

THE EFFECT OF EIGHT WEEKS OF HIGH-INTENSITY FUNCTIONAL TRAINING ON RESPIRATORY PERFORMANCE INDICATORS OF YOUNG FEMALE TAEKWONDO FIGHTERS

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ABSTRACT

Background and purpose: Cardiopulmonary function indicates the ability to transfer oxygen to active muscles for taekwondo athletes who perform high-intensity movements in a short period of time and is an important factor that directly affects sports performance. The aim of the present study was to investigate the effect of eight weeks of high-intensity functional training on the respiratory performance indicators of young female taekwondo fighters. **Methodology:** In this semi-experimental study, 16 female Taekwondo fighters between the ages of 17 and 27 were randomly selected and randomly assigned to two groups of high-intensity functional training (HIFT) and control. The HIFT training group participated in the training program for eight weeks and four sessions per week. Before and after the eight-week training period, anthropometric measurement, body composition and breath gas test (gas analyzer) of young female taekwondo fighters were performed. The data were analyzed by analysis of covariance test at a significance level of $P < 0.05$. **Findings:** The results showed that time and the interaction of time and group had a significant effect on VO_{2max} values in young female taekwondo fighters ($P = 0.001$). Time had no significant effect on FVC and VE/VCO_2 values ($0.05 < P < 0.05$). $P >$, but the interaction of time and group on FVC values in taekwondo girls. The young fighter had a significant effect ($P = 0.001$) and the interaction of time and group had no significant effect on the values of FEV1, PEF, FEF25-75 and VE/VO_2 in Taekwondo girls of the young fighter ($P > 0.05$). Time had a significant effect on FEV1/FVC ratio ($P = 0.001$), but the interaction of time and group did not have a significant effect on FEV1/FVC ratio in young female taekwondo fighters ($P > 0.05$). **Conclusion:** According to the results of the research, probably HIFT exercises can be effective in improving the performance indicators of the respiratory system of young female taekwondo fighters. Therefore, performing HIFT exercises can be recommended as a safe and useful method to improve the lung function of women taekwondo athletes.

Keywords: High-intensity functional exercises, Respiratory system, Maximal oxygen consumption, Taekwondo

1. INTRODUCTION

The important goal of coaches and athletes is to increase the physical and physiological ability of the athlete to the highest possible level, to develop and control the training program to ensure maximum performance. Many athletes preparing for an important competition achieve maximum performance following a period of intense training (1).The benefits of this type of exercises to improve cardio-respiratory performance can create a new perspective in training goals for athletes.(2)

Considering the beneficial effects of high-intensity functional training as well as the reduction of training time compared to other exercises, investigating the effects of this type of training in improving lung function is of great importance for the health and well-being of society, especially athletes (3). Cardiopulmonary performance is a term that can be used together with cardiopulmonary endurance or cardio-respiratory fitness³ and indicates aerobic capacity or the ability of aerobic exercises. Improved cardio-respiratory function means that the body can perform exercise much more effectively. This is mainly due to the body more effectively getting oxygen into the bloodstream and delivering it to working muscles, where it is needed for metabolic processing of energy. In other words, athletes' bodies are much more skilled in loading, transporting and using oxygen (4).Considering the important role of high-intensity training in improving cardio-respiratory performance, it seems to be very important to investigate the effects of high-intensity training in athletes. to be investigated in female athletes.(5)

Correct breathing is a necessary technique for athletes. Lung function tests are among the tests that are included in the fitness measurement of people. It is estimated that people with higher levels of physical activity have higher lung function in the same age, gender and physical parameters [6-7].Sports activity improves vital capacity 3 (VC), forced vital capacity 4 (FVC) and maximal voluntary ventilation 5 (MVV) compared to sedentary individuals (8) Several studies have been conducted to investigate and compare the volume of ventilation in athletes' samples to determine the effect of different training methods on pulmonary function. Durmick et al. compared the pulmonary functions of endurance and strength athletes (470 subjects) and found that the forced vital capacity (FVC), forced expiratory volume in the first second (FEV1) and vital capacity (VC) in the group of endurance athletes were significantly higher than the measurements in both strength and control groups.(9) This suggests that exercise may affect pulmonary function. Similarly, the results of a study in Serbia on 1639 athletes showed an increase in lung volume for athletes participating in endurance sports activities compared to strength and team athletes (10). Mazichetal.also conducted a large-scale study on 15 sports and sedentary people. The results showed that VC, FEV and FVC in rowing, basketball and water polo athletes were significantly higher than the control group. These differences were not recorded in other sports considered in this study, and the researchers suggested that the type of exercise used in different sports could have the potential to improve respiratory performance.(11)

Halk et al. also investigated the effect of 12 weeks of training on the pulmonary function of male and female students and found that no significant changes were observed in the lung function test except for the peak expiratory flow rate (PERF). (11) The peak of expiratory flow was significant only in men. In a research conducted by Azarbaijani et al. (12), they investigated the effect of short-term intense interval training on the aerobic capacity of elite futsal players. The results of the research showed that a short period of intense interval training in elite soccer players did not lead to a significant change in aerobic fitness. Dunham et al.did not observe a

significant difference in the respiratory volumes of PEF, FEF25-75%, FVC, FEV1 and (FEV1/FVC) after four weeks of intense interval training and standing training.(13)

The results of Raushe and Elnaweez showed that intense interval training three days a week for three weeks (75-85% (HR max) significantly improved lung function, FEV1, FEV1 / FVC ratio and (MVV) in healthy inactive men. However, intense interval training did not affect FVC in healthy inactive men, suggesting that longer durations of exercise may be needed to affect FVC.(14)

High Intensity Functional Training (HIFT) is a training method that emphasizes functional, multi-joint movements that can be adapted to any fitness level. The HIFT program includes various functional exercises and different durations of activity along with rest periods (15). This type of exercise emphasizes both aerobic and anaerobic energy pathways and is a balanced exercise in terms of strength, power, flexibility, speed, endurance, agility and coordination. HIFT approaches emphasize functional movements (i.e., compound movements such as lifting, pushing, pulling, throwing, and movement patterns that acquaint the body with the functional environment) performed at a relatively high intensity.(16)

And they need general motion calling patterns in multiple motion schemes. HIFT aims to produce high levels of cardiorespiratory fitness, endurance, and strength that are beyond what is achieved by following current physical activity recommendations (17). Studies that have investigated the effectiveness of HIFT programs have shown significant improvements in VO₂max (~12%) (10) and reduction in body fat (~8%) (9) Edami et al. in a study investigated the difference between a group of beginner HIFT athletes and a group of beginner HIFT athletes. Compared to competitive HIFT athletes, novice HIFT athletes achieved higher levels of VO₂peak, maximal lower limb strength, maximal handgrip strength, maximal isometric knee extension strength, isokinetic strength, and peak anaerobic strength, while anaerobic capacity did not show significant differences. Therefore, HIFT may lead to improvement of VO₂max through the above mechanisms. According to the results of studies, HIFT as an exercise program can help improve physical fitness parameters and performance (18).

Research findings regarding the response of respiratory function to sports activity are contradictory; High-intensity training is an efficient way to increase maximum oxygen consumption, ventilation capacity and muscle strength along with improving body composition, however, the effects of high-intensity functional training on respiratory performance indicators in female athletes are not known. Therefore, the current research aims to examine the question of whether eight weeks of high-intensity functional training (HIFT) has an effect on the respiratory performance indicators of young female taekwondo fighters.(19)

The general purpose of this research is to investigate the effect of eight weeks of high-intensity functional training on the respiratory performance indicators of young female taekwondo fighters.(20). The Specific Goals are-

1. Determining the effect of eight weeks of high-intensity functional training on the forced vital capacity (FVC) of young female taekwondo fighters.
2. Determining the effect of eight weeks of high-intensity functional training on the forced expiratory volume in the first second (FEV1) of young female taekwondo fighters.
3. Determining the effect of eight weeks of high-intensity functional training on the FEV1/FVC ratio of young female taekwondo fighters.
4. Determining the effect of eight weeks of high-intensity functional training on maximum oxygen consumption (VO₂ max) of young female taekwondo fighters.

5. Determining the effect of eight weeks of high-intensity functional training on the maximum expiratory flow (PEF) of young female taekwondo fighters.
6. Determining the effect of eight weeks of high-intensity functional training on the amount of expiratory flow with pressure at 25-75% of (FEF 75-25) FVC of young female taekwondo fighters.
7. Determining the effect of eight weeks of high-intensity functional training on the first ventilation breaking point (VE/VO₂) of young female taekwondo fighters.
8. Determining the effect of eight weeks of high-intensity functional training on the second ventilation breaking point (VE/VCO₂) of young female taekwondo fighters.

1.1 Definitions of Related terms

1.1.1 High Intensity Functional Training (HIFT)

HIFT is an exercise method that emphasizes functional and multi-joint movements that can be adapted to any fitness level. HIFT uses constantly varied functional exercises and different activity durations (21).

1.1.2 Maximum oxygen consumption (VO₂max)

VO₂max indicates the maximum amount of oxygen used during muscle contraction and is considered the gold standard measure of functional limitation of the cardiorespiratory system (22).

1.1.3 Forced Vital Capacity (FVC)

It is the volume of air that can be expelled from the lungs with maximum force after a deep breath. Operational definition: In the present study, the subjects' FVC was measured using a gas analyzer.(23)

1.1.4 High-intensity interval training (HIIT)

High-intensity interval training (HIIT) refers to an exercise program characterized by relatively short periods of intense activity followed by periods of rest or low-intensity exercise for recovery. HIIT is primarily performed using aerobic exercises, such as running on a treadmill and cycling on a treadmill (24). Although this type of training was used among athletes from the end of the 20th century. Recently, it has gained more momentum among fitness enthusiasts and has been recognized as the "Top 10 Fitness Trends" in 2018 (25). In the last decade, studies evaluating the effectiveness of HIIT programs have shown improvements in metabolic and cardio-respiratory adaptations [26-27]. In addition, Borgmeister et al reported a significant improvement in time to exhaustion after six HIIT sessions over a two-week period. This increase in endurance is remarkable because it was observed without an increase in maximal oxygen uptake (VO₂max), suggesting that "environmental" adaptations, such as changes in carbohydrate metabolism, and enzyme activity in muscles may be responsible for these changes (28).

2. METHODS AND MATERIALS

2.1 Sample

The statistical population of this research was the young taekwondo girls of Karaj city, among whom 16 people were selected as a sample in an accessible and purposeful way. The criteria for entering the study or the conditions for the selection of the subjects include the following:

The subjects did not have a history of any specific disease or use of supplements and drugs, and did not participate in any official or unofficial competitions during the research period. Also, when conducting the research, they did not use dehydration methods such as food restriction and were not in a state of overtraining. the subjects were randomly divided into two groups of 8 people, then the training group performed the desired HIFT exercises for eight weeks.(30).

The sample volume was calculated by considering $\beta = 0.1$ and $\alpha = 0.05$ using the following formula:

$$\frac{(\sigma_1^2 + \sigma_2^2) (Z_{\alpha/\gamma} + Z_{\beta})^2}{\Delta^2}$$

2.2 Selection of Variables

2.2.1 Independent variables-

(i) HIFT exercises

2.2.2 Dependent variables-

(i) FVC, FEV1, /FVC1FEV,

(ii) VO2max,

(iii) PEF and FEF 25-75,

(iv) VE/VO2 and

(v) VE/VCO2

2.3 Research design

The samples of the present research were made up of female taekwondo practitioners. Due to the fact that many variables were not under control, hence the present research was semi-experimental and has a practical aspect in terms of using its results.(29)

2.4 Tools and Technique used

In this research, exercise groups performed the HIFT exercise program for eight weeks and four sessions each week In the present study, the subjects' VO2max was measured using a gas analyzer.

2.5 Method of information collection

All the subjects qualified to participate in the test submitted the written consent form and the relevant questionnaire one week before the start of the research and declared their readiness to start the training program. A briefing session was held with the presence of the researcher to familiarize the subjects with the method of conducting the research, the day and time of the protocol and other explanations.

2.5.1 Inclusion criteria

The inclusion criteria for the study included: available and targeted girls between the ages of 17 and 27, at least 7 years of experience in the Premier League of Taekwondo, no chronic injuries, and consent to participate in the study. Also, in this research, a health certificate was obtained from the subjects by a specialist doctor (cardiovascular approach, high blood pressure and peripheral nerve disorders).

The criteria for exiting the research also include not taking supplements and exercising, diagnosing other underlying diseases during the implementation of the protocol, such as cardio-pulmonary problems and skeletal and neurological disorders during sports activities that prevented the implementation of the activity. It was the feeling of danger of exercising or taking supplements and not having a phone call from the researcher to follow up.

Subjects were asked not to change their diet during the research period. After the necessary coordination with the Olympic and Paralympic Academy of Iran, as well as the evaluation center of that group, the necessary measures were taken. Anthropometric measurement tests, body composition and breath gas test (gas analyzer) of taekwondo girls were performed.

Then the subjects were divided into two homogenous groups, one group did only HIFT exercises and one group did not do any specific exercises.

2.5.2 Ethical considerations

The purpose of the research was explained to the participants and people voluntarily participated in this research. Also, a way of cooperation, benefits and possible risks of participating in the study were emphasized and explained to the volunteers. In addition, the obtained information was kept confidential and the researchers only published the general and group results without mentioning names and specifications.

2.6 Training protocol

The HIFT group participated in the exercise program for eight weeks and four sessions per week. The training sessions lasted about 1 hour, with 10 minutes of warm-up and stretching, 40 minutes of training, and 10 minutes of cooling down. HIFT exercises include moving with a plate in hand, throwing a leg from a bosoball, squat jump with a medicine ball and immediately kneeling, performing a blow with elastic resistance on a bosoball, performing a punch with an elastic band and resisting the impact, crossing short obstacles with a medicine ball in hand and kick, saw movement with knee folded with plate in hand, hip rotation from the outside with knee folded and elastic tied to knee, knee folded on the step with plate in hand and movement above the head, push (push) and kick , two-legged jump and turning into one-legged with vertical resistance, long scissor jump with foot shot and medicine in hand, which they did with repetition of 30 seconds and 5 sets and for eight weeks [31-32].

2.7 Statistical Method

Quantitative description of data was done using central dispersion indices such as mean and standard deviation, and the Shapiro-Wilk test was used to determine the normality of data distribution. (33)Then, analysis of covariance test was used to compare the groups. Calculations were done using SPSS version 26 statistical software and the significance level of the tests was considered as $p \leq 0.05$.

3. FINDINGS

Table 1 and Table 2 show the results of descriptive statistics related to the demographic characteristics of subjects and research variables between different research groups.

**TABLE 1
DESCRIPTIVE STATISTICS RELATED TO THE AVERAGE DEMOGRAPHIC CHARACTERISTICS OF THE SUBJECTS**

Group Variable	Practice Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
Number	8	8	8	8
Age (Yrs)	2.71 ± 22.25	---	1.5 ± 23.25	---
Height (Cm)	6/47±168	---	6.14 ± 165	---
Weight (Kg)	10.63±60.07	11.60±59.90	4.12 ± 57.7	3.8 ± 58.17
BMI	2.04 ± 21.22	2.33 ± 21.25	1.18 ± 21.03	0.46 ± 21.12
PBF	10.63±60.07	11.60±59.90	4.12 ± 57.7	3.8 ± 58.17

TABLE 2
DESCRIPTION OF RESEARCH VARIABLES

Group Variable	Practice Group		Control Group	
	Pre-test	Post-test	Pre-test	Post-test
FVC	0.70±4.5	0.44±4.92	0.58±4.3	0.46±4.23
FEV1	0.26±3.03	0.43±3.14	0.10±3.00	0.12±2.99
FVC/FEV ₁	0.11±0.68	0.10±0.63	0.05±0.711	0.06±0.705
VO ₂ max	4.62±40.75	4.99±44.87	3.45±40.75	3.07±40.50
PEF	0.54±4.57	1.83±5.75	0.46±4.54	0.59±4.65
FEF	0.50±2.7	0.71±2.75	0.38±2.72	0.36±2.73
PEF	3.37±28.66	1.39±29.45	3.44±28.80	0.97±28.72
0.87	30.47±2.3	28.95±1.77	30.18±1.90	29.73±1.30

The first hypothesis Testing

Zero hypothesis: Eight weeks of functional training with high intensity has no effect on FVC changes in female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.13$) did not have a significant effect, but the interaction of time and group ($p = 0.045$) had a significant effect on FVC.

TABLE 3
THE RESULTS OF ANALYSIS OF VARIANCE RELATED TO FVC IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	0/245	1	0/245	2/53	0/134
The Interaction of time and Group	0/470	1	0.470	4/86	0/045

The second hypothesis

Zero hypothesis: Eight weeks of high-intensity functional training has no effect on the changes in FEV1 of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.46$) and the interaction of time and group ($p = 0.31$) had no significant effect on FEV1.

TABLE 4
THE RESULTS OF ANALYSIS OF VARIANCE RELATED TO FEV1 IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	0/018	1	0/018	0/57	0/46
The Interaction of time and Group	0/033	1	0/033	1/08	0/31

The third hypothesis

Zero hypothesis: Eight weeks of high-intensity functional training has no effect on the changes of FEV1/FVC in female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.04$) had a significant effect, but the interaction of time and group ($p = 0.09$) did not have a significant effect on FEV1/FVC.

TABLE 5
THE RESULTS OF ANALYSIS OF VARIANCE RELATED TO FEV1/FVC IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	0/007	1	0/007	5/09	0/04
The Interaction of time and Group	0/005	1	0/005	3/19	0/09

The fourth hypothesis

Zero hypothesis: Eight weeks of functional training with high intensity has no effect on changes in VO₂max of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.001$) and the interaction of time and group ($p = 0.001$) had a significant effect on VO₂max.

TABLE 6
. THE RESULTS OF THE VARIANCE ANALYSIS TEST RELATED TO VO₂MAX IN THE SUBJECT GROUPS.

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	30/03	1	30/03	17/38	0/001
The Interaction of time and Group	38/28	1	38/28	22/15	0/0001

The fifth hypothesis

Zero hypothesis: eight weeks of functional training with high intensity has no effect on PEF changes of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.06$) and the interaction of time and group ($p = 0.11$) had no significant effect on PEF.

TABLE 7.
THE RESULTS OF ANALYSIS OF VARIANCE RELATED TO PEF IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	3/31	1	3/31	4/17	0/060
The Interaction of time and Group	2/30	1	2/30	2/89	0/11

The sixth hypothesis

Hypothesis zero: eight weeks of high-intensity functional training has no effect on the changes in FEF₂₅₋₇₅ of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time ($p = 0.69$) and the interaction of time and group ($p = 0.83$) had no significant effect on FEF₂₅₋₇₅.

TABLE 8

THE RESULTS OF ANALYSIS OF VARIANCE RELATED TO FEF25-75 IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	0/006	1	0/006	0/16	0/69
The Interaction of time and Group	0/002	1	0/002	0/047	0/11

The seventh hypothesis

Zero hypothesis: eight weeks of functional training with high intensity has no effect on the changes of VE/VO₂ of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time (p = 0.17) and the interaction of time and group (p = 0.20) did not have a significant effect on VE/VO₂.

TABLE 9.

THE RESULTS OF THE ANALYSIS OF VARIANCE TEST RELATED TO VE/VO₂ IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	10/50	1	10/50	2/039	0/175
The Interaction of time and Group	9/17	1	9/17	1/78	0/23

The eighth hypothesis

Zero hypothesis: Eight weeks of high-intensity functional training has no effect on the changes in VE/VCO₂ of female Taekwondo fighters.

The results of the analysis of variance statistical test showed that time (p = 0.048) had a significant effect and the interaction of time and group (p = 0.25) did not have a significant effect on VE/VCO₂.

TABLE 10.

THE RESULTS OF THE VARIANCE ANALYSIS TEST RELATED TO VE/VCO₂ IN THE SUBJECT GROUPS

Source of Time	Mean Squares	df	Sum of Squares	F- value	p-value
Time	7/80	1	7/80	4/71	0/048
The Interaction of time and Group	2/31	1	2/31	1/39	0/25

4. SUMMARY

The aim of the present study was to investigate the effect of eight weeks of high-intensity functional training on the respiratory performance indicators of young female taekwondo fighters. The current research was semi-experimental. The research plan is of pre-test-post-test type. The statistical population of this research is made up of young female Taekwondo fighters. The sampling method was random and purposeful, and the number of samples consists of 16 young female taekwondo fighters in Karaj city. Taekwondo girls were divided into two groups of 8 after the pre-test (anthropometric tests and gas analyzer) according to the results of the tests, then the experimental group did HIFT exercises for eight weeks and four sessions per week. The training sessions lasted about 1 hour, with 10 minutes of warm-up and stretching, 40 minutes of training, and 10 minutes of cooling down. Exercises include moving with a board in hand, throwing the foot from a bosoball, squat jump with a medicine ball and immediately kneeling,

performing a blow with elastic resistance on the bosoball, performing a punch with an elastic and resisting the blow, crossing short obstacles with a medicine ball in hand, and execution of kick, saw movement with folded knee with plate in hand, rotation of pelvis from outside with folded knee and stretcher tied to knee, folded knee on step with plate in hand and movement above the head, push (push) and execution of blow, Two-legged jump and change to one-legged jump with vertical resistance, long scissor jump with foot shot and medicine in hand, which were performed by repeating 30 seconds and 5 sets for eight weeks. Before and after the eight-week training period, anthropometric measurements were performed. , body composition and breath gas test (gas analyzer) of young female taekwondo fighters were performed. The data were analyzed by analysis of covariance test at a significance level of $P < 0.05$. The results of analysis of covariance test showed:

- 1- The results showed that time did not have a significant effect on FVC, but the interaction of time and group had a significant effect on FVC values in young female taekwondo fighters.
- 2- The results showed that time and the interaction of time and group did not have a significant effect on FEV1 values in young female taekwondo fighters.
- 3- The results showed that time had a significant effect, but the interaction of time and group ($p = 0.09$) did not have a significant effect on the ratio of FEV1/FVC in young female taekwondo fighters.
- 4- The results showed that time and the interaction of time and group had a significant effect on the values of VO₂max in young female taekwondo fighters.
- 5- The results showed that time and the interaction of time and group did not have a significant effect on PEF values in young female taekwondo fighters.
- 6- The results showed that time and the interaction of time and group did not have a significant effect on FEF₂₅₋₇₅ values in young female taekwondo fighters.
- 7- The results showed that time and the interaction of time and group had no significant effect on VE/VO₂ values.
- 8- The results showed that time had a significant effect and the interaction of time and group did not have a significant effect on VE/VCO₂ values.

5. DISCUSSION

The results of the present study showed that HIFT exercises caused a significant increase in FVC and VO₂max values and a non-significant increase in PEF, FEF 25-75 and VE/VO₂ in young female Taekwondo fighters. Also, HIFT exercises were associated with a significant decrease in FEV/FVC1 ratio, a non-significant decrease in VE/VCO₂ and no significant change in FEV1 in young female taekwondo fighters. These results show that HIFT exercises affect pulmonary ventilation by improving respiratory indices. The results of the present study are in line with the findings of the researches of Mebhut et al. (34), Fatima et al. Azad et al. 1 (35). Respiratory function depends on many factors, including the nervous system, coordination of nerves, muscles, strength of respiratory muscles and lung dimensions. Increasing respiratory muscle strength and reducing airway resistance following physical activity is effective in improving lung function.

The lack of significant change in FEV1, PEF and FEF₂₅₋₇₅ levels in the present study can be due to the high level of preparation of the subjects, so that hormone secretion is probably less affected by the exercises. As the heart rate increases, the number and depth of breathing also increases and affects pulmonary ventilation. Aerobic exercises reduce the resistance of respiratory tracts and increase the capacity of pulmonary bubbles (36). It can be said that the

effectiveness of sports training is due to improving the strength and endurance of respiratory muscles, reducing inflammation and subsequently reducing airway resistance. These factors will reduce the apparent resistance of ventilation and allow efficient ventilation to be increased with less effort. Increasing the strength of respiratory muscles and reducing airway resistance during exercise is effective in improving lung function. Bronchi dilation caused by exercise reduces airway resistance and improves ventilation. Also, high-intensity exercise by engaging the muscles increases the range and depth of breathing to improve FVC and oxygen consumption and its diffusion rate (37).

In explaining the reasons for the effect of aerobic exercise on FVC and FEV1 following HIFT exercise, it should be said that neuromuscular coordination and greater activity of the diaphragm muscle improve pulmonary indices (38). An important factor to consider in HIFT training is the training method used. Most aerobic exercise and HIT protocols use a single exercise method, such as running or cycling [39-40], while HIFT exercise includes aerobic, anaerobic, and resistance exercises all in one. It is practiced. Many of the HIFT exercises involve upper body movements (eg, shoulder press, swimming, barfix, etc.) Most HIFT exercises are multi-joint movements that engage large parts of the body and create complex patterns of movement at different levels. (41), this is of interest because the pressor reflex has been shown to rapidly elevate HR and place greater hemodynamic stress, thus providing a potential mechanism for adaptation. (42). Aerobic exercise improves ventilatory functions and increases the body's ability to use oxygen in several ways: (1) it strengthens all muscles, improves circulation in the process, lowers blood pressure, and It reduces the workload of the heart. (2) It strengthens the respiratory muscles and since it can reduce the resistance of the air flow, it also facilitates the air flow inside and outside the lungs (43). An increase in the rate of breathing leads to an increase in the rate of ventilation per minute. During high-intensity exercise, the number of lung volume receptors and other receptors in the respiratory control center increases, which leads to an increase in ventilation. The high volume of exhalation with pressure in the first second in adults indicates a favorable ventilatory performance and it can be concluded that HIFT exercises have applied more work load on the inspiratory muscles and has led to a better strengthening of the expansion forces of the chest and increased their endurance, more research is needed to clarify these mechanisms.(44)

6. CONCLUSION

In general, the findings of this research show that eight weeks of HIFT training led to a significant increase in FVC and VO₂max values and a non-significant increase in PEF, FEF 25-75 and VE/VO₂ in young female taekwondo fighters. Also, HIFT exercises were associated with a significant decrease in FEV/FVC1 ratio, a non-significant decrease in VE/VCO₂ and no significant change in FEV1 in young female taekwondo fighters. According to the results of the research, probably HIFT exercises can be effective in improving the performance indicators of the respiratory system of young female taekwondo fighters. Therefore, performing HIFT exercises can be recommended as a safe and useful method to improve the lung function of women taekwondo athletes. However, more studies will be necessary to clarify definitive results in this field.

7. SUGGESTION

Eight weeks of HIFT exercises improved some performance indicators of the respiratory system in female taekwondo fighters, so it is recommended that female taekwondo athletes benefit from these exercises.

8. RECOMMENDATIONS

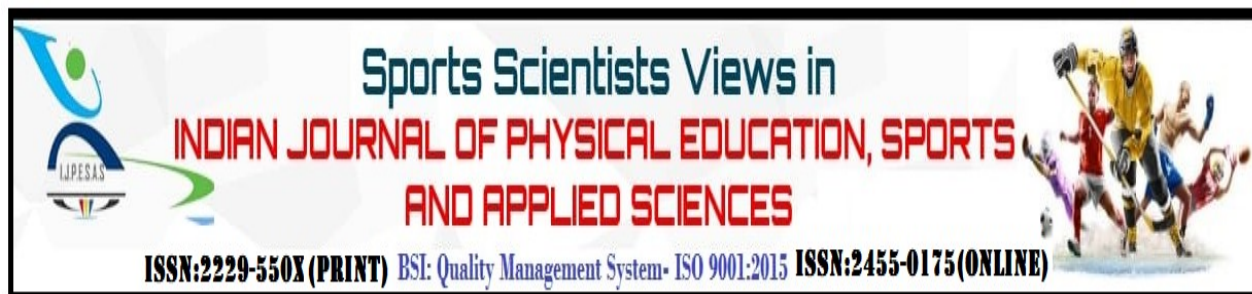
- 1- One of the limitations of the present study is the small number of subjects, therefore, a similar study with the measurement of these indicators in a larger statistical population and a larger number of subjects is suggested.
- 2- It is suggested that in a similar research, the effect of HIFT exercises on the indicators of the respiratory system performance in female taekwondo athletes.
- 3- It is also suggested that a similar research be done by measuring the performance indicators of the respiratory system following exercise protocols with different intensities.

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**RELATIONSHIP OF TECHNO-STRESS AND INTERNET
ADDICTION ON FEMALE PHYSICAL EDUCATION
TRAINEE TEACHERS**

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ABSTRACT

Finding out the connection between technological stress and internet addiction among female physical education trainee teachers is the aim of this abstract. 33 female trainee instructors for physical education, ranging in age from 21 to 25, were studied, and they were all from West Bengal's Hooghly district. They were chosen using a purposeful group design. The T evaluated techno-stress. Internet addiction was assessed using the Young's Internet Addiction Scale and the Westermann Scale. It was determined that, at 0.05 levels, there was a substantial and positive correlation between the domains of Internet Addiction and the domains of Techno-stress. The conclusion drawn from the results is that young female teachers who experience high levels of technological stress may also experience high levels of internet addiction.

Keywords: Trainee Teachers, ICT, Stress, Internet, Addiction.

1. INTRODUCTION

The internet is a new tool that's evolving as a necessary requirement in the daily life of individuals everywhere around the globe and its use has increased particularly among the youth. This drawback, which has had a detrimental effect on many people's educational, interpersonal, financial, and recreational elements of their life, may be a rising trend that involves relocating people throughout the world with varying regularity. Anxiety, desire, despair, aggression, preoccupation with substances, loss of control, withdrawal, performance impairment, and impaired decision-making are typical characteristics of internet addiction. ICT stress is an adverse psychological condition associated with the use or potential risk of ICT usage, influenced by the sense of association in nursing imbalance between resources and demands related to the use of ICTs, which results in a very high level of uncomfortable psycho-physiological activation as well as the occurrence of adverse attitudes towards ICTs.

It can also be classified as a maladaptive problem brought on by students' failure to cope with technology, both dynamic and technological, or as an association in nursing accommodating condition, produced by the lack of ability to disrupt advancing digital technologies healthily. ICT stress consequently appears when ICT core competencies exceed students' threshold of proficiency at various points in an institution or when technological expectations exceed its capacity to meet them. Among students enrolled in learning settings with integrated ICT, one may notice diminished learning commitment, burnout, poor performances, and inclinations to stop technology-enhanced learning. This study aims to gauge the level of ICT stress among working instructors.

Increased communication opportunities have been made possible by the rapid expansion and dissemination of the internet and apps like Facebook, Instagram, WhatsApp, Snap Chat, etc. Information can be filtered by news apps like Google News and In-Shorts, and apps like Google Pair and Skype for Live Video Calling provide social engagement. However, some people's excessive and disorderly use has led to the emergence of internet addiction. In actuality, younger internet users are more likely to develop an addiction to the internet than older users. In the recent decade and during the pandemic time, there has been an association in the enormous increase of internet use, not just in Asian countries but also globally. environmental and psychological aspects of scholars' and university students' lives of scholars and university students could leave them disproportionately liable to net addiction.

. Internet addiction leads to inactivity, a decreased capacity for social interaction that may end in loneliness, and a false awareness of others online. Long sessions online can also cause the neck to flex forward, physical changes, and eyesight problems like eye strain and blurred vision. Obsessive compulsive disorders can be brought on by squandering time unnecessarily and checking the phone incessantly at random intervals. In extreme circumstances, radiation from mobile screens and other surfaces might result in headaches and cephalalgia. The purpose of the study is to determine the prevalence of internet addiction among young adults and to raise awareness of the problems caused by excessive internet use, which were previously described. The study evaluates the stress caused by ICT and internet addiction. among female physical education student teachers or trainee teachers. In this study an attempt is made to find out the relationship among female physical education student teachers or trainee teachers.

The primary goal of the study is to evaluate the association between technological stress and internet addiction in aspiring physical education teachers. It may be useful for the teachers to assess the psychological status of the trainee female physical education teachers, maintain their

equilibrium, and create training learning schedules for them if they are informed about the characteristics of ICT-oriented stress and addiction.

2. METHODOLOGY

2.1 Sample

The thirty three female student instructors of physical education who were between the ages of 21 and 25 were chosen for the study. The Hooghly district provided the subjects. A deliberate group design was employed.

2.2 Description of Scale

The T. Westermann Scale was used to assess technological stress, while the Young's Internet Addiction Scale was used to assess internet addiction.

2.3 Statistical Method:

The correlation was computed, 0.05 levels.

3. RESULTS

TABLE 1
RELATIONSHIP OF TECHNO-STRESS AND INTERNET ADDICTION ON FEMALE PHYSICAL EDUCATION TRAINEE TEACHERS

N	Variables	Mean	Standard Deviation	Calculated "r"	Tabulated "r"
33	Techno-stress	27.484	6.569	0.389*	0.344
	Internet Addiction	43.424	15.557		

0.05 level of confidence

Data revealed that significant and positive relationship between Internet Addiction and Techno-stress at 0.05 level of significant. Techno-stress, Internet Addiction are positively correlated to each other.

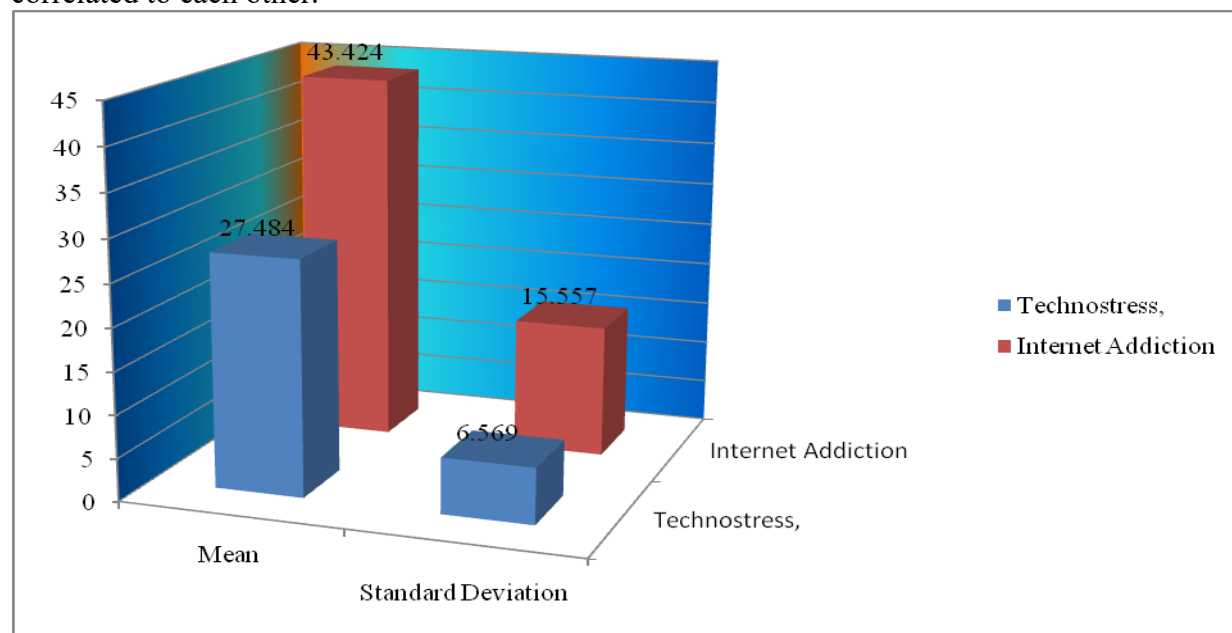


Figure1: Shows the Mean Value and Standard Deviation of Technostress and Internet Addiction

4. DISCUSSION

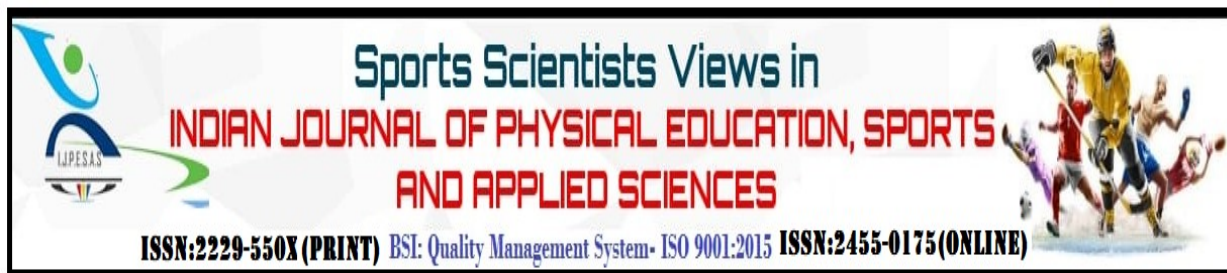
This study improves teaching techniques and aids in the formation of shrewd study habits. The female trainee physical education teachers would be able to work very hard and conquer their addiction if they maintain a good attitude and strong study habits. It shown that a rise or fall in technological stress might cause a corresponding rise or fall in net addiction, and vice versa. Undoubtedly, an increase in the frequency of techno-stress is linked to excessive internet use and ICT disturbances of traditional lifestyles.

5. CONCLUSION

According to the study, there is a significant positive association between technological stress and internet addiction.

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**SACHIN TENDULKAR: THE PEOPLE'S CHAMPION - A
STUDY OF HIS LIFE, HUMILITY, PHILANTHROPY,
AND ENDURING POPULARITY IN
INDIA AND BEYOND**

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ABSTRACT

Sporting celebrities have become an integral part of popular culture in recent years, with their influence extending far beyond the realm of sports. These individuals have achieved a level of fame and recognition that transcends their athletic abilities, becoming cultural icons and role models for people all around the world. This abstract provides an overview of the concept of sporting celebrities and their impact on society. Sporting celebrities are individuals who have achieved fame and recognition through their achievements in sports. They are known for their exceptional talent, hard work, and dedication to their craft. Sporting celebrities are not only admired for their athletic abilities but also for their personalities, values, and personal struggles. They have become symbols of inspiration and hope for many, inspiring people to pursue their dreams and overcome challenges. In this article, we take one sporting celebrity, Indian cricketer Sachin Tendulkar, and assess his image in popularity across the globe and his impact on the social culture of the region. The study also reveals that his humble personality and philanthropic work have contributed to his popularity among fans.

Keywords: cricket; sports icon; philanthropy; achievements; fame; humility; community outreach;

1. INTRODUCTION

Sachin Tendulkar is one of the most popular and iconic cricketers in the world. He is regarded as a legend in the sport and has been a household name for several decades. This paper aims to examine the popularity of Sachin Tendulkar across the globe. The study uses a mixed-methods approach to analyze the data, including both quantitative and qualitative research methods. The quantitative data was collected through surveys and social media analytics. The surveys were conducted among cricket fans across different countries to assess their familiarity with Sachin Tendulkar and their perceptions of his popularity. The social media analytics data was collected from various online platforms to analyze the trends in the mentions and engagement of Sachin Tendulkar. The qualitative data was collected through interviews with cricket experts, journalists, and fans. The findings of the study indicate that Sachin Tendulkar is widely recognized and admired across the globe, with his popularity extending beyond the borders of India. He is regarded as one of the greatest cricketers of all time and has inspired millions of fans with his achievements and dedication to the sport.

2. CRICKET IN WORLD

Cricket is one of the most popular sports in the world, with millions of fans and players spread across the globe. The sport has a long and rich history, dating back to the 16th century, and has since grown into a global phenomenon (Manners, 2018). The International Cricket Council (ICC) is the governing body of cricket worldwide, with 12 full members and several associate members. The full members of the ICC are Australia, Bangladesh, England, India, New Zealand, Pakistan, South Africa, Sri Lanka, West Indies, Afghanistan, Ireland, and Zimbabwe (Barry, 2019). Cricket is played in different formats, including Test cricket, One Day International (ODI) cricket, and Twenty20 (T20) cricket. Test cricket is the longest format of the game, with matches lasting up to five days, while ODI and T20 cricket are shorter formats, with matches lasting one day and three hours, respectively (Darnell et.al., 2018 & Bajpai et.al., 2020). The popularity of cricket varies across different regions of the world. In countries like India, Australia, England, and South Africa, cricket is a national obsession, with millions of fans following the sport with great passion and fervor. In other regions, such as the Caribbean, cricket has a strong cultural significance, with players and teams becoming symbols of national pride (Bojicic, 2017). Cricket has also become a lucrative industry, with players earning significant amounts of money through endorsements, sponsorships, and player contracts. The Indian Premier League (IPL), for instance, has become one of the most lucrative cricket leagues in the world, attracting players from around the globe (De Zoysa, 2019, Giustozi, 2019).

Cricket is a popular and influential sport worldwide, with millions of fans and players spread across the globe. Its impact on different regions of the world varies, with some countries treating it as a national obsession, while in others, it has cultural significance. As the sport continues to grow and evolve, its impact on popular culture and the global economy is likely to increase.

3. CRICKET IN INDIA

Cricket is the most popular sport in India and has a long and rich history in the country. It is widely considered to be more than just a sport, with cricket being deeply ingrained in the cultural fabric of India. The game has had a profound impact on Indian society, with cricket being a symbol of national pride and identity (Singh, 2017). Cricket was introduced to India during the British colonial period and quickly became popular among the Indian elite (Singh, 2019). The first cricket club in India, the Calcutta Cricket Club, was established in 1792. However, it wasn't until the 1930s that cricket began to gain widespread popularity across the country, with the Indian cricket team playing its first Test match in 1932 (Chaudhuri,

2018). Since then, cricket has become a national obsession in India, with millions of fans following the game with great passion and fervor. The Indian Premier League (IPL), a professional Twenty20 cricket league, has only added to the popularity of the game in India. The IPL has become one of the most-watched and lucrative cricket leagues in the world, with players from around the globe vying for a spot in the tournament (Stump, 2020 & Mitra et.al., 2019).

The success of the Indian cricket team has also contributed to the popularity of the sport in the country. India has won multiple major international tournaments, including the Cricket World Cup in 1983 and 2011, the ICC Champions Trophy in 2002 and 2013, and the T20 World Cup in 2007. The Indian cricket team has produced many legendary players, including Sachin Tendulkar, Sunil Gavaskar, Kapil Dev, and MS Dhoni, who have become cultural icons in India (Menon et.al., 2018, Bhatia, 2019). Cricket has also had a significant impact on Indian society, with the game being a unifying force that transcends regional and cultural differences. The sport has provided a platform for social and political causes, with cricketers using their platform to raise awareness about issues such as gender equality and environmental conservation (Barmola, 2018).

Cricket has a special place in the hearts of the Indian people and is an integral part of the country's cultural identity. The game has a rich history in India, and its popularity shows no signs of slowing down. The impact of cricket on Indian society cannot be overstated, and it will continue to be a unifying force that brings people together for generations to come.

4. CELEBRITY, CRICKET, AND TENDULKAR

Among other cricketers icons, in this article we are discussing about one of the greats of the game Sachin Ramesh Tendulkar. Sachin Tendulkar is a cricketer legend who has inspired millions of people around the world with his exceptional skills, dedication to the sport, and humble personality. He is widely regarded as one of the greatest batsmen of all time, having set numerous records throughout his career spanning over two decades. This literature introduction provides an overview of Sachin Tendulkar's life, career, and impact on the sport of cricket (Gupta, 2019). Sachin Tendulkar was born on April 24, 1973, in Mumbai, India. He showed an early interest in cricket and started playing at the age of 11. He made his debut for the Indian cricket team in 1989 at the age of 16, and soon became a rising star in the sport. Tendulkar's career spanned 24 years, during which he played in 200 Tests, scored 15,921 runs, and amassed 51 Test centuries, a record that still stands today (Kandathil et.al., 2018, Srivastava, 2018 & Singh et.al., 2018). Throughout his career, Tendulkar faced some of the best bowlers in the world and consistently performed at the highest level. His technique, precision, and concentration were unparalleled, and he was known for his ability to dominate even the most challenging conditions (Anand, 2017). Tendulkar's success on the cricket field earned him numerous accolades, including the Wisden Cricketer of the Year award in 1997, the Arjuna Award in 1994, and the Bharat Ratna, India's highest civilian honor, in 2013 (Dhulipudi, 2020). However, Tendulkar's impact on the sport extends beyond his individual achievements. He has been a role model and inspiration to millions of people around the world, especially in his home country of India. His humble personality, dedication to the sport, and philanthropic work have made him a beloved figure both on and off the cricket field (Rahman et.al., 2018).

Sachin Tendulkar's life and career are a testament to his exceptional talent, hard work, and dedication to the sport of cricket. His legacy is not only as one of the greatest cricketers of all time but also as a cultural icon who has inspired and impacted the lives of many. His contributions to the sport and to society will undoubtedly continue to be celebrated for years to come.

5.THE POPULARITY OF SACHIN TENDULKAR

Sachin Tendulkar, also known as the "Little Master," is one of the most popular and iconic cricketers in the world. He is widely regarded as one of the greatest batsmen of all time, and his popularity extends far beyond the borders of his home country, India. Here are some examples of Sachin Tendulkar's popularity across the world:

1. Australia: During India's tour of Australia in 2011-12, Tendulkar's popularity was on full display. The Sydney Cricket Ground, where India played a test match, was sold out for all five days of the game, with many fans coming to watch Tendulkar play. Australian cricketing legend Ricky Ponting, who played against Tendulkar in numerous matches, has also spoken highly of Tendulkar's popularity in Australia.
2. South Africa: Tendulkar has always been popular in South Africa, where he has played numerous matches over the years. In fact, in 2010, he was named as the most popular cricketer in South Africa, beating out the likes of Jacques Kallis and Graeme Smith (Roy, 2019).
3. Pakistan: Despite the long-standing cricketing rivalry between India and Pakistan, Tendulkar is immensely popular in Pakistan. During a tour of Pakistan in 2004, Tendulkar was greeted with cheers and applause from Pakistani fans, who held up signs reading "Sachin, we love you." In fact, a Pakistani fan once famously said, "I hate India, but I love Sachin." (Mishra, 2019).
4. United Kingdom: Tendulkar's popularity in the United Kingdom is evident by the fact that he has been invited to give lectures at prestigious institutions such as the Oxford Union and the London School of Economics. He has also been honored by the Queen, who awarded him with an honorary Order of Australia in 2012 (Shetty et.al., 2019).
5. United States: Despite cricket not being a popular sport in the United States, Tendulkar's popularity has transcended boundaries. He was invited to ring the opening bell at the New York Stock Exchange in 2014, and he has also been featured in Time Magazine's list of the 100 most influential people in the world.

6. TENDULKAR AND SOCIAL MEDIA:

Sachin Tendulkar has a strong presence on social media with active pages on popular platforms such as Twitter, Facebook, Instagram, and LinkedIn. These pages are used to share his personal and professional updates, as well as to interact with his fans across the world (Waghmare, 2020).

On Twitter, Sachin Tendulkar's official handle is @sachin_rt, which has over 35 million followers. He shares his views on various topics, posts pictures, and interacts with his followers through this handle.

On Facebook, Sachin Tendulkar's official page is @sachintendulkar, which has over 28 million likes. The page is used to share his personal and professional updates, including his charity work and endorsements.

On Instagram, Sachin Tendulkar's official handle is @sachintendulkar, which has over 26 million followers. The page features pictures and videos of his personal and professional life, as well as his love for food and fitness.

Sachin Tendulkar also has an active LinkedIn page where he shares his professional updates and experiences. He uses this platform to connect with other professionals and share his insights on various topics.

In addition to these pages, Sachin Tendulkar also has a personal website (www.sachin.in) where fans can access his biography, career highlights, and latest news.

Sachin Tendulkar's popularity extends far beyond his home country of India. He is admired and revered by cricketing fans all around the world and has left an indelible mark on the sport. His achievements and popularity have made him an icon not only in cricket but also in the world of sports.

7. SACHIN TENDULKAR AS A PHILANTHROPIST

Sachin Tendulkar, a former Indian cricketer, has been actively involved in philanthropic work throughout his career and continues to do so. Some of his notable philanthropic initiatives include:

1. **Sachin Tendulkar Foundation:** In 2010, Tendulkar established the Sachin Tendulkar Foundation to support underprivileged children across India. The foundation focuses on providing basic amenities like education, healthcare, and sanitation to children in need (Hoque 2018).
2. **Apnalaya:** Tendulkar has been associated with Apnalaya, a Mumbai-based NGO, for many years. He has supported the organization's efforts to provide health, education, and livelihood opportunities to vulnerable communities.
3. **Support for Cancer Patients:** Tendulkar has been actively involved in supporting cancer patients and raising awareness about the disease. He has contributed to several cancer-related initiatives, including the Cancer Patients Aid Association and the Tata Memorial Hospital (Khan et.al., 2019).
4. **Disaster Relief:** Tendulkar has also contributed to disaster relief efforts in India, including the Gujarat earthquake in 2001 and the Mumbai terror attacks in 2008. He donated a significant amount of money to support the victims and their families.
5. **Swachh Bharat Abhiyan:** Tendulkar has been a strong supporter of the Swachh Bharat Abhiyan, a government initiative aimed at promoting cleanliness and hygiene across India. He has participated in various campaigns to raise awareness about the importance of cleanliness and sanitation.
6. **Sachin Tendulkar adopted a village called PuttamrajuKandriga in Andhra Pradesh, India, in 2014, as part of the Sansad Adarsh Gram Yojana (SAGY) scheme launched by the Indian government. The scheme aims to develop model villages across the country by focusing on improving the social, cultural, and economic conditions of the rural population.**

Tendulkar adopted the village with the objective of providing basic amenities like water, sanitation, education, and healthcare to the villagers. He visited the village and interacted with the locals to understand their problems and needs. He also announced a sum of Rs. 2.79 crore from his MP Local Area Development (MPLAD) fund for the development of the village. Under Tendulkar's guidance, several initiatives were undertaken to improve the village's infrastructure and quality of life. Some of the key initiatives include:

- a. **Building toilets:** Tendulkar launched a program to build toilets in every home in the village, to improve sanitation and hygiene.
- b. **Providing clean drinking water:** A water treatment plant was installed to provide clean drinking water to the villagers.
- c. **Developing education facilities:** Tendulkar supported the development of schools and educational facilities in the village, to provide access to quality education to the children.

- d. Enhancing healthcare facilities: A mobile medical unit was launched to provide medical facilities to the villagers, and a diagnostic center was set up to offer basic healthcare services.

Sachin Tendulkar's adoption of PuttamrajuKandriga has had a significant impact on the village's social and economic development. His efforts have helped provide basic amenities, education, and healthcare facilities to the villagers, improving their quality of life (The Hindu, 2017). Sachin Tendulkar's philanthropic work has had a significant impact on the lives of many people in India. His efforts have helped provide basic amenities and opportunities to underprivileged children, support cancer patients, and contribute to disaster relief efforts.

8. SACHIN TENDULKAR AS A SYMBOL OF HUMBLENESS

Sachin Tendulkar, the former Indian cricketing legend, is often considered as a symbol of humbleness and modesty in the cricketing world. Despite achieving unparalleled success in his career and being recognized as one of the greatest cricketers of all time, Tendulkar has always remained grounded and humble. Throughout his career, Tendulkar demonstrated a level of professionalism, dedication, and sportsmanship that earned him respect not only from his teammates but also from his opponents. He never allowed his success to get to his head and remained gracious in both victory and defeat. He also recognized the contributions of his teammates and always gave credit where it was due (Chavan et.al., 2018 &Chakraborty et.al., 2017).Tendulkar's humility was evident in his demeanor both on and off the field. He was always approachable, and his behavior towards his fans was admirable. Despite being one of the most sought-after personalities in the world, Tendulkar never refused an autograph or a photograph with his fans. He also used his celebrity status to support charitable causes and give back to society. Even after his retirement from cricket, Tendulkar has continued to remain humble and grounded. He has always been quick to acknowledge his flaws and has never shied away from giving credit to his team for his success. He has also used his influence to mentor and guide the next generation of cricketers, emphasizing the importance of hard work, dedication, and humility.

Sachin Tendulkar's career is a testament to the fact that it is possible to achieve great success while remaining humble and grounded. He has set an example for the younger generation of cricketers and demonstrated that it is important to remain humble and gracious, both in victory and defeat. Tendulkar's legacy extends far beyond cricket, and his life serves as an inspiration to people all around the world.

9. CONCLUSION

In conclusion, Sachin Tendulkar is one of the most popular and revered cricketers of all time. He has left an indelible mark on the sport with his incredible skills and achievements and has inspired millions of fans across the world. Despite retiring from the sport several years ago, his legacy continues to live on through his fans and the impact he has had on cricket.

Tendulkar's humble nature and dedication to the sport have made him a role model for many aspiring cricketers, and his impact on Indian cricket and global cricket cannot be overstated. With his strong presence on social media, Tendulkar has been able to connect with fans across the world and share his insights and experiences. Overall, Sachin Tendulkar's popularity is a testament to his outstanding career and the inspiration he has provided to cricket fans everywhere.

10. DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).

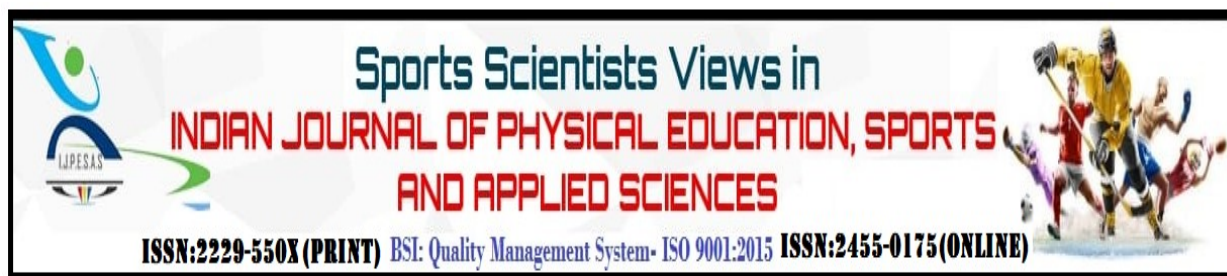
11. ACKNOWLEDGEMENT

We would like to express our sincere appreciation to all the authors for providing technical support for this research. We would also like to thank them for providing access to their resources and for their technical assistance. We are grateful to for their valuable guidance and suggestions throughout the course of this research.

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A COMPARATIVE STUDY OF TEAM SPIRIT AT VARIOUS LEVELS AMONG INDIAN MALE VOLLEYBALL PLAYERS

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ABSTRACT

Background : A team as a work group or unit with a common purpose through which members develop mutual relationships for the achievement of goals/tasks. It requires the sharing of talent and leadership, the playing of multiple roles. **Aim :** The purpose of the study was to explore the team spirit of Indian male volleyball players. **Sample:** A sample consisted of two hundred and thirty four Indian volleyball players to serve as subjects for this study. The subjects were in age group of 19 to 21 years. The subjects were selected from amongst the National Volleyball Competitions who had already represented their respective state team in senior national level volleyball competitions held at different corners of India) during the session 2017- 2019. **Data Collection:** To collect the reliable data from the sample, the Team spirit Questionnaire developed by Matt M. Starcevich (1999) was employed on Indian Volleyball players to explore the sports team spirit. **Statistical Technique:** To assess the sports team spirit of Indian male volleyball players, mean, standard deviation, and t-ratio were computed. **Results:** High level team spirit was shown to be more prevalent among Indian male volleyball players, followed by medium and low levels. There was a notable difference among Indian male volleyball players between high level team spirit, medium level team spirit, and low level team spirit; and between medium level team spirit and low level team spirit. **Conclusion:** The highest level of teamwork was displayed by the male volleyball players from India, which contributed to their exceptional achievement.

Key words: Sports, Team Spirit, Indian Male, Volleyball Player, Competition.

1. INTRODUCTION

The coach's role as a leader has been the focus of sport psychology research. The leaders and leadership forces that may emerge or be appointed inside team membership itself have received little attention from researchers interested in team performance (Fuoss and Tropmann, 1985).

The psychological preparation is planned and carried out with the aim of enabling the sportsman to be in an ideal psychological state at the time of competition so that he can achieve the highest level of performance. It is based on the psychological characteristics of the sport, the competition conditions, and the sportsmen's personality structure (profile).

Success in sports appears to be partially influenced by psychological health and personality qualities. One can improve the accuracy of prediction in a variety of sports by using an athlete's personality profile, along with knowledge of his past experiences, coach's rating, anatomic and physiological traits, and so on.

Numerous research initiatives have been carried out both domestically and internationally to enhance athletic performance in the context of physical education. In the United States, they are essentially just starting to help the coach in making decisions that are valid and reliable regarding athletic performance, but many of the studies could be classified as theoretical or simply a study for its own sake as opposed to practical or applied research that the coaches could use. Many coaches, among others, undoubtedly view them as theoretical study that is essentially pointless and not immediately relevant to their goals (Vanek and Cratty, 1980).

An "energetic group of people who are committed to achieving common objectives, who work well together and enjoy doing so, and who produce high-quality results" is what Francis and Young (1979) characterised as a team.

A team, according to Johnson and Johnson (1991), is a group of interpersonal interactions organised to accomplish predetermined goals.

A team, in the words of Hairis (1986), is "a work group or unit with a common purpose through which members create reciprocal connections for the accomplishment of goals/tasks. Therefore, teamwork refers to collaborative and coordinated effort among persons working for a common goal. It requires the sharing of talent and leadership, the playing of multiple roles.

The current study's goal was to evaluate the sense of camaraderie among male and female national volleyball players. It was predicted that there would be a big disparity between national levels in terms of team spirit. volleyball players who are male and female

2. METHODOLOGY

2.1 Sample:

A sample of two hundred and thirty four male Indian volleyball players representing their respective state teams in Senior National Volleyball Competitions and who volunteered to participate in this study, were selected to serve as subjects for this study. The subjects were in age group of 19 to 21 years. The subjects were selected from Senior National Volleyball Competitions held at different corners in india during 2009- 2010 in their respective volleyball courts.

2.2 Instrumentation:

The Team Spirit Questionnaire, created by Matt M. Starcevich at CEO, the Centre for Coaching and Mentoring in 1999, was chosen as a criterion tool to assess team spirit among male volleyball players competing at the senior national level.

2.3 Collection of data:

The research scholar was able to conduct this study on National level male and female volleyball players during competitions conducted in 2009 after obtaining the appropriate approval from the organising secretary of the 58th Senior National Volleyball Competitions in Gwalior. At the site finals, the coaches and subjects were personally contacted and asked for their earnest collaboration. Respondents were summoned to a common location at a time when they were not busy and had plenty of time for the test. Prior to the administration of each exam, the subjects received any necessary instructions. The researcher encouraged the respondents by promising to send an individual abstract of his study's findings to each subject.

Responses were protected from disclosure so that the subjects wouldn't hide their true emotions. The questionnaire had no stated time limit, although individuals were encouraged to complete it as quickly as they could. The questionnaires were retrieved from the participants as soon as a group of them finished them, and it was confirmed that no question had gone unanswered.

3. RESULTS

To assess the Indian male volleyball players on team spirit, mean, standard deviation, and t-ratio were computed and data pertaining to this, have been presented in table 1 to 6 .

**TABLE 1
DESCRIPTIVE STATISTICS ON VARIOUS LEVELS TEAM SPIRIT OF INDIAN MALE VOLLEYBALL PLAYERS**

Level of Team spirit	N	M	SD
High team spirit	71	83.85	3.647\
Medium team Spirit	105	68. 85	5.220
Low team spirit	58	51.59	5.208

The mean scores on team spirit of three different levels as indicated by Indian male volleyball players at their Senior national level participation have been depicted in figure 1 to 4

To find out the significant differences between Indian male volleyball players on high and medium level team spirit, t-ratio was computed and data pertaining to this have been presented in Table 2 to 4.

**TABLE 2
SIGNIFICANCE OF DIFFERENCES BETWEEN MEAN SCORES OF HIGH TEAM SPIRIT AND MEDIUM TEAM SPIRIT AMONG INDIAN MALE VOLLEYBALL PLYERS**

Levels of Team Spirit	N	Mean	MD	σ DM	t-ratio
High Medium	71 105	83.85 68.85	14.997	0.715	20.98*

*Significant at .05 level
t.05 (174)= 1. 97

It is evident from table 2, that the high significant difference existed between high and medium level team spirit of Indian male volleyball players , as the obtained t-value of 20.98 was very much higher than the required t.05 (174)=1.97.

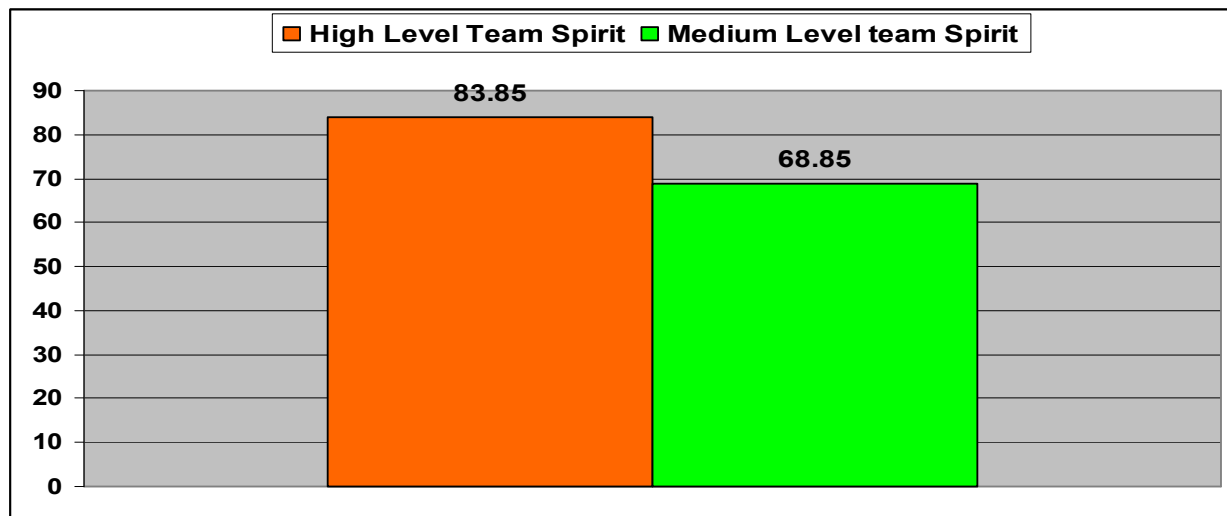


Fig.1: Mean Scores of High, Medium and Low Team Spirit among Indian Male Volleyball Players.

TABLE 3
SIGNIFICANCE OF DIFFERENCES BETWEEN MEAN SCORES OF HIGH TEAM SPIRIT AND LOW TEAM SPIRIT AMONG INDIAN MALE VOLLEYBALL PLYERS

Sex	N	Mean	MD	σ DM	t-ratio
High	71	83.85.	32.259	0.782	41.27*
Low	58	51.59			

*Significant at .05 level

$t_{.05} (127) = 1.98$

It is evident from table 3, that the high significant difference existed between high and low level team spirit of Indian male volleyball players, as the obtained t-value of 41.27 was very much higher than the required $t_{.05} (127) = 1.98$.

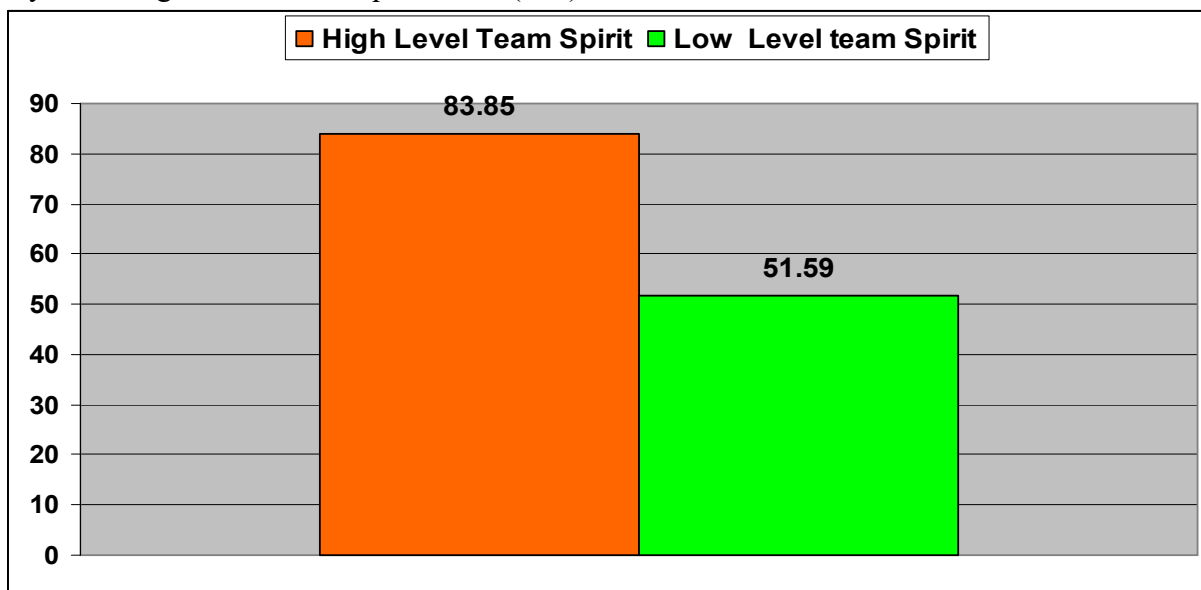


Fig.2: Mean Scores of High, Medium and Low Team Spirit among Indian Male Volleyball Players.

TABLE 4
SIGNIFICANCE OF DIFFERENCES BETWEEN MEAN SCORES OF MEDIUM AND LOW TEAM SPIRIT AMONG INDIAN MALE VOLLEYBALL PLAYERS

Levels of Team Spirit	N	Mean	MD	σ DM	t-ratio
Medium	105	68.85	17.28	0.853	20.23*
Low	58	51.59			

*Significant at .05 level
 $t_{.05 (161)} = 1.98$

It is evident from table 4, that the high significant difference existed between medium and low level team spirit of Indian male volleyball players, as the obtained t-value of 20.23 was very much higher than the required $t_{.05 (161)} = 1.98$.

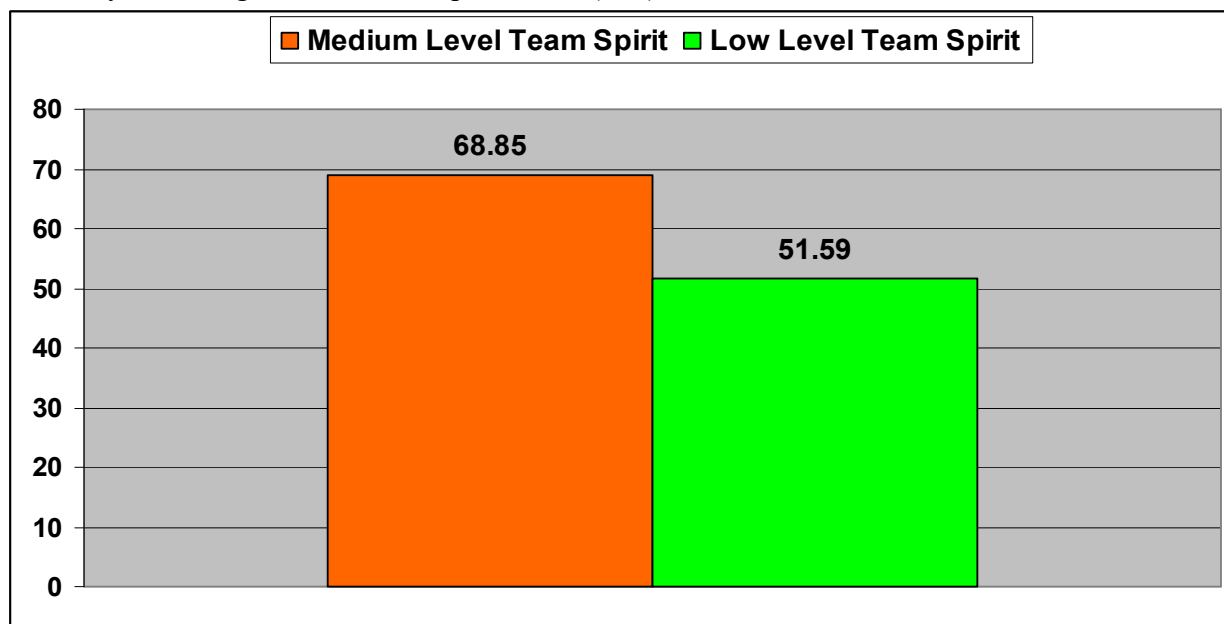


Fig.3: Mean Scores of High, Medium and Low Team Spirit among Indian Male Volleyball Players.

TABLE 5
ONE WAY ANALYSIS OF VARIANCE AMONG MEAN SCORES ON HIGH, MEDIUM AND LOW TEAM SPIRIT OF INDIAN MALE VOLLEYBALL PLAYERS

Source of Variance	SS	df	MS	F-ratio
Between the Groups	32233.72	2	16616.86	722.78*
Among the Groups	5312.927	231	23.00	
Total	38546.65	233		

Significant at .05 level
 $F_{.05 (2, 231)} = 3.04$

It is evident from table 5, that there was statistically significant difference existed among high, medium and low levels team spirit of Indian male volleyball players, as the obtained F-value of 722.78 was very much higher than the required $F_{.05 (2, 231)} = 3.04$.

As the F-ratio was found to be significant, Scheffe's Test of Post-hoc comparison was applied to study the significance of differences among Indian male volleyball players in their team spirit levels and the data pertaining to this have been presented in Table 6.

TABLE 6
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS OF TEAM SPIRIT OF INDIAN MALE VOLLEYBALL PLAYERS

High Level	Medium Level	Low Level	Paired Mean Difference	Confidence Interval
83.85	68.85	-	15.00*	2.28
83.85	-	51.59	32.26*	1.95
-	68.85	51.59	17.26*	2.08

* Significant at .05 level.

It is evident from the Table 6, that there were significant differences in between high level team spirit - medium level team spirit followed by low level team spirit; between medium level team spirit -low level team spirit of Indian male Volleyball, as the obtained mean differences of 15.00, 32.26 and 17.26 . were very much higher than the confidence interval (CI) of 0. 2.28, 1.95 and 2.08 respectively.

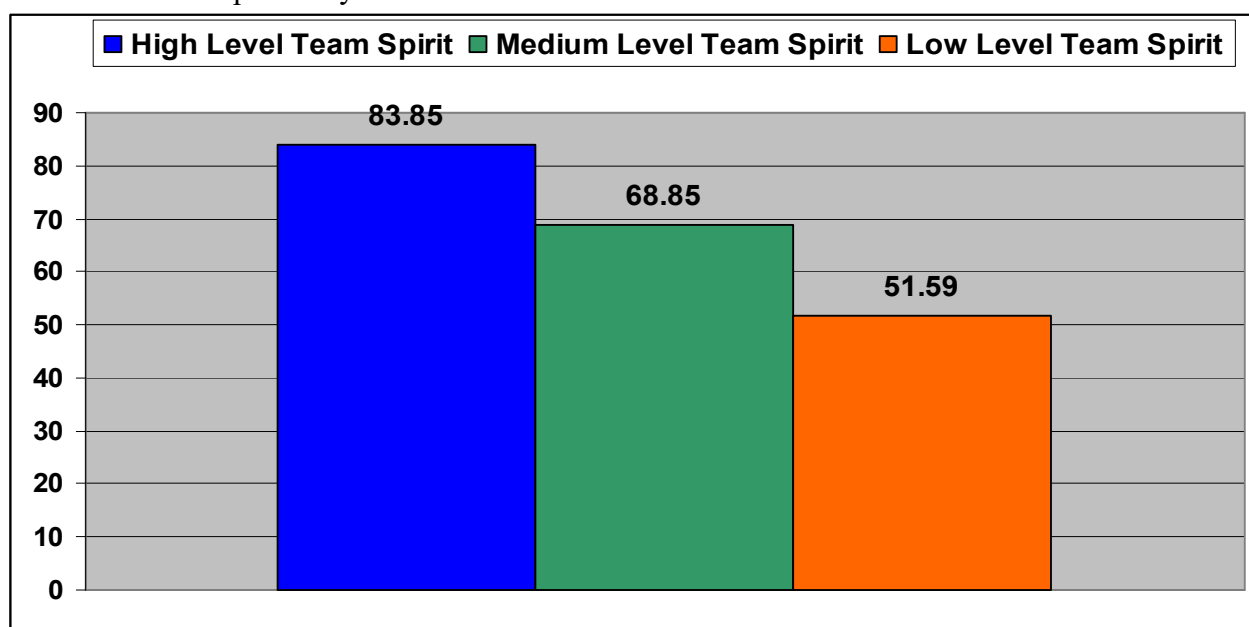


Fig.4: Mean Scores of High, Medium and Low Team Spirit among Indian Male Volleyball Players.

4. DISCUSSION

Results of descriptive data on different types of team spirit among male and female national-level volleyball players showed that more than one-four of them fell into the high team spirit category, less than 50% into the medium team spirit category, and roughly one-fourth into the low team spirit category.

There were noticeable variations among Indian male volleyball players in their high, medium, and low team spirit when they were compared on a scale of high, medium, and low. It indicates that Indian male volleyball players displayed diverse levels of team spirit according on their level of competitive experience, age at which they began practising, and age at which they began competing.

When the general sense of teamwork among Indian male volleyball players was compared, no discernible differences were discovered. However, it was discovered that male volleyball players at the national level had greater overall team spirit.

Additionally, it was predicted that Indian male volleyball players' levels of team spirit would differ significantly. Given that the obtained F-value for the male volleyball players' sense

of teamwork was significantly higher than the necessary value, this hypothesis has been accepted in its entirety.

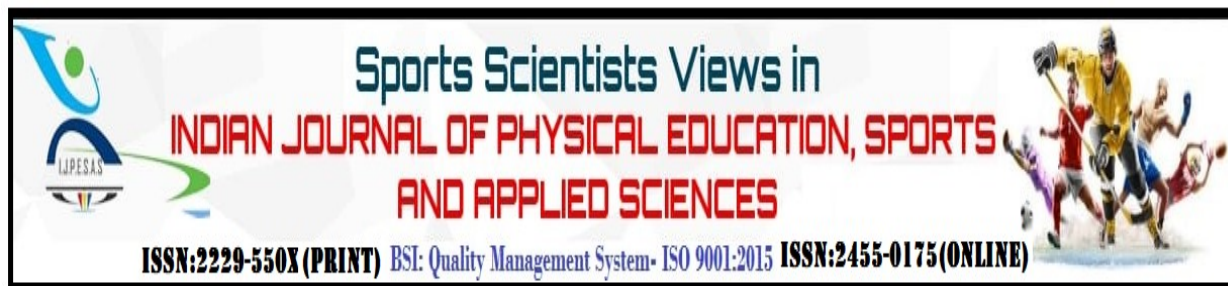
5. CONCLUSIONS

The following findings are listed within the constraints of the current study:

1. High level team spirit was shown to be more prevalent among Indian male volleyball players, followed by medium and low levels.
2. There was a notable difference among Indian male volleyball players between high level team spirit, medium level team spirit, and low level team spirit; and between medium level team spirit and low level team spirit.

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INJURIES AMONG FEMALE FOOTBALL PLAYERS: A CROSS-SECTIONAL SURVEY OF UNDER-17 GIRLS

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ABSTRACT

The purpose of this cross-sectional survey is to analysis the physiotherapy treatment, injury prevention program, football training, awareness, types, incidence, mechanism and recurrence of injury among female players in Dervan "Energia" football competition (under-17 girls), 2023. Around 34 girls were taken part at SVJCT's Sports academy, Dervan, Maharashtra. The questionnaire was framed in Google form that related with football related injuries and its prevention program through physiotherapy and rehabilitation. The questions were in English and that were translated through the coaches into their local language in case any misunderstanding. Girls responded their questions before their games. Answers were framed in spread sheet and converted into word format. Results were analysed and suggestions were given to female football players based on their responses.

Keywords: Female football players, Injury awareness, Injury prevention program, Physiotherapy treatment

1. INTRODUCTION

Women's football is a physically taxing contact sport that frequently involves sprinting, jogging, walking, jumping, and changing directions. The physical demands of the sport vary depending on the level of competition (youth, amateur club, elite club, international), but injury incidence rates (IIRs) are high in the women's game at all levels¹. Even though women's football is increasingly popular and there are more female players than ever, little research has been done on knowledge about physiotherapy treatment, injury prevention program and the injuries sustained by female football players².

The integration of evidence into routine practise is the main focus of current approaches to injury prevention. Influencing players' attitudes and beliefs is one effective strategy.

This study's goal was to document players' opinions on injury prevention³. Unfortunately, increased participation is also linked to higher injury rates, especially among elite athletes. Injuries in women's football differ from those in men's football in type and severity⁴. Physical inactivity is a public health concern, and integrating physical activity (PA) promotion into healthcare systems is a key change agent.

Numerous factors, such as healthcare professionals' PA habits and their familiarity with the PA guidelines, affect PA promotion in everyday clinical practise. Little is known about the extent to which PA is currently promoted in physiotherapy practise or the variables that affect it⁵.

2. METHODOLOGY

2.1 Study design

Cross-sectional survey

2.2 Methods and Materials

Google Form was used to create a survey tool. The free, web-based Google Docs Editors suite from Google includes the survey administration tool known as the Google Form. Only a web application is available for the Google Form. The app enables users to collaborate in real-time with other users while creating and editing surveys online. Spreadsheets can be automatically updated with the collected data. This was decided upon in light of the anticipated volume of responses and resulted in the closure of all questions with limited options⁶. Questions about the player's knowledge of football training, the number of injuries, the types of injuries, the mechanism of injury, the likelihood of recurrence of injury, and the injury prevention programme were created specifically for this survey.

It also includes questions about warm-up/warm-down and physiotherapy treatments. Representatives from SVJCT Sports Academy and the competition's organiser gave their approval to the entire survey. The survey was started among players after they returned from the matches. The student physiotherapists were encouraged to explain about the importance of this survey to the players.

3. RESULTS

Among the 34 girls, 5 (14.7%), 5 (14.7%), 9(26.5%), 7(20.6%), 4(11.8%), and 4(11.8%) are, respectively, 12 years, 13 years, 14 years, 15 years, 16 years, and 18 years old.

Football players trained for 1 year, 1.5 years, 2 years, 3 years, 4 years, 5 years, 7 years, and 8 years, respectively.

According to the following statistics: 2 (5.9%), 1 (2.9%), 3 (8.8%), 2 (5.95), 6 (17.6%), 2 (5.9%), and 1.9%. Girls trained for an average of 32.4% more than 10 hours per week, 32.4% more than 7 hours per week, and 44.1% between 7 and 10 hours. No injuries, 1, 2, and more than 3 injuries were sustained by 44.1%, 32.4%, 14.7%, and 8.8% of participants during the season, respectively.

Girls were more likely to suffer from knee injuries (8.23%), groin injuries (2.59%), hamstring strains (4.11.8%), quadriceps strains (2.59%), and ankle sprains (12.35%). Injuries occurred in 35.3% of cases during games, 32.4% of cases during practises, and 11.8% of cases there were none. The major mechanisms of injuries were contact 11 (32.4%), sprinting 11 (32.4%), landing 3 (8.8%), overuse 2 (5.9%), and change of direction 6 (17.6%).

The most common injuries among players were ankle sprains, with 13 (38.2%), knee injuries 5 (14.7%), calf strains 3 (8.8%), quadriceps strains 2 (5.9%), hamstring strains 2 (5.9%), and any fracture or dislocation 1 (2.9%). There were 76.5% who said they were unaware of injury prevention programmes, 14.7% who said they were aware of them and 8.8% who said they might be. Before the game, 97.1% warmed up properly. 50% of those who needed physiotherapy for these types of injuries showed up, while 47.1% did not.

4. DISCUSSION

In this cross-sectional study, the injury awareness, injury prevention program and physiotherapy treatment were major components to analyse among girl football players during Dervan “Energia” football competition (under-17 girls), 2023 at SVJCT Sports academy, Dervan, Maharashtra.

Soligard Tand et al suggested that the risk of severe injuries, overuse injuries, and injuries in general was decreased, even though the primary outcome of a reduction in lower extremity injuries did not reach significance. This suggests that young female football players can avoid injuries with a structured warm-up routine⁷. Owoye OBand et al concluded that the overall injury rate among Nigerian semi-professional football players is high, but the majority of injuries do not cause lost time. The majority of the injury pattern matches earlier studies. To develop injury prevention programmes among African athletes, more prospective studies are required⁸. Lion A and et al recommended that a digital database like the Training and Injury Prevention Platform for Sports (TIPPS) could be used to improve the methodology for collecting injury data. This system enables stakeholders to share critical information, monitor players, provide risk factor warnings, and raise awareness of the injury problem in addition to allowing for the systematic recording of injury data (as well as training load) by the players or medical staff⁹. Hulawale, K and et al concluded that the use of physiotherapy camps and seminars might be used to educate recreational football players about the value of physiotherapy in injury prevention and post-injury recovery. By providing them with a physical as well as a mental boost and motivation, various physiotherapy treatment methods may assist improve recreational footballers' performance over the long run. Additionally, it is crucial to have a physiotherapist on staff at all football training facilities to instruct the players on the proper techniques and how often, when, and what sort of exercises they should perform. This will reduce the likelihood of injuries developing¹⁰.

There were a few limitations in this study: Lack of cooperation was among coaches to circulate the questions to players through whatapps group. Lack of mobile phones was among the female players. Questions were prepared in English that to be translated to their native language among players.

5. CONCLUSIONS

1. This cross-sectional survey concluded that the awareness of injury rate among girls was minimal.
2. Most of the girls were aware about warm up program before the match. While half of the girls were known about physiotherapy and remaining girls did not know about physiotherapy.

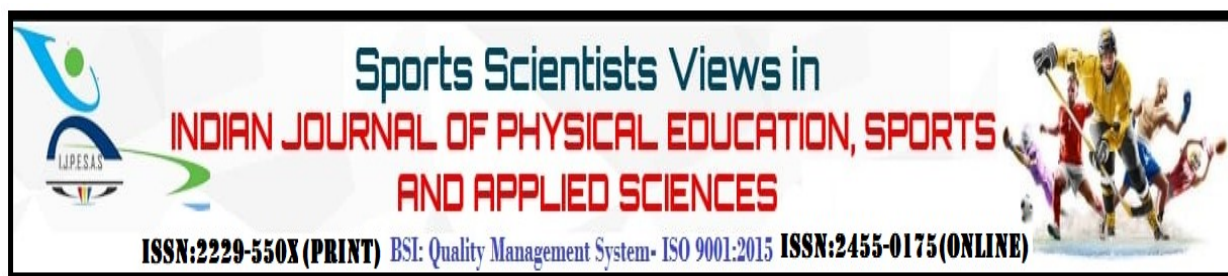
3. The most common injuries were ankle sprain and knee injuries among the players. Which were occurred during practice hours than play hours. The major mechanisms of injuries were contact, sprinting and landing.

6. SUGGESTION

This cross-sectional survey suggested that female football players should aware about injury rate equivalent male players. Moreover, girl players should be referred to physiotherapy after suffering from injury.

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THEORITICAL CONCEPT OF VARIOUS PSYCHOLOGICAL ATTRIBUTES OF MALE AND FEMALE ATHLETES

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ABSTRACT

This research paper aims to provide a comprehensive theoretical concept of comparative analysis of the psychological attributes exhibited by male and female players in team sports. The study explores the potential differences and similarities in these aspects based on gender and their implications for team dynamics and performance. The research involved a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather data from diverse sports teams. The findings suggest that while there are some gender-related patterns, individual variations are substantial. Understanding these nuances can contribute to better team management and performance enhancement strategies.

Keynotes: Leader, behaviour, psychological Skills, cohesiveness, gender

1. INTRODUCTION

Team sports require effective cooperation, communication, and leadership among players to achieve optimal performance. The role of gender in influencing psychological characteristics, leadership preferences, and team cohesion within sports teams remains a topic of interest. This paper aims to examine how male and female players differ or align in terms of these factors and their potential implications for team dynamics.

1.1 Psychological characteristics

Psychological characteristics are the intricate and multifaceted aspects of an individual's mental and emotional makeup that shape their thoughts, feelings, and behaviors. These characteristics encompass a wide range of traits, tendencies, and attributes that collectively define a person's unique personality and contribute to their interactions with the world around them. Rooted in the complex interplay of genetics, upbringing, environment, and personal experiences, psychological characteristics provide insights into how individuals perceive, process, and navigate the challenges and joys of life.

Understanding psychological characteristics is crucial not only for individual self-awareness and personal growth but also for fields such as psychology, education, business, and healthcare. Researchers, clinicians, educators, and employers alike seek to unravel the intricacies of these characteristics to enhance mental well-being, foster positive relationships, and optimize human potential.

Throughout history, various psychological theories and frameworks have emerged to categorize and analyze these characteristics. From Sigmund Freud's psychoanalytic theory to contemporary approaches like the Big Five personality traits, these theories offer lenses through which we can explore the dimensions of human behavior and emotion. Whether investigating introversion-extroversion tendencies, emotional intelligence, cognitive styles, or resilience, the study of psychological characteristics provides a deeper understanding of what makes us uniquely human.

In this exploration, we delve into some of the most fundamental psychological characteristics that shape who we are. We will examine how these traits are assessed, how they influence our daily lives, and how they contribute to our interactions with others. By uncovering the intricacies of these characteristics, we can gain valuable insights into the rich tapestry of human nature and pave the way for personal and collective growth

1.2 Leadership Preferences

Leadership Preferences: The survey responses indicated that male and female players showed a preference for transformational leadership styles, emphasizing inspiration and teamwork (Loughead, & Hardy, 2005). However, male players exhibited a slightly higher inclination toward transactional leadership, which focuses on rewards and punishments. Qualitative interviews shed light on the underlying reasons, suggesting that gender socialization and role expectations may contribute to these preferences (Bass, & Riggio,2006)..

Effective leadership within sports teams plays a pivotal role in shaping team dynamics, performance outcomes, and overall cohesion. The choice of leadership styles and the way leaders interact with team members can significantly influence athletes' motivation, commitment, and overall satisfaction. Leadership preferences, the manner in which individuals perceive and respond to different leadership approaches, are of particular importance in understanding how male and female players perceive and engage with their team leaders.

Leadership within sports settings involves a complex interplay of psychological, social, and situational factors (Chelladurai, 2007).. While leadership styles can vary widely, they are often categorized into two primary dimensions: transactional and transformational leadership.

Transactional leadership focuses on task-oriented behaviors, where leaders provide rewards and consequences based on performance. In contrast, transformational leadership emphasizes inspiration, vision, and the development of personal growth and potential among team members.

The preferences athletes hold regarding leadership styles are influenced by a myriad of factors, including personal attributes, past experiences, cultural norms, and societal expectations. Gender, as a fundamental social identity, can also shape these preferences (Bass, 1985).. Research has indicated that gender stereotypes and societal norms often lead to the expectation that men and women possess different leadership qualities. These expectations can subsequently influence the preferences male and female athletes hold for specific leadership styles.

Historically, traditional masculine traits such as assertiveness, decisiveness, and control have been associated with effective leadership (Doherty, & Stott, 2015). These traits align with transactional leadership behaviors. On the other hand, transformational leader (Avolio & Yammarino, 2013).

1.3 Team Cohesion

Team cohesion was measured through various aspects such as interpersonal relationships, communication, and trust. While both genders emphasized the importance of unity, female players showed higher scores in terms of perceived trust and cooperation within their teams. Interviews highlighted that female players often attributed this to enhanced communication skills and mutual support (Eys, Carron, & Bray, 2007)..

Team cohesion is a fundamental aspect that shapes the dynamics and performance of sports teams across various disciplines (Carron, et.al. 2002).. In the realm of athletics, the concept of team cohesion refers to the degree of unity, camaraderie, and shared understanding among team members (Carron & Eys, 2012).. It embodies the synergistic connection that binds individuals together towards a common goal, transcending individual talents to create a collective force greater than the sum of its parts.

Team cohesion in sports extends beyond the mere presence of talented athletes; it delves into the intricate web of interpersonal relationships, effective communication, and mutual trust. When a team exhibits high levels of cohesion, it operates as a well-oiled machine, where each member's strengths complement the weaknesses of others, resulting in seamless coordination during competition (Carron, Brawley, & Widmeyer, 1998).. This synergy is often manifested in synchronized movements, strategic plays, and a remarkable ability to adapt to changing circumstances on the field.

The multifaceted nature of team cohesion encompasses both task cohesion and social cohesion (Eys, Carron, & Bray, 2007).. Task cohesion pertains to the shared commitment to achieving common objectives, while social cohesion focuses on the emotional bonds and camaraderie that develop among teammates. Both dimensions are essential for a team's success, as they contribute to improved morale, enhanced communication, and a supportive environment that encourages each member to contribute their best efforts (Kassing2007)..

However, team cohesion is not an automatic outcome; it requires deliberate effort and continuous nurturing (Spink, Carron, & Loughhead, 1996).. Coaches, leaders, and team members must work collectively to foster an atmosphere of respect, open communication, and mutual understanding. Building and maintaining cohesion involves acknowledging individual differences, resolving conflicts constructively, and celebrating both personal achievements and team milestones (Loughead, et.al. 2016)..

In this exploration of team cohesion in sports, we will delve deeper into its significance, strategies for its cultivation, its impact on performance, and real-world examples of teams that have harnessed its power to achieve remarkable feats. As we navigate the intricate interplay of

personalities, goals, and shared experiences within sports teams, we will uncover the essence of what truly sets exceptional teams apart on the journey toward victory (Filho & Tenenbaum, 2011)..

2. METHODOLOGY

A mixed-methods approach was employed to collect data from a diverse range of team sports. Quantitative data were obtained through self-report surveys administered to male and female players. The surveys covered psychological characteristics (e.g., motivation, self-confidence), leadership preferences (e.g., leadership styles preferred), and team cohesion measures (e.g., perceived unity, trust among teammates). Additionally, qualitative interviews were conducted with select participants to gain deeper insights into their experiences and perspectives.

3. RESULTS

Psychological Characteristics: Analysis of the survey data revealed that both male and female players exhibited similar levels of motivation and self-confidence. However, there were nuanced differences in how they attributed success and failure, with males tending to attribute success more to internal factors and females to external factors. These findings suggest that while both genders are driven and confident, their attributional tendencies may influence their reactions to outcomes.

4. DISCUSSION

The findings suggest that while gender can influence certain patterns in psychological characteristics, leadership preferences, and team cohesion, individual variations are substantial. It is important to recognize that these differences and similarities are not solely determined by gender but are also shaped by socialization, personal experiences, and situational factors. Effective team management should focus on tapping into individuals' strengths while promoting an inclusive environment that values diversity.

6. CONCLUSION

In conclusion, this research provides a comprehensive comparative analysis of psychological characteristics, leadership preferences, and team cohesion of male and female players in team sports. While gender-related patterns exist, the complexity of individual differences should not be overlooked. Acknowledging and leveraging these insights can contribute to creating harmonious and high-performing sports teams, ultimately advancing the field of sports psychology and team dynamics.

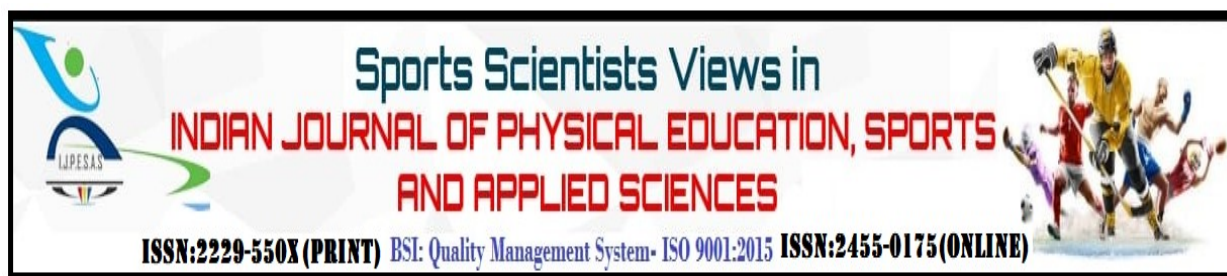
7. IMPLICATIONS

Understanding the comparative psychological characteristics, leadership preferences, and team cohesion of male and female players can have several implications for sports teams and their performance (Cotterill, & Fransen, 2016).. Coaches and team managers should be cognizant of both the commonalities and differences, tailoring their leadership approaches and team-building strategies accordingly. Emphasizing open communication, trust-building activities, and recognizing the unique contributions of each player can enhance team dynamics and overall success.

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EFFECT OF AQUA AEROBIC TRAINING AND YOGIC PRACTICES ON PHYSICAL PHYSIOLOGICAL AND PSYCHOLOGICAL VARIABLES AMONG HOCKEY PLAYERS

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ABSTRACT

To achieve the purpose of the study, the investigator randomly selected 90 women hockey players from different colleges in Tirupati Chittoor District. The age of subjects for the study was between 17 to 21 years. The selected subjects were divided into three groups, experimental group I, experimental group II and control group consisting of 30 Hockey players in each group. Experimental group I was assigned as Aqua Aerobics exercises group, Experimental group II was assigned as Yogic Intervention group and control group was not given any special treatment and were under strict supervision of the investigator. Prior to experimental treatment, all the subjects were measured of their Physical Physiological and Psychological components such as Speed, RHR and Sports Achievement Motivation. This formed pre-test scores. After 8 weeks experiments to the experimental groups on respective training, all the three groups were tested on criterion variables selected, which formed post test scores. The difference between pre and post test scores was considered as the effect of varied respective experimental treatments. Analysis of Covariance (ANCOVA) was used to find out the significant differences if any, among the groups for each variable separately. It was concluded that eight weeks of Aqua Aerobic exercises and Yogic Practices were significantly improved the Physical Physiological and Psychological variables of women hockey Players compared to control group.

Keywords: Aqua Aerobics, Yogic practices, Speed

1. INTRODUCTION

The large range of postures offers training capable of developing a vigour body, healthy internal organs, and an alert mind. The yoga asana penetrates and impact every single cell and tissue, bringing them to life. The human body is seen by yoga as a tool for the path to perfection. Yoga practice not only strengthens the body but also expands the mind. Additionally, yoga develops control over the automatic muscles in several organs. Yoga activities resist violent muscular movements because they build huge amounts of lactic acid in the muscle fibres, which leads to exhaustion, as opposed to regular physical training, which emphasises the violent motions of the muscles. In the yogic system, all movements are slow and gradual with proper breathing and relaxation.

The beauty of water exercise is that it can accommodate the fitness needs of every one, it's generally considered safe for people with arthritis and musculoskeletal problems. Water exercise is not just land exercise programme water fitness benefits range from helping to control blood sugar levels to improving aerobic fitness (Karl). Water adds magic to any workout the magic lies in water's support for the body (buoyancy) water's resistance to body movement, and water's wonderful freshness.

Water aerobics can also be known as aqua fit or aquatic fitness and it simply involves doing aerobic activity in the water. Water Aerobic is generally done in fairly shallow water, usually no deeper than your hips, but sometimes the water can be up to your chest or even your neck, depending on how hard you plan on going. Things like knee lifts, running in the water, jumping jacks, and lunges are all great examples of water aerobics exercises

2. METHODS

2.1 Sample

To achieve the purpose of the study, the investigator randomly selected 90 women hockey players from different colleges in Tirupati Chittoor District. The age of subjects for the study was between 17 to 21 years.

2.2 Research Design

The selected subjects were divided into three groups, experimental group I, experimental group II and control group consisting of 30 Hockey players in each group. Experimental group I was assigned as Aqua Aerobics exercises group, Experimental group II was assigned as Yogic Intervention group and control group was not given any special treatment and were under strict supervision of the investigator.

2.3 Training Protocol

Prior to experimental treatment, all the subjects were measured of their Physical Physiological and Psychological components such as Speed, RHR and Sports Achievement Motivation. This formed pre-test scores. After 8 weeks of experiments to the experimental groups on the respective training, all three groups were tested on criterion variables selected, which formed post test scores. The difference between pre and post-test scores was considered as the effect of varied respective experimental treatments.

2.4 Statistical Technique

Analysis of Covariance (ANCOVA) was used to find out the significant differences if any, among the groups for each variable separately.

3.RESULTS AND DISCUSSION

TABLE I
COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST-TEST ON SPEED SCORES OF AQUA AEROBIC EXERCISES AND YOGIC PRACTICES AND CONTROL GROUPS

	Aqua Aerobic Exercise	Yogic Practice	Control Group	Source of Variance	df	SS	MS	F-Value
Pre-Test Mean	10.75	10.93	10.90	Between Groups	2	0.57	0.28	0.36
				Within Groups	87	68.21	0.78	
Post Test Mean	9.49	9.88	10.86	Between Groups	2	29.92	14.96	29.71*
				Within Groups	87	43.81	0.50	
Adjusted Post Test Mean	9.55	9.84	10.84	Between Groups	2	27.38	13.59	48.05*
				Within Groups	86	24.50	0.28	
Mean Difference	1.25	1.05	0.03					

*Significant at 0.05 levels, F.05 (2, 87) = 3.10, F.05 (2, 86) = 3.10

The obtained pre test means on Speed on Aqua Aerobic exercises group was 10.75, Yogic Practices group was 10.93 and control group was 10.90. The obtained pre test F value was 0.36 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Speed on Aqua Aerobic exercises group was 9.49, Yogic Practices group was 9.88 and Control group was 10.86. The obtained post test F value was 29.71* and the required table F value was 3.10, which proved that there was significant difference among post test scores of the subjects.

Adjusted Post – test taking into consideration of the pre test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 48.05* was greater than the required value of 3.10 and hence it was accepted that there were significant differences among the treated groups.

TABLE II
COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST TEST ON RHR SCORES OF AQUA AEROBIC EXERCISES AND YOGIC PRACTICES AND CONTROL GROUPS

	Aqua Aerobic Exercise	Yogic Practice	Control Group	Source of Variance	df	SS	MS	F-Value
Pre-Test Mean	73.27	73.30	73.63	Between Groups	2	2.47	1.23	0.25
				Within Groups	87	421.13	4.84	
Post Test Mean	68.90	69.10	73.47	Between Groups	2	399.62	199.81	20.15*
				Within Groups	87	862.87	9.92	
Adjusted Post Test Mean	68.98	69.16	73.33	Between Groups	2	362.55	181.27	21.47*
				Within Groups	86	726.05	8.44	
Mean Difference	4.37	4.20	0.17					

*Significant at 0.05 levels, F.05 (2, 87) = 3.10, F.05 (2, 86) = 3.10

The obtained pre test means on RHR on Aqua Aerobic exercises group was 73.27, Yogic Practices group was 73.30 and control group was 73.63. The obtained pre test F value was 0.25 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post test means on RHR on Aqua Aerobic exercises group was 68.90 Yogic Practices group was 69.10 and Control group was 73.47. The obtained post test F value was 20.15* and the required table F value was 3.10, which proved that there was significant difference among post test scores of the subjects.

Adjusted Post – test taking into consideration of the pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 21.47* was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

TABLE III
COMPUTATION OF ANALYSIS OF COVARIANCE OF PRE – TEST AND POST TEST ON SPORTS ACHIEVEMENTMOTIVATION OF AQUA AEROBIC EXERCISES AND YOGIC PRACTICES AND CONTROL GROUPS

	Aqua Aerobic Exercise	Yogic Practice	Control Group	Source of Variance	df	SS	MS	F-Value
Pre-Test Mean	26.80	26.47	26.27	Between Groups	2	4.36	2.18	0.14
				Within Groups	87	1322.13	15.20	
Post Test Mean	31.20	31.03	29.73	Between Groups	2	384.69	192.34	12.40*
				Within Groups	87	1349.63	15.51	
Adjusted Post Test Mean	31.015	31.06	26.86	Between Groups	2	350.70	175.35	15.25*
				Within Groups	86	988.63	11.50	
Mean Difference	4.40	4.57	0.47					

*Significant at 0.05 levels, F.05 (2, 87) = 3.10, F.05 (2, 86) = 3.10

The obtained pre-test means on Sports Achievement Motivation on Aqua Aerobic exercises group was 26.80, Yogic Practices group was 26.47 and control group was 26.27. The obtained pre-test F value was 0.14 and the required table F value was 3.10, which proved that there was no significant difference among initial scores of the subjects.

The obtained post-test means on Sports Achievement Motivation on Aqua Aerobic exercises group was 31.20, Yogic Practices group was 31.03 and Control group was 26.73. The obtained post-test F value was 12.40* and the required table F value was 3.10, which proved that there was significant difference among post-test scores of the subjects.

Adjusted Post-test taking into consideration of the pre-test means and post-test means adjusted post-test means were determined and analysis of covariance was done and the obtained F value 15.25 * was greater than the required value of 3.10 and hence it was accepted that there was significant differences among the treated groups.

4. CONCLUSIONS

The conclusion was that eight weeks of Aqua Aerobic exercises and Yogic Performs significantly enhanced the Physical Physiological and Psychological variables of female hockey players in comparison to the control group. It was also discovered that Aqua Aerobic exercises altered the physical physiological and psychological variables of female hockey players significantly more than did Yogic practices. .

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