International Journal of Physical Education & Sports Sciences
Vol. 13, Issue No. 2, April-2018, ISSN 2231-3745

Influence of a Sport-Specific Training on Fitness Performance of Volleyball Players

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Abstract – Physical fitness is an essential first and foremost criterion in every game. Without having physical fitness no one can elicit his amble performance level. It is important to research that the level of physical activity in which volleyball is more important. Ball games require significant physical, technological, mental and tactical expertise. Amongst them, players' physical attributes have major implications for the players' skills and the team's strategies. Players must also have the physical ability to meet sport specifications. Volleyball is one of the world's most famous sports. Sadly, Indian volleyball players' rates of success lag well behind international standards. The goal of this study was to test volleyball players' endurance, muscular stamina, strength and cardio respiratory stamina and compare the results with age matched controls. The results of volleyball players should also be contrasted with the international standards of literature available and recommendations for enhancing their level of performance made.

Key Words – Physical fitness, volleyball, Flexibility, Muscular Endurance, Power, Cardio-Respiratory Endurance.

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INTRODUCTION

Sport today has become a significant and dynamic cultural phenomenon. It's amazing; almost everyone's got involved in it in some way or another. It's been heavily involved. A number of research studies undertaken by experts in sport and physical education have stressed the significance for the selection and growth of the talent in sports and for improved success at different levels of the sport competition. Particular frameworks related to various sports activities must be examined. The success of a sportsman is a function of various factors. Physically, emotionally, strategically and tactically. Among them are most essential physical skills. Also abilities, preparation, motivation and physiological factors are essential to success. Indian athletes and sportsmen were particularly deprived of their low success in the international competition for their coaches, physical educators and sports scientists. Strives to raise our sportsmen's standards have been made for a long time, but there have so far been little progress in this area. Volleyball is one of the world's most famous sports. It's both the strength agility and pace game. Fitness in this game is of the utmost importance. The factors relating to health therefore play an important role in players' success. The present research has been conducted so as to measure some basic physical fitness parameters including flexibility, muscle endurance, volleyball players' strength and aerobic respiratory endurance, and to identify gaps in the fitness level in order to provide some important suggestions to improve the level of volleyball players' performance. In this context, we conducted a study in order to determine the physical fitness according to age matched controls and international norms, of volleyball players from a university team and players playing higher university level.

REVIEW OF LITERATURE

Meckel Y. et. al. (2015) Specified RST performance indices, analyse their connections with RJTs and aerobic fitness in qualified volleyball players. Their connections with the performance indices of a repetitive jump test (RST). There have been no major linkages between the RST and RJT performance indexes. In the RST Protocol, significant associations were found and the predicted peak VO2 between PD, IS and TS. Between RJT performance indexes and peak VO2 no significant correlations were established. The results indicate that a set of repeated activity test protocols can consider the particular technique used in sport, and that a different RJT, rather than classical RST is best suited for testing volleyball players' anaerobic capacities. The results also indicate that aerobic fitness plays only a minor role in sustaining efficiency during a typical repetitive volleyball jumping activity.

Romero Davila C. et. al. (2015) Define fitness and game performance profiles, analyse the connection between these profiles and evaluate the link

between player profiles and play team performance. They showed a correlation between the two profile forms. Linear regression then showed that the number of players with a high fitness profile and team performance in the championship is relatively mild. Their studies also concluded that coaches and trainers can better handle training plans in order to obtain personalised training, to recognise criteria for volleyball-specific physical fitness training and to produce better outcomes when competing in competitions.

Woods M.A., e.g. (2015) factors investigated leading to professional Australian Rules Football Players jumping success (ARF). Mass, height, age, lower body strength, and eccentric usage ratio and leg stiffness included physical measures. In comparison with the LC group, the HC group showed a higher CMJ speed and CMJ capacity. In addition, the HC group showed that Kleg was 7.5% higher than the LC group. Spearman's correlations between rho and jumping height, velocity and strength showed moderately significant relations, while an analysis of regression showed the velocity of the jump was the sole predictive variable. In a group of professional ARF athletes, jumping success clearly differs. Motion speed tends to be a major jumping factor, but less corporeal strength and Kleg also play a major role in jumping success.

Battaglia G. et. al. (2015) examined In vertical jumping and tossing in young women's basketball and volleyball, the 3-year sport preparation experience (SSTB). They also recorded that the vertical jumping performance in SJ and CMJ was higher with and without arm swing vp groups than in BP and C. In particular, we have shown that in SJ, CMJ and CMJ-AS studies, VP showed higher flight time and jump height than C. The performance of players in SCPT and SBOMBT was higher than C. In the contrast between BP and C during SCPT however, they found only a substantial difference. We also found important associations in C and VP groups in comparison with BP one between SBOBMT performance and the CMJ-AS jump height. Three years of SSTB could encourage major adaptations of neuromuscularity in the full strength of volleyball and basketball athletes as compared with age-matched controls.

Cristina Sterkowicz P. K. et. al. (2014), analysed whether and how sports skills level and gender of the Olympic Volleyball Tournament participants have to do with age, body height, body fat, body mass index and the results of fitness tests. For the attack height and the block height, a major advantage over groups B and C was found. In Group A, differences in the ranges of attack and block were not important among women and men as regards net height. Middle block jump range, especially in women, did not match up to attack jump. The use of the PNN network demonstrated that age, BMI, relative jump and block jump are strong predictors of sport performance. In the men's category, the number of players properly listed was lower than in women. Lower sport findings showed major differences: A, B and C. They concluded that national team selection should take into account players with a long background in competition with appropriate ratios of weight/height who are well-adapted to their jumping training.

J. et. al. Dal Pupo. (2014) has demonstrated excellent jumping reliability, average vertical jump height and fatigue index. Peak lactate displayed moderate faith. Large correlations between the mean high of the first four jumps from CJ30 and the Wingate's high power have been established, between CJ30's average vertical jumping height and the average Wingate power, and between the CJ30 and Wingate lactate peaks. The fatigue index between CJ30 and the wingate was found to be moderately associated. A accurate test is the continuous hop and some of WAnT's anaerobic properties are calculated. The anaerobic correlations observed between the tests show that the CJ30 can adequately assess the level of anaerobic efficiency.

Carling C. and Collins D. (2014) have put the young player inside elite académy talent recognition and growth processes more in physical testing and subsequent benchmarking. This topic is compounded by the present media discourse at the time the English Premier League released a vision for the future growth of young football in the League. This is also supported by Elite Player Performance Plan and EPPP (Elite Player Performance Plans. London: Author). The EPPP suggests creating a domestic database to compare the performances of Academy players with national "benchmark" profiles of physical testing. This letter challenges the actual usefulness and the possible shortcomings of national athletic profiling initiatives for the elite youth football in the continuation of the above debate.

Robertson S. et. al. (2014) In the Australian Football League project prediction, establish a performance and anthropometric model of physiological attributes. Data from three Australian Under-18 soccer tournaments were collected from 2010 to 2013. Logistic regression models have been shown as the most significant attributes for Draft performance in the multi-stage fitness, height and 20m sprint distance. The study of the rule induction showed the most likely recruitment for players showing multi-stage fitness tests scores of >1 4.01 and/or 20 m of sprint times of < 2,99. Aerobic and/or speed testing has a high output standard that raises the probability of Australian junior soccer players being recruited to the highest level.

Nikolaidis P.T. (2013) were examined by the prevalence of obesity/overweight and the relationship between body mass index, BF and adult volleyball players. BMI cutbacks were observed, 27.5% in young people and 12.3% in adulthood, and

the incidence of overweight in young girls was higher than in women. In both age groups, BMI was linked to BF. Certain physical and physiological features were superior to those with overweight in average participants. For example, normal girls and women during WAnT have higher average power than their overweight counterparts. BMI and BF have inverted physical fitness with the exception of versatility. The results indicate that overweight and fatness have a detrimental impact on selected physical health parameters. In adolescent volleyball, the prevalence of overweight was higher than in the general population which was new, suggesting proper exercise strategies to target the body mass excess in young volleyball clubs should be established.

CRITERIA OF MEASUREMENT OF PHYSICAL FITNESS:

Flexibility:

Sit and reach test: This test is used to measure hip and back flexion growth as well as the expansion of leg muscles. The goal is to see how far a person can stretch his fingertips straight beyond his foot. A tape was mounted on the floor and on the floor, a 15-inch line was marked perpendicular to the tape. The subject was asked after enough warm-up to sit down and line his heels with the perpendicular rim of the tape between the two heels and to shift his seat back over the zero end of the tape. An assistant stood up against the subjects as he reached out to keep his heels from slipping across the perpendicular rows. Two assistants were still keeping the subjects locked up in the knees. The subject was then asked to slowly and gradually expand without jerks, to keep his knees locked and heels not more than 5 centimetres apart. The fingertips of both hands were touched as much as possible down the handle. The test score for the subject which was recorded in the record was the best one of three trials in the next quarter of an inch.

Muscular Endurance:

In the present study, muscular endurance was tested by dynamic relative type. In this type, the performer executes identical repetitions of a movement through a designated distance and over an unlimited amount of time. The test is scored in terms of the numbers of correct executions completed. Following tests were done in the present study

(a) Push-ups:

The goal was to test arms and shoulder girdle endurance, i.e. muscle strength in the high body. The actor had to lower the body from a straight forward arm leaning resting position until the chest hits the mat and raised it up to the straight support of his arm. The exercise has been continued without rest for as many repeats as possible. The score was the right number of push-ups. Precautions taken:

- ► The performer should not sag or pike his body but should maintain a straight line throughout the exercise.
- ► The score was terminated when the performer stopped to take rest.
- ► If the chest did not touch or if the arms were not completely extended on an execution, the trial was not counted

Thus only the total numbers of push-ups executed correctly were recorded [1]

(b) Sit-ups:

The endurance of the abdominal muscles was calculated by the numbers of seated ones with bent knees. For this test only a mat and a metering stick were needed. The artist was asked to flex his knees over the measuring rod from a laying position on his back, while sliding his heels as near as possible to his seat. The measuring rod was close under the knees and the artist was told to slowly slide his feet forward. The heel and seat lines were labelled at the stage where the yardsticalk fell to the mat to demonstrate how far the feet remained from the seat during the curved knee drill. The topic was then asked to place his fingers behind his neck and sit down. In the inside of the right knee the left elbow should strike and the right élbow must touch alternately inside the left knee. The theme was asked as much as possible to repeat the exercise.

Precautions taken:

Repetitions were not counted,

i) If finger tips did not maintain contact behind the head.

ii) When the knees were not touched by elbows.

iii) When the subject pushed off the floor with the elbow.

Power (vertical jump):

a) Vertical jump without approach (Sargent chalk jump)

This test aimed to assess the strength of the legs in spring upward vertically. A yard and several pieces of crack and sweet wall surface were required to at least 12 metres from the ground. The equipment and material were necessary. The theme was asked to stand with his face against the wall, and to hit the heels on the floor as much as possible, and to mark the wall with an inch piece of crack in his hands closest to the wall. This was the ordinary extent of the subject noted in centimetres. It then asked the subject to swing downwards and backwards,

thinking that the knees bent at a recto angle were in a hooked position and to leap as high as possible. The highest point of the jump was noted as the subject on the wall. This was the vertical jump performed without approach by the subject.

b) Vertical jump with approach:

Three steps from the wall were asked for the theme to approach the spike. Starting at the end of the third stage, the subject was asked to approach the wall and then to jump as high as possible with his hands extended, and to mark the crack on the wall. With this, he had to reach the highest point of the wall. The best jump with approach has been noted after 3-5 tests. The score of the subject reported and entered his record profile was the number of centimeters between the standard reach and the jump, with approach measured closest to half a centimeter.

Speed:

One's ability to perform successive movement of the same pattern at a fast rate is speed. Speed may also be defined as rapidity with which a movement or successive movements of the same kind may be performed by an individual. Speed of muscle contraction is an inherited quality but it can be greatly improved through training by proper techniques and practicing speedy movement and their proper coordination. Speed is measured by dividing distance by time in short runs.

Test: Speed for 50 -Yard Dash (AAHPER youth fitness test Item).

Purpose: To measure speed. Facilities and Equipment: A football field with same starting line, and finishing line of a 50 yards course and two stopwatches.

Procedures: i) After a short warm up period the student take a position behind the starting line. For best result 2 students run at the same time in a competitive mood. ii) The starter uses the command, "Are you ready?" and "Go!" The latter is accompanied by a downward sweep of the arm as a signal to the timer. iii) The students run across the finish line. iv) 1 trail is permitted.

Instructions: 1. Student may take any position behind the starting line as they wish. 2. On the command, "Go!" the student can run as fast as he can to cross the finish line. 3. Do not slow up until across the finish line. Then student may slow down gradually.

Scoring: The score was the elapsed time as indicated in stopwatch between the starting signal and the student crosses the finish line.

Testing personnel: One starter and 2 timers are needed to administer this test. One assistant scorer did record the times.

Agility:

The speed with which an individual may change his body positions or fastness in changing directions while moving is known as agility. It may be defined as one's controlled ability to change body position and direction rapidly and accurately.

Test: Shuttle Run. (AAHPER youth fitness test) Purpose: To measure the agility.

Facilities and Equipment's: Two lines 30 feet apart and parallel to each other are placed on the field. Since the student must overrun both of these lines, it is necessary to have several feet more of space at either end. Four blocks of wood, 2 by 2 by 4 inches and stopwatch.

Procedure: i) The student stands at starting and the lines with the 2 blocks placed at the opposite line. ii) On the signal to start, the student runs to the block, takes one, and returns to the starting line, and places the blocks behind that line. iii) He then returns to the second block, which is carried across the starting line on the way back. iv) Two students run at the same time two trails are permitted.

Instructions: i) On the signal to "Go!" run as fast as the student can to the opposite line and pick up a block. ii) Student should return the block over the second line where student place it on the floor. iii) Do not throw it. iii) Return for the second block, and this time student may run across the starting line as fast as student can without placing the blocks on the ground.

Scoring: The score is the elapsed time recorded in seconds, for the better of two trails.

Testing personnel: One starter starts this. Two trained tester taken time and one assistant record the score. (Barrow and McGee 1979)

Power:

Ability to release maximum muscular force in an explosive manner in the shortest duration is known as muscular power, for example, standing broad jump or vertical jump performance.

Test: Standing Long Jump.

Purpose: To measure power.

Facilities and Equipment: A measuring tape and a mat. Space on the floor or an outdoor jumping pit.

Procedure: The student stands behind a takeoff line with his feet several inches apart. Before jumping

the student dips at the knees and swings the arms backward. He then jumps forward by simultaneously extending the knees and swinging the arms forward. Three trails are permitted. Measurement is form the closest heel mark to the takeoff line. Indoor administration is best accomplished by placing a tape measure on the floor at right angles to the takeoff line and permitting the student to jump along the line. Measurement can then be made by sighting across the tape to the point of the jump.

Instructions: Must take off from both feet simultaneously, jump as far forward as possible, and land on both feet. Try not to fall backward after the landing. You can jump further by crouching before the jump and swinging your arms.

Scoring: The score is the distance between the takeoff line and the nearest point where any part of the student's body touches the floor. It is measured in feet and inches to the nearest inch. Only the best trail is recorded.

Testing personnel: Two testers needed to administer this test and one scorer did record the distance.

CONCLUSION

Volleyball is one of the world's most famous sports. Sadly, Indian volleyball players' rate of success lag well behind international standards. The goal of this study was to test volleyball players' endurance, muscular stamina, strength and cardio respiratory stamina and compare the results with age matched controls. The results of volleyball players should also be contrasted with the international standards of literature available and recommendations for enhancing their level of performance made. Sport today has become a significant and dynamic cultural phenomenon. It's amazing; almost everyone's got involved in it in some way or another. It's been heavily involved. A number of research studies undertaken by experts in sport and physical education have stressed the significance for the selection and growth of the talent in sports and for improved success at different levels of the sport competition. Particular frameworks related to various sports activities must be examined.

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