The Study of Effect of Sand Training on Jump Abilities of University Level Volleyball Players

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Abstract

The purpose of this study was to find out the effect of sand training on selected jump abilities of university level volleyball players. The subjects were taken from affiliated colleges of Punjabi University Patiala who had performed at Inter University Level. There were 24 volleyball players (Experimental group-12, Control group-12). Standing vertical jump, Standing broad jump and Approach and jump reach were used as tests for study. 't' test was applied to find out difference between pre training and post training abilities.

KEYWORDS: - Sand training, Experimental group, control group.

INTRODUCTION

Performance in sports competitions at various levels have become a sign of prosperity, development and innovations of new techniques in the field of sports. It is gaining momentum day by day and high level of research in the field is going to explore the possibilities of investigating in the ingredients responsible for the enhancement of sports performance and facilitating the talent selection for competition. It is evidently visible that all the countries of the world are trying to establish their dominance over other and to achieve that the coaches, trainers and concerned sports bodies will have to try their best to find out the various mean sand methods of training for achieving their ends successfully.

During the last few decades, volleyball has gained tremendous popularity all over the world with the improvement in performance in competitive volleyball and increasing awareness of the significance of sports and games for the welfare of the human being after its introduction in modern Olympic Games. There is rapid increase in performance at different level of competitions in volleyball. The players possessing high performance level in the all performance determining factors have the chance to win Olympic or other world level competition. In fact height is the main prerequisite for the volleyball game but alone height is not helping to get success in the high level competitions. **Hirata (1996)** examined 116 Olympic volleyball players who were found to be tall and lean. There overall height was 183.3cm and weight 79kg. Further, in his study he observed that generally volleyball players are not as tall as basketball players. Volleyball is not like other sports giving time to the athlete to respond in his optional way to the given situation. By nature it is a rebound sport, where the athlete has to adapt himself faster. Because of the quick reflexes expected from players, sometimes fraction of delay in reaction may bring negative results on performance. In volleyball, blocking and spiking

required exceptional vertical jumping ability. During blocking and spiking the jumps are performed with adjustment of foot or with running take off or with the hop or from stand still positions.

According to Kumar et. al. (2002) that plyometrics train the muscle to produce high forces in a short time to cause sport specific improvement in speed, quickness, agility and powers. Plyometric training is also known as jump training and it is aimed towards the development of jumping and running abilities. It is proposed to bridge the gap between speed and strength training. Plyometrics or more accurately stretch shortening training involves a rapid strengthening of a muscle immediately followed by a powerful contraction. The stretching action permits the storage of elastic energy and the activation of the stretch reflex. Both mechanisms increase the potential strength and speed of the subsequent muscular contraction. Ploymetric training include various jumping and rebounding exercises that are supposed to develop the muscle, stretch reflex; this would promote faster and more efficient recruitment of the motor units. He concluded that ploymetrics and weight training programme are the ideal way to increase one's vertical leap for volleyball as long as the ploymetrics exercises are performed properly. **Terry and Nethery (1993)** studied the effect of combined plyometric/weight lifting programme on vertical jumping performance and found a significant improvement in vertical jump after 4 weeks training. **Holcomb et. al. (1996)** stated that the training with depthjumps has been found to significantly improve the vertical jump performance. Holcomb further explained that strength may also be enhanced because muscles are trained under tension greater that normal maximal tension. This is achieved by taking advantage of stored elastic energy and the added force to contraction caused by the stretch reflex.

Kumar and Alexnder (2004) stated that plyometric are used to exploit the muscles cycle of lengthening and shortening in order to increase maximal power. There is a quick and forceful eccentric contraction, or lengthening of a muscle group, followed by an explosive and violent concentric contraction or shortening of the same muscle group. There are three phases of the Stretch-shortening cycles (SSC), which will be very important to remember the muscle physiology phase 1 is called the eccentric phase or stretch phase. It is this phase where the pre-loading of the agonist muscle takes place. A rapid eccentric contraction of the agonist muscles uses the SEC to store elastic energy. Phase 11 is the most important phase of the SSC. This phase is often called the amortization phase or the transition phase. Amortization refers to the gradual extinction, extinguishing or deadening of something. Phase 11 is the time that elapses between the end of the phase 1 (eccentric action) to the beginning of the concentric contraction (phase-111), Phase 111 is often called the concentric phase of the SSC or the violent shortening of the agonist muscles. The force generated is greater than that of an isolated concentric muscles action due to the alpha motor neurons stimulating the agonist muscle group through the stretch reflex. This phase also utilize the stored elastic energy from phase 1 to increase the energy needed for force output.

OBJECTIVE

To find out the effect of sand training on selected jump abilities of university level volleyball players

HYPOTHESIS

It was hypothesized that training on sand would develop the jumping ability.

METHODOLOGY

The present study has been conducted to find out the effect of sand training on selected jump abilities of university level volleyball players

Selection of the Subjects: - For the purpose of selection of the sample of study was delimited to the male volleyball players those have at least participated in the Inter University were identified. The twenty four male volleyball players were selected from colleges of Punjabi University Patiala. All 24 subjects were divided by lottery methods into two groups namely experimental group and control group consisting of 12 subjects each.

TABLE-1

Sr. No.	Name of the exercise	Number of repetition	Intensity	Rest period
1.	Sport jumps with both legs	10 rep x 4 sets	Maximum possible effort for all Exercises.	Complete recovery (2-5 min.) in between the sets for all the exercises.
2.	Tuck jumps	10 rep x 3 sets		
3.	Double leg jumps	5 jumps (on set x 4 sets)		

Tests used for the study:-

1. Standing vertical jump: - A scale was marked on the wall from 1.5 to 3.5 meters above the ground. The subject was asked to stand with his side to the wall and extend his one arm upward to a maximum level along the scale without raising his heals. This level was recorded as the standing reach of the subject. He then put some chalk powder on the tips of the fingers of the same hand and stood with his side to the wall. From this position he them took vertical jump by bending his knees and by swinging the arms and made a mark on the scale as high as possible. Three attempts were given with a sufficient rest time in between the attempts. The best jump was recorded.
2. Standing broad jump: - The subject stood just behind the take-off line keeping both feet comfortably apart. A five centimeter thick take-off line was drawn with lime powder, fifty centimeter away from the jumping pit. From this position by bending his knees and arm swing the subject jumped forward without touching the take off line. Double jump was not recorded.
3. Approach and jump reach:- A measuring tape was pasted on the basket ball board (in cm.). The subject was asked to jump and touch with single hand (dominant hand) on the scale as high as possible. His fingers were dipped into the lime powder so as to make the impression on the scales. The subjects were allowed to take approach run and jump to reach as high as possible with maximum effort by using double leg take off. The subjects were encouraged to take jump with maximum effort. The highest point of reaching was measured. The subjects were given 3 attempts.

STATISTICAL PROCEDURE: - The collected data was analyzed through the statistical treatment i.e. Mean, Standard Deviations, ‘t’ tests.

TABLE-2
COMPARISON IN PRE AND POST TRAINING TEST VALUES OF EXPERIMENTAL GROUP

Name of Test	Pre training (n=12)		Post training (n=12)		't' value
	Mean	S.D.	Mean	S.D.	
S.V.J.	52.11	1.49	57.30	1.12	2.42*
S.B.J.	227.01	2.75	245.59	2.77	7.41*
A.P.J.	291.01	3.15	301.43	3.72	2.82*

Tabulated value=1.796

TABLE-3
COMPARISON IN PRE AND POST TRAINING TEST VALUES OF CONTROL GROUP

Name of Test	Pre training (n=12)		Post training (n=12)		't' value
	Mean	S.D.	Mean	S.D.	
S.V.J.	52.22	1.47	54.32	1.37	0.00
S.B.J.	229.12	1.34	231.14	1.20	0.00
A.P.J.	290.91	2.07	293.88	2.00	0.00

Tabulated value=1.796

DISCUSSION & FINDINGS

The present study has been conducted to find out the effect of sand training on selected jump abilities of university level volleyball players. The twenty four male volleyball players were selected from colleges of Punjabi University Patiala. Results showed that the mean values of all the jump abilities had improvement in the post test. The study indicated that four weeks sand training has caused improvement in the test for jumping ability of experimental group. The results obtained also confirm the findings of **Singh HP (1994)**. The hypothesis was accepted in this study. But there was insignificant difference of jump abilities of control group. So it indicated that sand training added to the routine training programme improves explosive strength of leg extensors leading to improvement in jump test performance.

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