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EFFECT OF YOGIC PRACTICES ON PHYSIOLOGICAL AND PSYCHOLOGICAL VARIABLES AMONG SWIMMING PLAYER

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Abstract

Yoga enhances acceptance, compassion, physicality, mental and emotional awareness, and spiritual benefits through breath techniques, postures, and body locks, while swimming improves flexibility, strength, and body awareness. The fusion of yoga and swimming, particularly the aqua yoga asana method, offers a balanced lifestyle for athletes and non-performers, enhancing their performance **Vasile** *et al.*, **(2024).** Therefore, the investigator intends to explore the impact of integrating yogic practices on physiological and psychological variables among swimming players. To accomplish the objectives of the study, 50 swimming players were selected from balagavi and Gulbarga division of Karnataka state swimming players randomly selected as subject from the age group from above 15 years are divided into the two equal groups. Group I underwent Yogic Practices (YP), while Group II served as the Control Group (CG). The experimental group received the combined training three days per week for a duration of 12 weeks, whereas the control group continued with their regular daily activities without any additional intervention. The data were analyzed using the paired sample 't' test, with the level of significance set at 0.05. The results revealed that Yogic Practices (YP) had a positive impact on both Vo_2 Max and aggression among swimming players. The findings of the present study indicated a significant improvement in Vo_2 Max and aggression as a result of the integrated YP intervention for swimming players. The data collected from the subjects were statistically analyzed to assess the changes in Vo_2 Max was assessed by cooper 12 minutes run and walk test and aggression was assessed by GP Mathur and Dr.Rajkumari Bhatnagar standardized questionnaire's, which demonstrated significant improvement following the (YP) intervention. The study was carried out considering certain limitations such as diet, climate, lifestyle habits, and prior training experience. The results of the present investigation are consistent with previous research

findings (Review). Therefore, it is concluded that YP effectively enhances Vo_2 Max and aggression development among swimming players.

***Key Words**: Aggression,Vo_2 Max, Yogic Practices, Physiological, Psychological and Swimming Players.*

INTRODUCTION

Yogic practices play a significant role in enhancing both physiological and psychological variables among swimming players. Swimming and yoga are complementary disciplines that collectively influence the cardiovascular, respiratory, muscular, nervous, and metabolic systems. Regular engagement in swimming improves aerobic capacity, muscular endurance, flexibility, and breathing efficiency, while yoga further refines these benefits by promoting body awareness, balance, and controlled respiration. **Singh (2018).**

From a physiological perspective, yogic practices contribute to improved respiratory efficiency through pranayama, which enhances lung capacity, breathing control, and oxygen utilization critical factors for swimming performance. Yoga postures stretch and open the chest, shoulders, hips, and spine, thereby increasing joint mobility and muscular flexibility essential for efficient swimming strokes. Strengthening of the upper back, core, and stabilizing muscles through yoga supports proper body alignment and posture in water, reducing the risk of overuse injuries common among swimmers. Practices such as aqua yoga asanas, performed in deep water, combine the principles of yoga with water resistance and buoyancy. These practices improve muscular endurance, coordination, balance, and overall physical fitness while reducing fatigue and lethargy. **Katch** *et al.,* **(2015).**

In addition, aqua yoga asanas performed at deeper water levels emphasize water balance at the final posture of each asana. The integration of swimming strokes with yogic balance makes the execution of asanas easier and safer in water, while simultaneously enhancing flexibility, joint mobility, and general physical conditioning. Such practices positively influence physiological variables like heart rate regulation, muscular relaxation, and recovery efficiency.

From a psychological perspective, yogic practices significantly enhance mental well-being among swimming players. Yoga promotes relaxation, reduces stress, anxiety, and fatigue, and improves emotional stability. **Kulkarni** *et al.,* **(2017).** The meditative and mindful aspects of yoga cultivate concentration, focus, and internal awareness, which are crucial for maintaining rhythm, timing, and coordination during swimming training and competition. Improved mindfulness helps swimmers achieve a flow state, allowing optimal performance with minimal mental distraction.

Furthermore, yoga enhances self-confidence, mood regulation, and stress management, thereby contributing to better psychological readiness for competition. **Iyengar, B. K. S. (2005).** The calming and restorative nature of yoga aids in faster recovery after intense training sessions, preventing mental burnout

and improving overall motivation. As a pre-performance routine, yoga enhances strength, flexibility, balance, and mental preparedness, leading to improved athletic performance.

METHODOLOGY

The study involved fifty(50) swimming players whose ages ranged from above 15 years were selected from balagavi and Gulbarga division of Karnataka state swimming players to take part in the study, and all participants provided valid data for assessing the effect of Yogic Practices (YP).The participants were randomly assigned into two equal groups: the YP training group (n = 25) and the Control Group (CG) (n = 25). The experimental group participated in the YP intervention three times a week (on Monday, Wednesday, and Friday) over a period of 12 weeks, while the control group did not undergo any additional training apart from their regular daily activities.

The study evaluated the following physiological and psychological parameters:

Vo2 Max (Kilometer): measured using the Cooper 12 minutes run and walk Test.

Aggression (points): assessed through the Questionnaire of Aggression Test developed by GP Mathur and Dr.Rajkumari Bhatnagar.

Both pre-test and post-test assessments were conducted to evaluate changes after 12 weeks of intervention. The training intensity for the experimental group was gradually increased every two weeks according to the participants' progress and adaptability.

PREPARATION PROGRAMME

The training program was showed for a duration of 12 weeks, with sessions held three times per week on Monday, Wednesday, and Friday. Each session lasted for 60 minutes, consisting of a 10-minute warm-up, 40 minutes of (YP), and a 10-minute cool-down period. The schedule was designed to ensure consistent participation and balanced training intensity across all sessions throughout the intervention period.

TABLE – I

YOGIC PRACTICES TRAINING SCHEDULE FOR SWIMMING PLAYERS

	Phase- I (I to IV Week)	**Phase- II** (V to VIII week)	**Phase- III** (IX to XII Week)
Yogic Practices	❖ Warm up ❖ Bakasana ❖ Tadasana ❖ Vrikshasana ❖ Sarvangasana ❖ Mathsyasana ❖ Dhanurasana ❖ Ujjayi Pranayama ❖ Warm Down	❖ Warm up ❖ Virkashanar ❖ Trikonasana ❖ Natarajasana ❖ Bhujangasana ❖ Shalanhasana ❖ Bhasthirika Pranayama ❖ Warm down	❖ Warm up ❖ Halasana ❖ Balancing Flow ❖ Garudasana ❖ Utasana ❖ Makrasana ❖ Dhanurasana ❖ Kapalapathi ❖ Warm down
Repetition	5-6	6-7	6-7
Sets	4	5	6
Rest in Between sets	60 Seconds	60 Seconds	60 Seconds
Rest in between Exercises	45 Seconds	45 Seconds	45 Seconds
Total	60 Minutes	60 Minutes	60 Minutes

NUMERICAL ANALYSIS

The data collected on vo2 max and aggression as a result of the Yogic Practices were statistically analyzed using the paired sample “t” test to determine whether significant differences existed between the pre-test and post-test results. In all analyses, the level of significance was set at 0.05 ($p < 0.05$) to assess the statistical reliability of the findings.

TABLE - II

TOTALING OF 'T' RATIO ON VO2 MAX OF SWIMMING PLAYERS ON INVESTIGATIONAL AND REGULATOR GROUPS

(Scores in kilometers)

Group	Test		Mean	Std. Deviation	T ratio
Vo_2 Max	Experimental Group	Pre test	1950.30	1.60	7.66*
		Post test	2250.40	1.75	
	Control Group	Pre test	1960.20	0.90	1.10
		Post test	1950.70	0.71	

*significant level 0.05 level (degree of freedom 2.06, 1 and 24)

Table II presents the calculated mean, standard deviation, and 't' ratio for vo2 max in the experimental group. The obtained 't' value for vo2 max was 7.66, while the critical table value for the degrees of freedom (df = 24) at the 0.05 level of significance was 2.06. Since the obtained 't' value exceeded the table value, the result was found to be statistically significant, indicating a meaningful improvement in vo2 max for the experimental group. In contrast, the control group recorded a 't' value of 1.10, which was less than the table value of 2.06, and therefore, the result was found to be statistically insignificant.

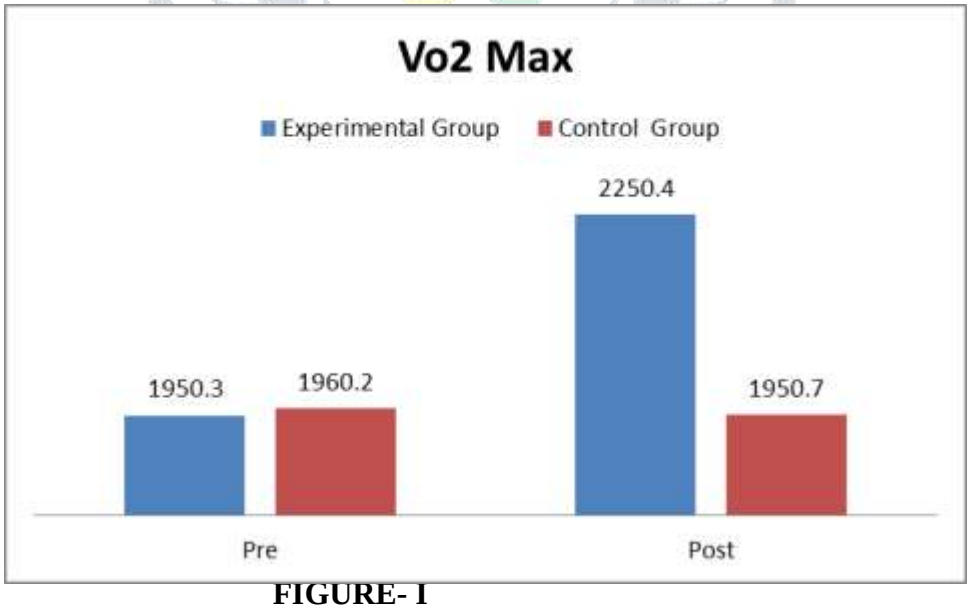

FIGURE- I

BAR DIAGRAM SHOWING THE MEAN VALUE Vo2 MAX OF SWIMMING PLAYERS ON EXPERIMENTAL GROUP AND CONTROL GROUP

TABLE - III

MULTIPLICATION OF 'T' RATIO ON AGGRESSION OF SWIMMING PLAYERS ON EXPERIMENTAL AND CONTROL GROUPS

(Scores in Points)

Group	Test		Mean	Std. Deviation	T ratio
Aggression	Experimental Group	Pre test	73.73	1.50	13.63*
		Post test	67.40	1.33	
	Control Group	Pre test	73.46	1.08	0.46
		Post test	74.06	2.21	

*significant level 0.05 level (degree of freedom 2.06, 1 and 24)

Table III displays the computed mean, standard deviation, and 't' ratio for aggression in the experimental group. The obtained 't' value for aggression was 13.63, whereas the critical table value for degrees of freedom (df = 24) at the 0.05 level of significance was 2.06. Since the obtained 't' value was substantially greater than the table value, the difference between the pre-test and post-test scores of the experimental group was determined to be statistically significant, signifying a notable improvement in personality development as a result of the intervention. Conversely, the control group achieved a 't' value of 0.46, which was lower than the table value (2.06), indicating that there was no significant difference in aggression scores for participants who did not undergo the YP program.

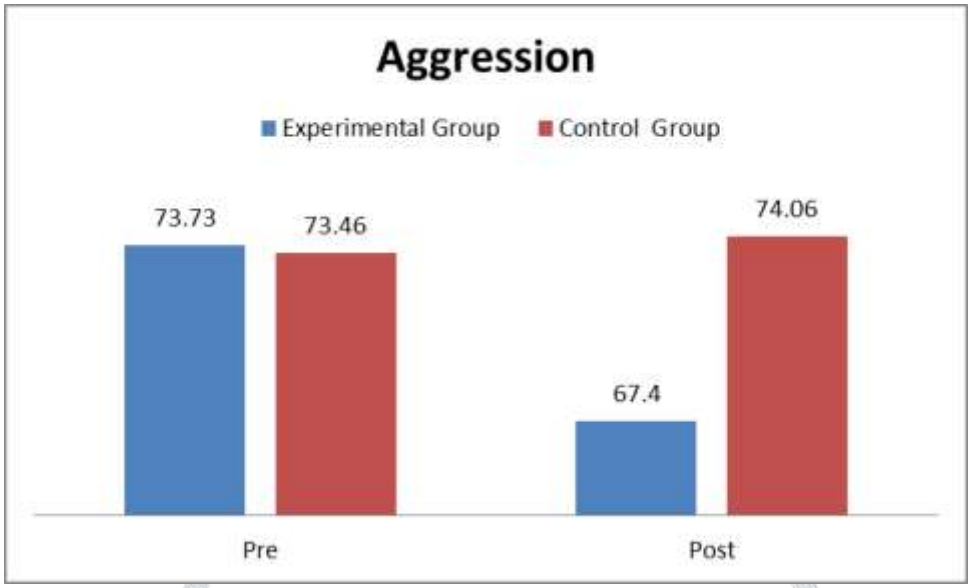

FIGURE- II

TABLET FIGURE DISPLAY THE MEAN VALUE ON AGGRESSION OF SWIMMING PLAYERS ON EXPERIMENTAL AND CONTROL GROUPS

DISCUSSION AND FINDINGS

The present findings indicate that the structured yogic practice module comprising warm-up, selected asanas, pranayama, and warm-down had a significant positive influence on both physiological and psychological variables among swimming players. The inclusion of dynamic warm-up and warm-down activities before and after each session prepared the neuromuscular system for activity and facilitated recovery, thereby reducing muscle stiffness and risk of injury. Similar observations have been reported by **Wilmore** *et al.,* **(2016),** who emphasized that systematic warm-up and cool-down routines enhance circulatory efficiency and recovery in athletes.

From a physiological perspective, the practice of balancing and strength-oriented asanas such as Bakasana, Vrikshasana, Garudasana, Natarajasana, and Balancing Flow significantly improved neuromuscular coordination, postural control, and core stability. These improvements are crucial for swimmers, as efficient balance and body alignment reduce drag and improve stroke efficiency. **Iyengar (2005**) noted that balancing postures enhance proprioception and muscular coordination, which directly translate into better movement control in sports like swimming.

Postures such as Tadasana, Trikonasana, and Uttanasana contributed to spinal alignment, flexibility, and postural awareness. These asanas helped in improving range of motion at the shoulder, hip, and spinal joints, which are essential for effective swimming strokes. Improved flexibility and joint mobility observed in the swimmers align with the findings of **Sharma and Singh (2018),** who reported that regular yogic practice enhances musculoskeletal efficiency and functional mobility in athletes.

Inverted and back-bending postures such as Sarvangasana, Halasana, Matsyasana, Bhujangasana, Shalabhasana, and Dhanurasana positively influenced respiratory and circulatory functions. These asanas are known to stimulate the endocrine system, improve blood circulation, and enhance lung capacity. For swimmers, enhanced respiratory efficiency is a key determinant of endurance and performance. **McArdle *et al.*, (2015)** stated that exercises improving thoracic expansion and respiratory muscle strength significantly enhance aerobic performance in aquatic sports.

The inclusion of Makrasana promoted muscular relaxation and recovery by reducing excessive muscular tension, thereby aiding faster physiological recovery after training. This relaxation response is particularly beneficial for swimmers who undergo high-volume training loads.

Regarding pranayama practices, Ujjayi Pranayama, Bhastrika, and Kapalabhati produced marked improvements in respiratory control, oxygen utilization, and autonomic balance. Ujjayi pranayama enhanced breath awareness and rhythmic breathing, directly supporting swimming breathing patterns. Bhastrika and Kapalabhati stimulated respiratory muscles and improved vital capacity, contributing to better endurance and fatigue resistance. **Telles and Naveen (2009)** reported that pranayama practices improve pulmonary function and autonomic regulation, leading to enhanced physical performance in athletes.

From a psychological perspective, the yogic practices significantly reduced stress, anxiety, and mental fatigue while improving concentration, emotional stability, and self-confidence among swimming players. Meditative awareness cultivated through asanas and pranayama enhanced mindfulness and focus, enabling swimmers to maintain composure and attentional control during training and competition. These findings are consistent with Patil and **Kulkarni (2017),** who observed that yoga practice leads to reduced stress levels and improved psychological well-being in sportspersons.

The integration of relaxation-oriented practices and controlled breathing facilitated mental recovery and promoted a calm mental state, which is essential for achieving a flow state in swimming performance. Yoga's holistic approach helped swimmers develop better mind–body coordination, internal awareness, and mental resilience. **Bompa and Buzzichelli (2019)** highlighted that psychological readiness and recovery are as vital as physical conditioning for optimal athletic performance.

In summary, the yogic practices adopted in the present study demonstrated significant improvements in physiological variables such as flexibility, balance, respiratory efficiency, and muscular coordination, along with psychological variables including stress reduction, concentration, and emotional stability among swimming players. These findings confirm that yogic practices serve as an effective complementary training method for swimmers, enhancing overall performance and well-being.

CONCLUSIONS

Within the limitations and delimitations established for the present study, and based on the results obtained, the following conclusion was drawn:

A twelve-week program of Yogic Practices (YP) brought about significant improvements in the selected physiological and psychological variables specifically, vo2 max and aggression among swimming players when compared to the control group.

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