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IMPACT OF YOGIC PRACTICES ON SELECTED PERFORMANCE RELATED FITNESS AMONG VOLLEYBALL PAYERS

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ABSTRACT: The aim of the research was to determine impact in volleyball players by yogic techniques. It was predicted that the impact of plyometric training combined with yogic techniques on volleyball players would result in notable variations on a few physiological indicators. Thirty male volleyball players, ages ranging from 18 to 25, were randomly recruited for the current study. Pre-test and post-test random group designs including control and experimental groups were employed for the current investigation. The participants were divided into two equal groups, Group A and Group B, each consisting of fifteen individuals, at random. Both before and after the six weeks of instruction, the data were gathered. To examine the data, the dependent "t" test was used. Compared to the control group, physical group the experimental group demonstrated greater improvement in the volleyball players' interms of confidence level, mean square and pulse rate.

KEYWORDS: Plyometric Training, Blood Pressure, Pulse Rate, Volleyball

I. INTRODUCTION

Volleyball is a sport played by two teams on a playing court divided by a net. There are different versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court, and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a service, hit by the server over the net to the opponents. The rally continues until the ball is grounded on the playing court, goes "out" or a team fails to return it properly. In Volleyball, the team winning a rally scores a point (Rally Point System).

When the receiving team wins a rally, it gains a point and the right to serve, and its players rotate one position clockwise. Volleyball is a complex game of simple skills. The ball is spiked from up to 60 cm above the height of a basketball hoop (about 3.65 metres) and takes fractions of a second to travel from the spiker to the receiver. That means the receiver must assess incoming angle, decide where to pass the ball and then control their pass in the blink of an eye [1]. A purely rebound sport (you can't hold the ball), volleyball is a game of constant motion.

A team can touch the ball three times on its side of the net. The usual pattern is a dig (an underarm pass made with the forearms), a set (an overhead pass made with the hands) and a spike (the overhead attacking shot). The ball is served into play. Teams can also try to block the opponent's spike as it crosses the net. A block into your own court counts as one of your three touches in beach volleyball, but not in volleyball. Power and height have become vital components of international teams, but the ability of teams and coaches to devise new strategies, tactics and skills has been crucial for continued success.

There are six players on court in a volleyball team, who each must rotate one position clockwise every time their team wins back service from the opposition. Only the three players at the net positions can jump and spike or block near the net. The backcourt players can only hit the ball over the net if they jump from behind the attack line, also known as the three-metre line, which separates the front and back part of the court [2].

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Volleyball has developed into a very specialised sport. Most teams will include in their starting line-up a setter, two centre blockers, two receiver-hitters and a universal spiker. Only certain players will be involved with service reception. Players will also have specialist positions for attack and defence. Substitutions are allowed during the game. Since 1998, volleyball bas been using a new scoring system. Teams scored a point on every rally (Rally Point System), regardless of which team served. Formerly, a team could only win a point if it served the ball. Winning the serve back from the opposition was known as a side-out.

Matches are played best of five sets. The first four sets are played to 25 points, with the final set being played to 15 points. A team must win a set by two points. There is no ceiling, so a set continues until one of the teams gains a two-point advantage. Previously, all sets were to 15 points, with the first four sets having a ceiling of 17 and the final set requiring at least a two-point winning advantage. In 1998, the FIVB introduced a new specialist role: the libero. This player wears a different coloured uniform from the rest of the team and can be substituted in backcourt for any player on the team. The libero cannot serve, spike the ball over the net or rotate into the front-line positions, but plays a vital role for the team in serve reception and backcourt defence. There must be at least one point played between a libero substituting off for a player and going back on the court for another player – hence he/she cannot be on the court for the whole game. The libero has added an extra dimension to backcourt defence, improving the reception of teams, lengthening the rallies and giving a vital role to shorter players.

Yoga is a very ancient discipline. It is recognized as one of the most important and valuable gifts of the Indian heritage. Today the world is looking to Introduction 25 yoga for solving the various problems men are facing. At no time in the past yoga has attracted so much attention from people in so many places in the world as it today [3]. Yoga is an indigenous physical and mental training. French scholar, Masson Oural, has described yoga as the permanent basis of Indian culture. Hence it has its varieties and diversions as it has its right and discipline, the different kinds of yoga have played a vital role in forming the spirit of modern India.

Yoga is a tool that can deepen and benefit anyone, of any religion. It does not conflict with personal beliefs; it is simply a vehicle to help one transform oneself by promoting conscious connection with oneself, the world, and the highest truth. There are many traditional paths of yoga, including tantra, mantra, kundalini, bhakti, jnana, karma, raja yoga, and others, all of which have their own techniques to awaken these connections. According to the classic text of the Yoga Sutras of Patanjali, “yoga” is the complete “inhibition of the modifications of the mind” quieting of the constant chatter in one’s mind so that our True Selves can manifest, rest in our own true nature and be free of suffering [4]. Disease, as described in the sutras, is said to be an impediment to spiritual practice, growth and freedom from suffering Traditional yogic practices include breath control and techniques (pranayama), meditation (including mindfulness), the adoption of specific bodily postures (asanas) and self reflection.

Asanas are special patterns of postures that stabilize the mind and the body through static stretching. Regular practice of sun salutation regulates pingala nadi (right nostril), whether it is underactive or overactive, thus leading to a balanced energy system at both the mental and physical levels [5]. Volleyball is very popular game worldwide. There is a need

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of high level of physical and physiological fitness to participate at the elite level.

Rotation system is a unique feature that differentiates volleyball from other sports. During game the object of every player team is to send the ball over the net in order to ground it on the opponent's court and to prevent the same effort is done by the opponent. In fact, four main abilities are most important for volleyball players which are 1) Power that refers to the state of applying force; 2) Take-off power is a crucial element in volleyball in which the player attempts to project the body to the highest point in the air to either spike or block. The greater the force applied against the ground, the higher the jump. The height of the jump is directly proportional to leg power; 3) Reactive power refers to the ability to generate force of jumping immediately following landing such as in spike-land-block. This kind of power is also necessary to quickly change the direction of motion during a game. The force necessary to adequately perform a reactive jump depends on the height of the jump, the player's body weight and leg power; and 4) Power-endurance is defined as the ability to develop power consistently throughout a game [6]. The development of power, as expressed by a high vertical jump to spike over the block is essential for any serious volleyball player. However, if one is not capable of duplicating this task some 200 times per game (the average number of spikes and blocks performed by a college player), a player's jumping effectiveness decreases in the latter part of the game.

II. LITERATURE SURVEY

P. Dev, R. S. Lancet, S. Saurav, N. P. G. Seshadri, B. Kumar Singh and M. Jha, et.al [7] investigating the changes of hemoglobin changes during attention task in yoga and non-yoga group using functional near infrared spectroscopy technique. Total of ten participants recruited for this study from each group performed visual continuous performance test for six minutes followed by rest. Results show significant increases in oxyhemoglobin concentration ($p=0.04$) and significant decreases deoxyhemoglobin concentration ($p=0.002$) levels in participants yoga group compared to the non-yoga group. The lateralization index of the brain shows that activation was more towards at left prefrontal regions in both groups during the task. Results have not shown any significant differences in task performance. The present study concludes that yoga improves regional cerebral oxygenation at prefrontal regions during the attention task.

E. S. Thanuja and L. Suganthi, et.al [8] purpose is to minimize subjective errors in gives various benefits such as reduction in back pain, blood circulation improvisation, reduce water detention, strengthen pelvic muscles, relieve digestion problems such as nausea, constipation and gas, manage blood pressure, overcome fatigue and cope up with labour pain or experience less pain. Despite of an increase in interest pertaining to the benefits of yoga practice, a detailed study of changes in physiological signals and the parameters extracted from the peripheral signals of pregnant women such as ECG, PPG due to yoga has been reported rarely. This paper explains the analysis of physiological signals such as electrocardiogram and photo plethysmogram of pregnant women practising yoga. More specifically this study analyses the effect of yoga practise in eight week by observing their ECG and PPG signal parameters change during this period. Physiological parameters extracted from ECG and PPG signals acquired after the specially framed yoga sequence at regular intervals of two weeks. These signals are processed suitably to measure the time domain and frequency domain parameters from ECG signal and contour parameters from PPG signal and analyse their variations over the period considered. Regular yoga practise shows significant

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changes in the parameters measured from the acquired signals. HRV parameters such as Mean heart rate (MHR), TINN and LF/HF are significantly reduced ($P<0.05$) due to regular yoga practice.

K. Sato, K. Watanabe, S. Mizuno, M. Manabe, H. Yano and H. Iwata, et.al [9] presents a system that consists of three robots to imitate the motion of top volleyball blockers. In a volleyball match, in order to score by spiking, it is essential to improve the spike decision rate of each spiker. To increase the spike decision rates, iterative spiking training with actual blockers is required. Therefore, in this study, a block machine system was developed that can be continuously used in an actual practice field to improve attack practice. In order to achieve the required operating speed and mechanical strength each robot has five degrees of freedom. This robot performs high speed movement on 9 m rails that are arranged in parallel with the volleyball net. In addition, an application with a graphical user interface to enable a coach to manipulate these robots was developed. It enables the coach to control block motions and change the parameters such as the robots' positions and operation timing. Through practical use in the practice field, the effectiveness of this system was confirmed.

J. He and Y. Bai, et.al [10] design a evaluation index system to reflect the teaching capability of volleyball teachers, which is materialized and analyzed by mathematical statistics, analytic hierarchy process, and logical analysis etc. Then the fuzzy evaluation based on AHP is adopted to establish index system and solve the problem in weight assignment, passing the consistency test by experiments. The empirical analysis shows that our scheme can scientifically evaluate the teaching ability of volleyball teachers in colleges. It provides certain theoretical reference for the development of volleyball teachers and improvement of teaching quality of physical education in colleges.

M. U. Islam, H. Mahmud, F. B. Ashraf, I. Hossain and M. K. Hasan et.al [11] Musculo skeletal disorder is increasing in humans due to accidents or aging which is a great concern for future world. Physical exercises can reduce this disorder. Yoga is a great medium of physical exercise. For doing yoga a trainer is important who can monitor the perfectness of different yoga poses. In this paper, we have proposed a system which can monitor human body parts movement and monitor the accuracy of different yoga poses which aids the user to practice yoga. We have used Microsoft Kinect to detect different joint points of human body in real time and from those joint points we calculate various angles to measure the accuracy of a certain yoga poses for a user. Our proposed system can successfully recognize different yoga poses in real time.

P. Supoo and P. Sittiprapaporn, et.al [12] studied brainwave activity and cognitive performance by meditation yoga. Study design was experimental design. This study compared the brainwaves of healthy people both before and after practicing by meditation yoga. Samples consisted of ten healthy people with no history of illness, no brain disease, never attended brain surgery. By conducting electroencephalogram (EEG) measurement by the NeuroSky Smarter Kit through the program “MindWave Mobile” showed average level of meditation and attention. Participants also practiced 21 meditation postures yoga program. The results revealed that the post-test scores of all ten healthy people that practiced with 21 meditation postures yoga program had meditation and attention score higher than before training with significant difference at 95% confidence level.

N. Ren, et.al [13] consider universities as our research groups, and use yoga

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principle selected from principles in yoga movement, with principles being, respectively, integrity principle, principle of gradual and orderly progress, principle of scientific rationality, interesting principle, yoga principle, as a criterion layer of algorithm. We discuss the arrangement of yoga movement via three distinct factors: the season, the crowd and the site, and regard the last factor as a result layer. Quantitative analysis of weights based on the AHP model has been made, from which for considersion to be able to reasonably adjusted the arrangement of college yoga movement in time.

C. Ye and Y. Liu, et.al [14] study the existing factors, find out the key factors, and find out the main factors that restrict the development of volleyball. Then through AHP method, analyze the four main factors that affect the volleyball pass technology, namely: finger flexibility and wrist force, passing the law, goal setting, volleyball type, find out the most important factor to influence the ball pass hit rate, and put forward the corresponding suggestion to improve the volleyball pass. Provide scientific and effective reference and guidance for the teaching and training of volleyball. So as to form a sound system to provide the basis for training and selection more reliable. To further improve the technical level of volleyball, to provide scientific guidance for the development of volleyball project.

C. M. C, A. M, S. Dubey, P. S. Raju and I. A. Pasha, et.al [15] proposes a novel Embedded based Smart Yoga Mat (ESYM) design and its implementation. In this work, initially the pressure nodes are identified on ESYM and from that nodes pattern is generated using FSR sensors. An algorithm for the pattern identification has been developed to evaluate Yoga postures. The posture correction of subjects is provided in real time with Biofeedback mechanism. The experimental setup is developed with NI-myRIO as the control unit of ESYM and a mat with the pressure sensors. The coding is done using LabVIEW software. The developed Prototype is validated by conducting experiments on subjects for the sitting and lying yoga postures.Yoga is a predominating approach to dissolve the physical diseases and reduce stress. A Yoga mat plays a vital role in performing yoga, in this regard, there is a need of Smart Yoga Mat to assist the human postures and to provide the Biofeedback to the subject (human).

III. METHODOLOGY

The aim of the research was to determine how certain physiological characteristics in volleyball players were affected by plyometric training combined with yoga techniques. It was predicted that the impact of plyometric training combined with yogic techniques on volleyball players would result in notable variations on a few physiological indicators. Thirty male volleyball players, ages ranging from 18 to 25, were randomly recruited for the current study from Krishna University (PG) College, Machilipatnam, India. Pre-test and post-test random group designs including control and experimental groups were employed for the current investigation. A parallel group pre-post-test design was implemented to conduct the experiment. Both experimental (yoga) and wait-list-control groups were assessed with four skill-variables of volleyball at the base line (pretest) and after completion eight weeks of yoga training intervention (posttest). After baseline assessment all the participants of experimental group. The participants were divided into two equal groups of fifteen each, designated as Group "A" and Group "B" at random. Group "A" received plyometric training combined with yoga techniques, whereas Group "B" received no training at all. Both before and after the six weeks of instruction, the data were gathered. The

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dependent "t test" was utilized to assess the data.

IV. RESULT ANALYSIS

The performance analysis of yogic practices on selected performance related fitness among volleyball payers is observed in this section.

Table.1: Performance Analysis

Parameters	Physical	Control	Yoga
Confidence level	91.6	90.1	97.5
Mean square	1.2	0.85	1.93
Pulse Rate	82	79	98

In Fig.1 confidence level comparison graph is observed between physical exercises group, Yoga group and control group.

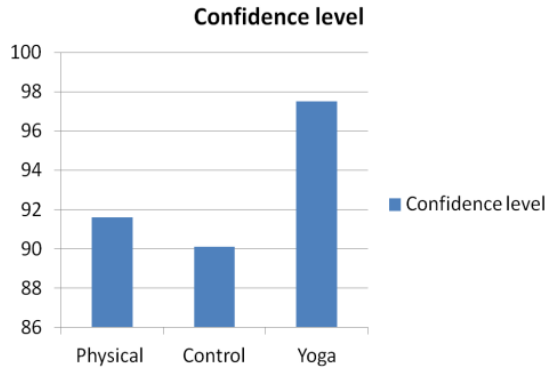

Fig.1: Confidence Level Comparison Graph

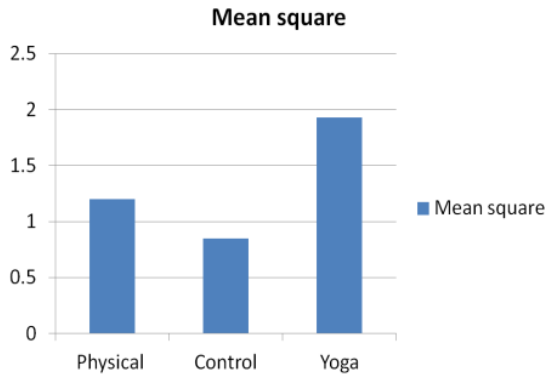

Fig.2: Mean square Comparison Graph

Mean square level comparison graph is observed in Fig2 between physical exercises group, Yoga group and control group.

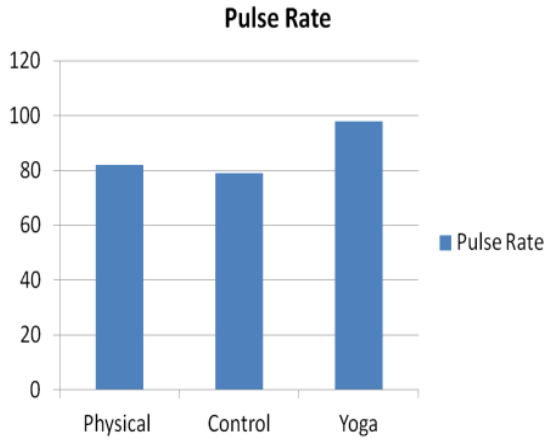

Fig.3: Pulse Rate Comparison Graph

In Fig.3 pulse rate level comparison graph is observed between physical exercises group, Yoga group and control group. Yoga group shows normal pulse rate.

V. CONCLUSION

The experiment concludes that the training of yoga practices for a period is effective in improving skills needed to achieve success in competitive volleyball. The experimental group showed better improvement on confidence level, Mean square and resting pulse rate among volleyball players than the control group

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