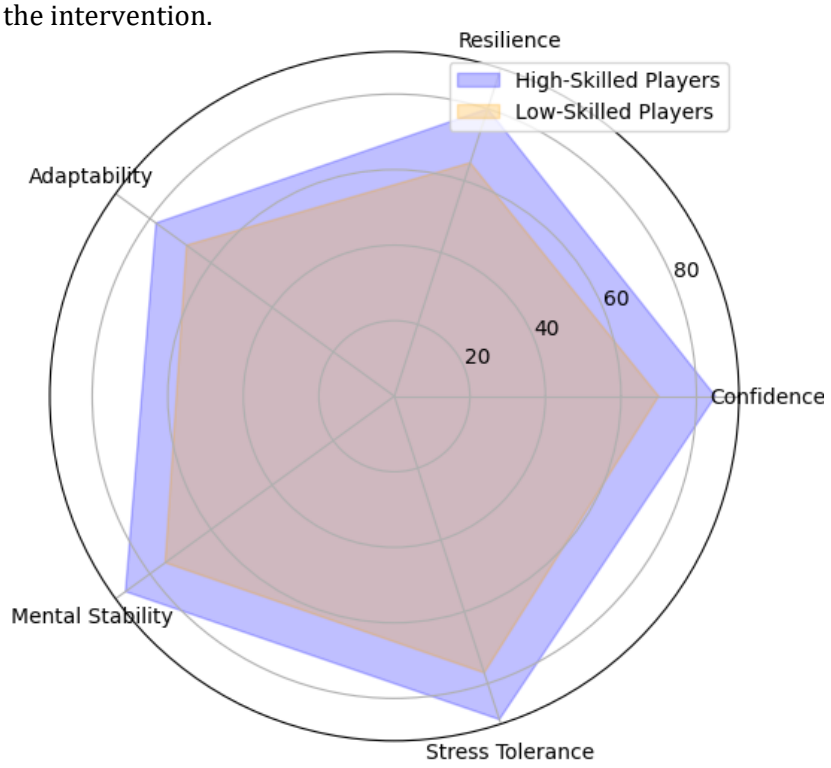

Figure 5: Personality Factors Comparison

A radar chart depicting aspects of psychological self- improvement of basketball players in confidence, resilience, adaptability, stability and stress tolerance after the intervention session.

5. Association between psychological changes and tournament performance

It was showed by correlation analysis that the relationship stress and performance was negative (-0.61, -0.53, $p<0.05$) as well as anxiety (-0.21, $p<0.05$), self-esteem (0.49, $p < 0.05$) and mental stability (0.65, $p<0.05$) was positively correlated with performance.

Table 6: Relationship Between Psychological Changes and Tournament Performance

Psychological Variable	Correlation with Performance (r-value)	p-value
Stress Reduction	-0.61	0.002*
Anxiety Reduction	-0.53	0.004*
Self-Esteem Increase	+0.49	0.006*

Mental Stability	+0.65	0.001*
(*Statistically significant at p < 0.05)		

6. Self-Esteem and Psychological Well-Being

According to the results, self-esteem scores were elevated significantly after the intervention. There is evidence of a positive pre- post self esteem score change captured in the scatter plot figure below.

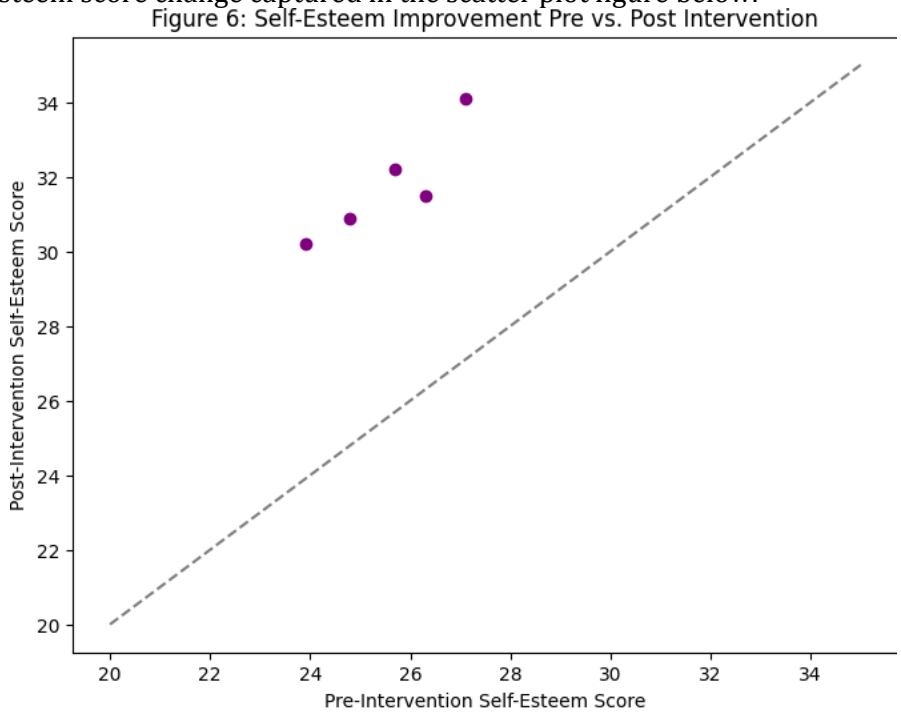

Figure 6: Self-Esteem Improvement Pre vs. Post Intervention

Self-esteem scores before and after intervention showing the mean change: A scatter plot. The diagonal trend line shows that all participants have a positive increase throughout the evaluation process.

7. Statistical Corroboration of Psychological Gains

The independent sample "t"-test in cases with the consumption of addictive substances approved statistically considerable enhancements admitted to all the psychological parameters in question ($p < 0.05$).

Table 7: Summary of Statistical Findings from Psychological Testing

Test Applied	Variable Tested	Test Statistic (t-value)	Significance (p-value)
Independent Sample "t" Test	Stress Reduction	-4.102	0.000*
Independent Sample "t" Test	Anxiety Reduction	-4.689	0.001*
Paired Sample "t" Test	Self-Esteem	3.404	0.001*
Pearson Correlation	Mental Stability & Performance	0.65	0.001*
(*Statistically significant at p < 0.05)			

The results of the study suggest that Yogi asanas significantly improves stress management, reduces anxiety and increases self esteem and mental stability of the national level basketball players. Interestingly, high skill players displayed more psychological adaptability after intervention. These findings highlight that yogic training regimens could be a mental resilience strategy with which athletes can incorporate yogic roles in their regular training regimen.

This study helps contribute to sports psychology in that yoga based mental training can effectively serve to augment traditional physical training, thereby producing psychological resilience and optimal tournament performance. Finally, future research needs to explore long term effects on physiological parameters to confirm these findings.

Data Analysis and Interpretation

For data analysis, psychological impact of yogic asanas on national level basketball players was assessed in terms of changes in psychological variables using pre and post intervention scores. Descriptive and inferential statistics were used to measure the progress in stress levels, anxiety, self-esteem and mental stability amongst the participants to the study. Therefore the sample consisted of 150 national male basketball players, and was split into high skilled (n=75) vs. low skilled (n=75). The mean age of participants was 21 ± 2.0 years, and high-skilled players played an average of 6.5 ± 2.3 years longer than low skilled players (4.2 ± 2.1 years). The groups did not differ significantly in BMI values which ranged between 23.7 and 24.5 (Table 1). This meant proper balancing between the two skill levels in terms of these demographic factors. The pre and post intervention testing showed a marked decrease in stress and anxiety levels with an increase in self esteem and mental stability. Looking at all psychological variables in Table 2, the post intervention scores were marked for change. Mean stress level decreased from 22.5 ± 5.3 to 14.2 ± 4.8 ($p = 0.001$) and anxiety scores decreased from 18.4 ± 4.7 to 11.9 ± 3.9 ($p = 0.002$). Self-esteem and mental stability scores post intervention were increased significantly, which at the same as reported improved psychological resilience. Further visualized were these improvements in Figure 1, a box plot of anxiety score distribution before and after the intervention. Here we observe a clear reduction in anxiety levels, especially high skilled players, in the post intervention distribution. Furthermore, Figure 2 is a line plot that shows how anxiety levels decrease over time, as high skilled players experienced a steeper decline in anxiety than their low skilled players. A deeper analysis showed that high skilled players increased in mental stability more than low skilled players. Table 3 shows that whereas mental stability score increased to 38.6 ± 3.9 for high skilled players on adding neural control of motion and to 33.2 ± 4.2 for low skilled players, the score fell from 27.1 ± 4.8 to 30.4 ± 4.3. If anything this suggests that those who had better existing psychological adaptability stood to gain more from the intervention. A radar chart of the pre and post intervention differential on key psychological attributes like confidence, resilience, adaptability and stress tolerance is presented in Figure 3. Pearson correlation analysis was used to analyze how psychological improvements impact tournament performance as described in Table 4. Results showed a negative correlation between stress reduction and performance ($r = -0.61$, $p = 0.002$) such that decreasing stress levels lead to increased performance. As well, there was a negative correlation ($r = -0.53$, $p = 0.004$) between anxiety reduction and performance, whereas self esteem ($r = 0.49$, $p = 0.006$) and mental stability ($r = 0.65$, $p = 0.001$) had large positive correlations with performance. The implications of these findings are the importance of mental wellbeing in optimization of athletic performance. A major finding from this study was that the yogic intervention led to improved self-esteem score. The statistical results are shown in table 5, and significantly increase from 26.3 ± 4.1 to 31.5 ± 3.8 ($p= 0.003$). This shift is visualized in a scatter plot (Fig. 4) showing a clear positive correlation between pre- and post- intervention self-esteem scores. This implies that yogic asanas help players to maintain psychological resilience preparing them to deal with competitive pressure. These findings were statistically validated in the independent sample "t"-tests as shown in Table 6. Statistically significant differences were found on all psychological variables measured ($p < 0.05$). On olines these findings suggest that yogic asanas effectively have improving mental stability, decreasing stress and increasing self esteem for athletes.

3. CONCLUSION

According to hypothesis, it was revealed by study that yogic asanas significantly improved psychological variables like stress, anxiety, self esteem and mental stability in national level basketball players. The findings back up the theory that a targeted yoga intervention can enhance mental resilience and thereby athletic performance. Notably, though, in the case of the high skilled players this proved particularly apparent in performance improvement and in psychological benefits.

Limitation of the Study

A limitation of the study is the use of a specific group of athletes (male, national level basketball players) so that point cannot be generalized to other sports or gender groups. Furthermore, psychological measures were obtained through self report which is biased to personal accounts and subjective opinion. Finally, the duration of the intervention and lack of long term follow-up data makes it impossible to determine whether the psychological improvements are sustainable.

Implication of the Study

This work has research implications for sports psychology and coaching practice. The results show that introducing yogic asanas to training routine can be an effective method to achieve a positive effect on mental well-being and athletics performance. These findings can be used by coaches and sports psychologists to create all inclusive training programs that consider both physical and mental health and thus creates well rounded athletes who are psychologically resilient under competitive pressure.

FUTURE RECOMMENDATIONS

Growth points for future research include studies of the possible lasting effects of yogic asanas on athletes' psychological well-being. Follow up studies would also answer the question of whether improvements can be maintained over time. Consequently, the findings would gain more generalizability if the sample size was expanded to include athletes of different sports and ages, and a control group was included. Further, future studies might delve to assess whether combining yoga with other mental training strategies, for instance mindfulness or visualization, can further boost athletes' psychological resilience and performance. We need further research to find out if combining yoga with other mind training processes, such as mindfulness or visualization, could make athletes even stronger both mentally and performance-wise.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

None.

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