EFFECT OF YOGIC EXERCISES ON PERFORMANCE IN CRICKETERS

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ABSTRACT: The purpose of the study was to find out the effects of yoga practice and physical exercise on performance among cricket players. The 48 subjects that were chosen were split into three equal groups, each with sixteen members: Group I was designated as a yoga practice group, Group II as a physical exercise group, and Group III as the control group. Subjects in Group I practiced yoga, subjects in Group II engaged in physical exercises, while subjects in Group III engaged in their daily routine rather than any particular yoga or physical activity. The instruction consisted of physical activities and yogic practice. Hence, Yogic practice performs better results interms of confidence level, mean square and capability.

KEYWORDS: Yoga, Physical Exercise, Speed and Agility

I. INTRODUCTION

Cricket is one of the world's oldest ball game in sports. It has its origin in the 16th century in England. The game of cricket developed from a simple game of hitting an object with a piece of wood. British Empire began this game in its colonies as a recreational sport. But gradually it developed into a spirited game and spread to almost every continent of the world. Today cricket seems to be a virtual lifeline of most of the Commonwealth countries. Presently cricket is played in more than 105 countries around the world [1]. Cricket is played in many forms such as Test match, One-day, T20, Super Six, Eight-A-side, Indoor cricket, Max cricket, Double wicket and single wicket. Cricket is a sport in which fitness was traditionally not thought of very important. Cricket had to wait for nearly a century before Kerry Packer arrived with ideas of coloured dress into the already prevalent system of limited overs" cricket. This step of Packer quickly brought the curtain down on the importance of the five-day format existing earlier in the cricket. Around 25 years later, T-20 cricket tournament burst on the scene, quite definitely the in-thing not only with Gen-Now and Gen-Next, but equally a hit with Gen-Past, too.

With the introduction of one-day cricket and more recently, T-20, the game has gone through major changes and the physical, mental and psychological demands on a cricketer has also increased dramatically [2]. Physical fitness of a cricketer depends upon the version of the game and the role of the player in the team. For instance, the fast bowler is required to be more fit than an opening batsman. T-20 and one- day cricket is more demanding than a test match. For batsmen, bowlers and fielders having a strong core, and the ability to generate explosive power with the upper body actions, strength and speed is extremely important. In cricket we can see an excellent integration of physical attributes in different actions executed by the batsman, wicket keepers and fielders. In general, strength is required when executing powerful strokes to hit the ball out of the ground or to bowl a bouncer; speed is required to take a sharp and cheeky single [3]. Fielder has to stop a ball before it crosses the boundary line; flexibility is shown by an excellent acrobatic fielder like Jonty Rhodes of South Africa.

A square drive, a square cut speeding through the cordon of fielders shows an example of high degree of coordination. A fast bowler bowling throughout the entire session shows ample evidence of endurance, strength and mental set. Even a single stroke executed by a master batsman shows an excellent combination of all these physical and mental attributes, let us take an example of a well-executed cover drive. As a bowler runs in, the batsman has to concentrate and watch and then in a split second, he lunges forward, showing speed and

flexibility, and timing the ball well, showing strength and co-ordination. If he sees a chance to take a quick single, he speeds off to take one, and he does this ball after ball showing endurance and patience [4]. The vital role played by yoga i.e. physical fitness and skill performance has assumed tremendous importance in recent times. Modern cricket demands supreme fitness, and the Yoga system is undoubtedly one of the best ways to acquire this fitness.

There is such a plenty to choose from! Asana - standing, seated, twisting, forward and back bending are there, and to crown them all, we have the magnificent inversions; and within each category, there exists splendid variety, permitting practice at introductory, intermediate and advanced levels. In present times, cricket has become a fast paced game in all respects like batting, bowling, fielding and wicket keeping. In the game, the target areas of the cricketer"s body that are used are ankle, knee, hips, thigh, gluteus in running, shoulders, chest, upper back during batting and bowling, and lower back for the wicket keeper and batsman [5]. Torso, including the core and posterior muscles of the back during the rotating action is used in different situations of the game. Due to the pace of the game common injuries that occur in the game of cricket are dependent upon the position playing. Fielders are often prone to hamstring injuries as their position is static and inactive for a long period of time, and then suddenly requires the player to quickly move in an unpredictable fashion. The bowler most often shows signs of backache and injury due to excessive side rotation of the torso backwards and forwards. It is an interesting fact that cricketers who carry out yoga regularly with their daily physical fitness routine can hold themselves well as their vertebra stretches and becomes more flexible. There are innumerable benefits which they get from Yoga and because of this reason, yoga has become one of the fastest growing activities in the world of sports.

Yoga creates balance in the mind as well as in the body. It helps in developing flexibility and strength. Different poses of asana have different physical and mental benefits. It is a known fact that strong and well-maintained body is less prone to injuries and every cricketer must vie for it. There are numerous asana, and each gives amazing benefits to the cricketers. To get the maximum of yoga, one has to combine the practices of yogasna, pranayam and mediation. Yoga can make every player more flexible, robust and stronger. In physical workout, one tends to utilize only 10 to 15 percent of the body but during yoga workout, all muscles, joints and organs of body are involved [6]. Due to the techniques used for breathing in yoga, joints of players move in full range. Players will not feel any pain when they wake up in the morning and they would feel completely rejuvenated. In a gymnasium, a cricketer can work out on only few or specific parts of his body but combining it with Yoga can do wonders for him/her especially those who are due to certain reasons busy round the year. In long duration session of play, the muscles are fatigued but yoga stretches and releases tension and stiffness of muscles.

Cricketers find yoga the best activity after a long duration of cricket session. Yoga has a great sense of sports community attached to it. It allows for immense mental clarity and focus. After the practicing of yoga, cricketers who play for six hour long duration of game can feel more grounded, less self-absorbed and more peaceful. They can discover much more about their body and its functions with the help of yogic practice [7]. They can understand that how their conscious and subconscious mind affects their body. Yoga can help cricketers to improve their body posture. It can not only realign their body but it can also help them to grow more fit. It is an interesting fact that Yoga can improve cricketer"s physical appearance

and boost their confidence. Various kinds of sleeping disorders can be cured by practicing yoga and pranayam regularly.

II. LITERATURE SURVEY

K. A. Puranik and K. M.,et.al [8] Yogic breathing or pranayama refers to various breathing exercises where we control our breathe. These breathing techniques vary in complexity. Often, the individual practices yogic breathing by three-part breath in which they inhale, then hold the breath for particular duration and finally exhale. This way they deepen their breathing and bring it under control. Further they may learn more advanced yogic breathing techniques, such as 'Kapalabhati'. All of these have their own unique benefits and effects on the body and mind when practiced systematically. Since these techniques rely on systematic breathing there is a need for a device which can monitor breathing and aid in performing these techniques in the right manner. The paper discusses about design and testing of a wearable device that can monitor heart rate, posture and yogic breathing. The device is tested on different subjects with various breathing exercises to verify the data obtained and its significance.

R. Pitale, K. Tajane, L. Phadke, A. Joshi and J. Umale, et.al [9] Human heart rate fluctuates in a complex and non-stationary manner, due to continuous influences from autonomic nervous system and other factors (harmones,temp,etc) on the Sinoatrial Node (S.A) (Pacemaker of the heart). ANS dysfunction is known to be associated with various cardiovascular and lifestyle diseases. The importance of traditional ancient Indian practice like Yoga has increased significantly due to the observed beneficial effects of it in various lifestyle diseases. Preliminary studies have shown that yoga may have its beneficial effect by influencing autonomic nervous system. Heart Rate Variability (HRV) is a most promising predictive and prognostic marker of autonomic (ANS) activity. HRV is analyzed by time and frequency domain parameters (Fast Fourier Transform). Being linear parameters these are not able to extract full information regarding the non linear behavior of heart rate fluctuations. In this paper, we propose to analyze HRV by using linear as well as non-linear methods during different yogaasanas. These mathematical models will be useful to understand the underlying physiological mechanisms during different yogasanas.

E. Jovanov,et.al [10] Very slow yogic breathing techniques provide valuable insights into mechanisms of autonomous nervous system regulation that are usually not available for human subjects. This paper presents results of eight sessions of Nadi Shodhana Pranayama practiced at rate of one breath per minute. We characterized statistic and spectral measures of heart rate variability before, during, and after exercises. Significant changes include increase of VLF frequencies caused by slow breathing and decrease in average interbeat interval from 959.3 to 904.1 ms $(t(7) = -7.5, p<0.001)$. We present the results of HRV analysis and analyze origins of characteristic frequency components. The most prominent changes of the exercise include significant increase of respiratory sinus arrhythmia (RSA) and LF/HF ratio, and decrease of breathing frequency after the exercise against the state before the exercise. The maximum LF frequency decreased from 0.0919 Hz to 0.07125 Hz $(t(7) = -3.255, p < 0.01)$, indicating the decrease of average breathing rhythm from 5.5 breaths/min to 4.3 breaths/min. In addition, the state after the exercise is characterized by disappearance of VLF frequencies from the spectrum, and a significant increase of LF/HF from 14.33 to 50.93 $(t(7) = 2.461, p < .05)$.

D. Hernando, et.al [11] yoga have been studied in different fields, from chronic health conditions to mental disorders, showing that it can help to improve the overall health. In

particular, it has been proven that yoga also improves the autonomic function. Heart rate variability (HRV) at rest is commonly used as a non-invasive measure of autonomic regulation of heart rate. Alternatively, pulse rate variability (PRV) has been proposed as a surrogate of HRV. VoluMetrix has developed a novel technology that captures venous waveforms via sensors on the volar aspect of the wrist, called NIVAband. This study aims to assess the effect of yoga in the autonomic nervous system by analyzing the PRV obtained from the NIVA signal. Temporal (statistics of the normal-to-normal intervals), spectral (power in low and high frequency bands) and nonlinear (lagged Poincaré Plot analysis) parameters are analyzed before and after a yoga session in 20 healthy volunteers. The PRV analysis shows an increase in parameters related to parasympathetic activity and overall variability, and a decrease in parameters related to sympathetic activity and mean heart rate.

M. C. Thar, K. Z. N. Winn and N. Funabiki, et.al [12] etects a Yoga pose using multi parts detection only with PC camera. Then, it calculates the difference of the specified body angles between the pose of an instructor and that of a user. Then, it calculates the difference of the specified body angles between the pose of an instructor and that of a user, and suggests the correction if larger than the given threshold. The total angle difference values are calculated averagely and defined as performance class level in Table 1. For evaluations, we applied the proposal to three persons with three Yoga poses of basic and easy Yoga poses for beginners and confirmed that it found the incorrect parts of each pose.

P. Somaskandhan, G. Wijesinghe, L. B. Wijegunawardana, A. Bandaranayake and S. Deegalla, et.al [13] Indian Premier League (IPL) is a franchise system based, annual cricket tournament. IPL deals with millions of dollars. The amount of money spent on the IPL teams imposes high pressure on owners to search victories, which depends on team performance. Essentially, it is critical to find the right set of metrics that would lead to assemble a team with the highest chance of winning. This study attempts to identify the optimal set of attributes, which impose the high impact on the results of a cricket match. Determining an optimal set of attributes will help team owners to look for players with these attributes to form a team by which they can enhance the winnability of a cricket team. Several efforts have already been taken to address this problem without much success. Most of the existing works focused on identifying different performance metrics based on their domain knowledge of cricket. The proposed solution relies on statistical analysis and machine learning while minimizing the use of domain knowledge. Ball by ball data for all past IPL matches were collected, aggregated to innings level details for the analysis and the problem is modeled as a classification problem. The data set contained a set of features based on the innings level data and win/lose/draw class labels. Different machine learning algorithms were employed, and Support Vector Machine (SVM) achieved the best accuracy in the evaluation. Then, we examined all possible feature combinations using SVM by using separate training and testing sets. Finally, the attribute set that yields the highest accuracy in the evaluation is identified, which will be the optimal set of attributes that impose the high impact on the end results of a cricket match.

P. Patil and S. Gore, et.al [14] globalization has increased beyond its growth, many challenges and stressful situations need to be faced by human. In Current scenario ayurveda experts diagnose the diseases by interacting with patients and by examining the patients. They suggest appropriate medicine, yoga, raga and diet according to their observations but such process is very time consuming. Considering such scenario, designing automatic recommendation systems which will recommend yoga and raga for specific prakriti. It will help experts to reduce certain amount of time, such system recommend accurate yoga and

raga according to physical and mental characteristics of person (prakriti). Based on timing, mood and constitution raga recommendation has been done and similarly yoga recommendation has been done based on parameters like disorder, atmosphere, and constitution. These parameters are finalized by experts of ayurveda. Decision tree and neural network technologies are used for designing recommendation systems.

A. Semwal, D. Mishra, V. Raj, J. Sharma and A. Mittal, et.al [15] Classifying various type of bat strokes played in a cricket match has always been an arduous undertaking while indexing the cricket sport. Identifying the type of shot played by the batsman in a cricket match is a substantial aspect as well as one of the unplumbed subjects in this domain. This paper proposes a novel scheme to recognize and classify different types of bat shots played in cricket. The model relies on the state-of-the-art techniques like saliency and optical flow to bring out static and dynamic cues and on Deep Convolutional Neural Networks (DCNN) for extracting representations. Moreover, a completely new dataset of 429 videos, has been introduced to evaluate the performance of the proposed framework. The model achieves an accuracy of 83.098% for three classes of right-handed shots and 65.186% for three classes of left-handed shots.

III. METHODOLOGY

In order to fulfill the study's objectives, 48 college cricket players who were enrolled in different Krishna University-affiliated institutions were chosen at random to serve as subjects. They were between seventeen and twenty years old. The 48 subjects that were chosen were split into three equal groups, each with sixteen members: Group I was designated as a yoga practice group, Group II as a physical exercise group, and Group III as the control group. Subjects in Group I practiced yoga, subjects in Group II engaged in physical exercises, while subjects in Group III engaged in their daily routine rather than any particular yoga or physical activity.

Instruction was provided for twelve weeks, five days a week, for 45 minutes a day in the morning, under the investigator's supervision, to both experimental groups. The instruction consisted of physical activities and yogic practice.

The playing ability is one of the performance factors. The three trained coaches subjectively scored each cricket player's performance using a ten-point rating system. Both before and after the experimental therapy, the data were gathered. The data that was gathered was examined using analysis of covariance (ANCOVA).

IV. RESULT ANALYSIS

The performance analysis of Effect of Yogic Exercises on performance in cricketers is seen in this section.

Table.1 Performance Analysis

Parameters	Physical	Control	Yoga
Confidence level	96.7	89.5	99.5
Mean square	97.2	91.6	98.9
Capability	98.1	89.9	99.2
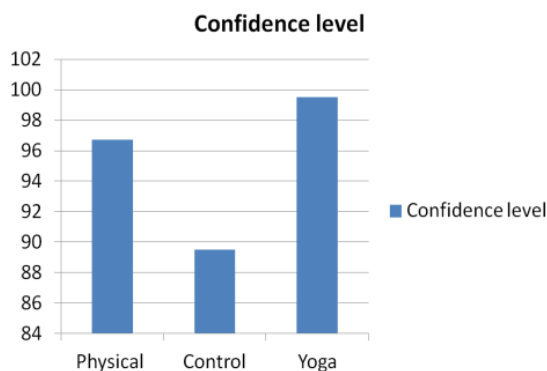
Fig.1: Confidence Level Comparison Graph

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

Mean square level comparison graph is observed in Fig.2 between physical exercises group, Yoga group and control group.
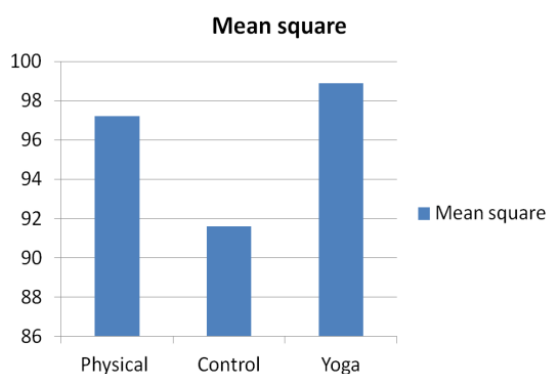
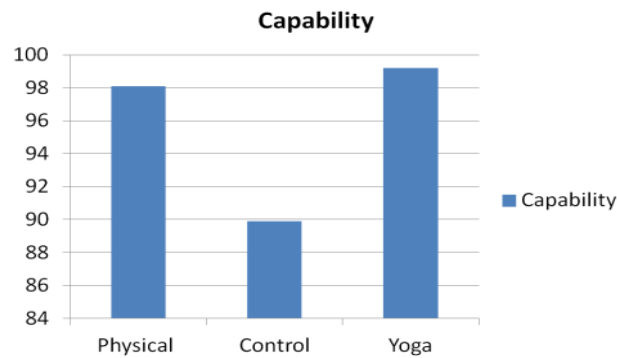
Fig.2: Mean square Comparison Graph

Fig.3: Capability Comparison Graph

In Fig.3 capability level comparison graph is observed between physical exercises group, Yoga group and control group. Yoga group shows higher capability.

V. CONCLUSION

The results of the study indicated that the experimental group' yogic practice had a significant influence on performance among cricket players. Also, yoga practices group performs better than physical exercise group and control group.

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