EFFECT OF ISOTONIC EXERCISE PROGRAMME ON SPEED & AGILITY OF VOLLEYBALL PLAYERS

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ABSTRACT

The purpose of the study was to find out the effect of the isotonic exercise programme on the speed and agility of volleyball players. For this purpose, twenty subjects were selected by Quota sampling technique and after the pre-test, all the subjects were scattered into two equal groups i.e. experimental group and control group(n=10 in each group). The experimental group underwent eight weeks of weight training program whereas the control group was not given any kind of training. Pre-test and post-test were applied to get the data from both groups. The difference between groups was analyzed by applying a t-test for the significant differences at 0.05 levels. The findings of the test showed the significant value of the t-ratio for selected variables in the experimental group. The results were found significant. The findings of the study revealed that the eight weeks isotonic exercise program is very beneficial to increase the speed and agility of volleyball players.

Keywords: Speed, Agility, Isotonic exercise, Volleyball Players

INTRODUCTION

A sport is commonly defined as an organized, competitive, and skillful physical activity requiring commitment and fair play. It is governed by a set of rules or customs. In a sport, the key factors are the physical capabilities and skills of the competitor.

The theory and methodology of training is a vast area. An intimate awareness of the information available from each science will make the coach more proficient in his/her training endeavors. The principles of training represent the foundations of this complex process, while the acquaintance with training factors will enable the coach to understand the role played in training by each factor in accordance with the characteristics and specifics of a sport.

Sports training is an entirely planned, systematic, regular, and continuous process based on scientific principles to achieve a high level of performance. The special characteristic of sports training is to result in the pursuit of different objectives, aiming at not only improving performance but also maintaining diminishing performance due to age. Training in sports programmes plays a very important role in improving the all-round personality of an individual and team (Harre 1982).

A training program must be designed in consideration of age particularities, and its success depends in part on the quality and abilities of the individual athlete involved. Thus, consideration must be given to the selection of athletes. Not all athletes have the physiological capabilities to become world-class champions.

The chapter referring to the methodology of developing motor abilities (strength, speed, endurance, flexibility, and coordination) will assist the coach in selecting the optimal method of training, while the knowledge acquired from the planning section will provide the coach with the ability to train hid athletes in such a way that maximum performance will be achieved at the desired time. But training is not everything. Now a day's one must recognize the importance of regeneration and recovery between training lessons, which is a necessary factor to ensure continuous improvement in one's performance (Bompa 1983).

Isotonic Exercises

The word isotonic is from Greek and roughly translates to equal or same tone. The muscle maintains equal tone while shortening during isotonic exercise. That means your muscles maintain the same tension throughout the exercise. Examples of isotonic exercise include squats, stair climbing, bicep curls, and push-ups.

Isotonic Contraction

In an isotonic contraction, tension remains the same, whilst the muscle's length changes. There are two types of isotonic contractions: (1) concentric and (2) eccentric. In a concentric contraction, the muscle tension rises to meet the resistance, and then remains the same as the muscle shortens. In eccentric, the muscle lengthens due to the resistance being greater than the force the muscle is producing.

Kaminoff (2007) sums up it well while discussing human kinetics stating that in concentric contraction the length of muscle decrease during a contraction while in eccentric contraction the length of muscle increase during a contraction.

METHOD AND PROCEDURE

The major objective of the present study was to ascertain the effects of the isotonic exercise programme on the speed and agility of volleyball players, so an experimental method was used in the study. The sampling used in this study was selected on the basis of the quota sampling method. The various testing procedures and training programme was explained to the subjects in detail before starting the training programme. For the present study, twenty subjects were selected and divided into two equal groups. The t-test was applied to determine the significant difference between the pre-test and post-test mean scores of experimental and control groups. To achieve the objectives of the study shuttle run (10 x 4 yards) fitness test was applied.

DATA ANALYSIS

As already stated, the main purpose of the investigator was to know the effect of the isotonic exercises training programme on the speed and agility of volleyball players. For this purpose, an isotonic exercise training schedule for 8 weeks was drawn up. Analysis of the study was divided into two test phases i.e. pre-test before the start of the experiment and post-test after the 8 weeks isotonic exercises training programme on both the groups i.e. experimental and control groups. The results were analyzed through the use of an appropriate approach of statistics. In this case, the t-ratio was computed between pre and post-tests to find out whether there existed any significant difference between the mean scores after the experiment.

The results are presented in the following tables and also represented through a graph:

Table 1

Comparison of pre-test and post-test related to Speed & Agility of volleyball players through 10x4 yards shuttle runs

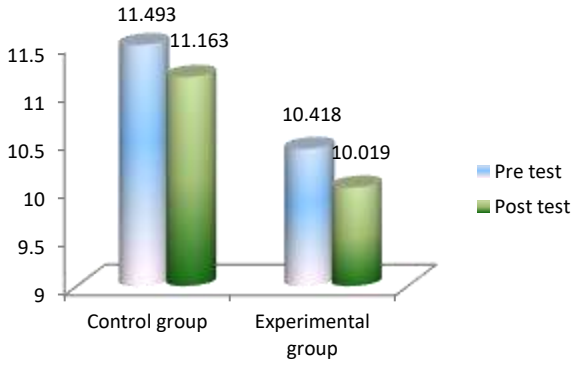
Control Group				Experimental Group		
Tests	Mean	SD	t-ratio	Mean	SD	t-ratio
Pre-test	11.493	0.723	2.262	10.418	0.826	2.262
Post-test	11.163	0.762		10.019	0.691	

*Significant at 0.05 level

Table 1 shows the result of the pre-test and post-test of the 10x4 yard shuttle run. It is evident from the histogram given in graph 1 that it is significant at 0.05 levels. This means that there is a significant difference in the pre-test and post-test performance of the experimental group. It is also revealed from the data that post-test means are more than pre-test means. This implies that the players have improved the performance of the 10x4 yard shuttle run after the training programme.

Graph 1

Comparison of pre-test and post-test related to Speed & Agility of volleyball players through 10x4 yards shuttle runs



CONCLUSION

The findings pertaining to the speed and agility of the volleyball players revealed the following results:

There was a significant development in speed and agility after 8 weeks of the isotonic exercises training programme for the experiment group.

It is worth mentioning here that after the pre-test when the control group was made free to go for physical exercises as per their regular schedule. When the post-test of the control group along with the experimental group was considered, it was found that the control group also improved in physical fitness variables such as shoulder strength, agility, explosive strength, and endurance aspect of the control group.

The investigator has come to realize that the various elements connected with the physical fitness of volleyball players, have not been analyzed and their vital role has been undermined. However, the present study intends to throw light on the necessary relevant and coaching ability of these elements so that their role may be properly and judiciously evaluated.

REFERENCES

1. Agnihotri H, Kapoor S. The Comparative Effectiveness of Isotonic and Isokinetic strength training on quadriceps peak torque, Serbian journal of sports sciences, Maharishi Markandeshwar Institute of Physiotherapy and Rehabilitation, Maharishi Markandeshwar University, 2010.
2. Berger RA. Effects of Dynamic and Static Training on Vertical Jumping Ability, Research Quarterly: American Association for Health, Physical Education and Recreation, 2013; 34; 4: p. 419-424.
3. Bompa TO. Theory and Methodology of Training, The key to Athlete Performance, 2nd edition, Kendall/Hunt Publishing Company, 1983.
4. Calvin S. Effect of Progressive Resistive Exercises on Motor Coordination of Boys, Research Quarterly, 1959, p.387- 398.
5. Coleman AE. Effect of Unilateral Isometric and Isotonic Contractions on the Strength of the Contra lateral Limb, Research Quarterly: American Association for Health, Physical Education and Recreation, 2013; 40; 3: p. 490-495.
6. Campbell R. Effect of Supplemental Weight Training on Physical Fitness of Athletic Squads, Research Quarterly, 1962; 33: p. 343-348.
7. Cordova ML, Ingersoll CD, Kovaleski JE, Knight KL. A Comparison of Isokinetic and Isotonic Predictions of a Functional Task, 1995.
8. Dennison JD, Howell ML, Morford WR. Effect of Isometric and Isotonic Exercise Programs upon Muscular Endurance, Research Quarterly: American Association for Health, Physical Education and Recreation, 2013; 32; 3: p. 348-352.
9. Edward CK. The Effect Systematic Weight Training on Power, Strength and Endurance, Research Quarterly, 1952, XXIII, p. 361-398.
10. Eapen C, Chetan D, Zulfeequer C. Effect of Eccentric Isotonic quadriceps muscle exercises on Patello femoral pain syndrome, an exploratory pilot study. Asian journal of sports medicine, 2011; 2; 4: p. 227-234.
11. Hare D. Principles of sports training, Berlin: sports sverlag, 1982, p.10.
12. Joshi S, Singh M. Comparative effect of isotonic and isometric exercises on the performance of cricket playing skill, international journal of behavioral social and movement sciences, 2013; 02; 01.
13. Palanisamy A, Franklin M, Dhanaraj S. Effects of Power Training with Varied Intensity on Selected Motor Fitness Variables among College Men Volleyball Players, 254 x Paripex- Indian journal of research, 2013; 2; 7.
14. Philip JR, Laurence EM. Effect of Static and Dynamic Exercises on Muscular Strength and Hypertrophy, Journal of Applied Physiology, 1957; 11; p. 129-134.
15. Rosentswing J, Hinson MM. Comparison of Isometric, Isotonic and Isokinetic exercises b Electromyography, Arch. Physical Education and Medical and Rehabilitation, 1972; 53, p. 249-60.
16. Rezaeimanesh D, Farsana PA. The Effect of a 6 Week Isotonic Training Period on Lower Body Muscle EMG Changes in Volleyball Players, Procedia – Social and Behavioral Sciences, 2011; 30, p. 2129-2133.
17. Thomas JP. Organization of Physical Education, Anderson Street, Madras. 1972. p. 156-159.

Web reference:
www.topendsports.com