Effect of In-Season Training on Strength Parameters among Volleyball Players

C. Arumugam, Assistant Professor, Departmennt of Advanced Training & Coaching, Tamil Nadu Physical Education and Sports University, Chennai.

Abstract

It is generally accepted that the training programme are designed to develop the fitness component for the required sports during off season. The fitness level will be maintained during in season training protocol. However the improvement in performance is possible with the help of well designed training intervention. The purpose of this study was to find out changes in strength performance after an in-season training programme in volleyball players. Higher secondary volleyball team players 14 in number were selected for this study and their age was ranging from 17 to 19 years. The study was designed to carry out resistance training and plyometric training drills apart from regular practical sessions in the competitive period for about 30 minutes in each training session. Training was given twice a week for 6 week. It was 3-4 sets of 8 – 10 repetition of resistance and plyometric exercise. These two variables muscular strength, explosive powers were assessed before and after the six week of training. Muscular strength was improved to 9.5% and explosive power was increased to 18.6%. The finding suggests that the strength parameter of volleyball players could be improved during the competitive season by implying well designed training programme and in turn in may help the players for better performance.

Key words: Resistance training, Plyometric drills, In-Season training.

Introduction

Volleyball is an Olympic sport is being played at different levels in all over the world. It becomes popular by its thrilling actions, and attracts the sports lover, spectators. To play this game one should be familiar with the explosive movements, such as jumping, hitting and blocking. Apart from these, the technical and tactical aspect of skill also plays predominant role in the successes of the Inter- national competition. It is quite natural that the coaches concerned are philosophically aspiring to enhancing the performance of their players to win medals. They tried, to prove their preeminence with this scientific approach to requirements for which they think off. The researches in this field also have shown keen interest in conceding the effective results. Due to the impact of science every angle of sports movements could be concentrated and analyzed to look for better performance. I would like to concentrate on the strength factor which is very vital why because, the playing ability could be enhanced and if the individual possess the jumping ability, naturally he will try to put more effort to learn and execute the skills during practice. And I had my own doubt whether can I go for resistance and Plyometric drills in the competitive seasons, yes the research review reveals that it could be.

Review of Related Literature

Marques (2006) have stated that the muscular strength and explosive power are the most important factors for the successful participation during elite competition. Due to the recent trends of technical training and competition the in-season training programme concentrates on the strength factors and designed to maintain adequate level for several

moths however it was un successful in competitive season the female hockey players, Who completed a maintained training programme 2 and 3 times per week. Hakkinen (1993) suggested that in order to maintain explosive strength careful attention was given during the entire course of competitive season. He found that if heavy resistance training was stopped for about five weeks and explosive strength training was performed, developments in both maximum strength and explosive strength observed, in contrast to Hakkine (1993) by his previous research with female basketball player found an increase in vertical jump explosive type of strength training. Adans.et.al (1992) provided clear evidence that the combination of resistance training and Plyometric were superior for the development of vertical jump performance compared to either training alone, most recently Marqnes, et.al (2004) showed an increase in explosive power and muscular strength in a group of professional male volleyball player during in- season when using resistance and Plyometric drills. These studies highlight the necessity of combining two training models when applying to improve performance in elite athletes. The ability to maintain or increase power and performance during the competitive season is an important consideration. To maintain certain level of maximum strength and explosives the, frequency the above exercise was given careful attention during the competition session. The hypothesis squabble in this article is that the mere elite volleyball players will be able to improve their strength factors in terms of jumping and hitting by doing resistance training and Plyometric drills apart from regular practice sessions during competitive period.

Purpose of the Study

The purpose of the study was to find out the changes in strength parameters during the in - season period among volleyball players. .

Methodology

The subjects selected for this study was the higher secondary volleyball team players (N=14) of Sports School Coimbatore. Their age was ranging from 17 to 19 years. They are having regular practice for about 4 hours daily. This was designed and executed before their State level match. Only the selected 14 players were administered this treatment. As such it was not possible to have a control group because in practical terms to locate another equal team sample with same training and at the same performance level in team games is diffluent task.

Training was given for 6 weeks and twice a week, apart from their regular practice. The training protocol was divided in to two segments as three weeks each. In the First three weeks the resistance training which includes Squat, Leg press, and bench press was carried out and in the second three weeks the Plyometric drills such as Depth jump, Rim jump and medicine ball throw were carried out. Given below the table, shows the detailed training programme.

Table -I
Resistance Training Schedule

Exercise	First week				Second week				Third week			
	Set	Rep.	% 1RM.	Rest (sec)	Set	Rep.	% 1RM.	Rest (Sec)	Set	Rep.	% 1RM	Rest (sec)
Squat	3	8	40%	60	3	8	60%	60	4	8	80%	60
Leg press	3	8	40%	60	3	8	60%	60	4	8	80%	60
Bench press	3	6	40%	60	3	6	60%	60	4	8	80%	60

Table-II
Plyometric Drills Schedule

Exercise	Fourth week				Fifth week				Sixth week			
	Set	Rep.	Height cm / wt	Rest (sec)	Set	Rep.	Height cm / wt	Rest (Sec)	Set	Rep.	Height cm / wt	Rest (sec)
Depth jump	3	8	40cm	60	3	8	60cm	60	4	8	70cm	60
Rim jump	3	8	--	60	3	8	--	60	4	8	--	60
Ball throw(medicine ball)	3	6	3kg	60	3	6	3kg	60	4	8	3kg	60

Pre and post test were conducted to assess the muscular strength by 1RM test and explosive power by vertical jump and ball throw for distance, the data's were recorded.

Statistical Analysis

Collected data, were presented as mean and SD comparison between pre to post test of the selected variable were analyzed using a paired simple't' test.

Table-III
Pre-test, Post-test Mean, Standard Deviation and‘t’ ratio of Muscular Strength of Volleyball Player

Test	Mean	Standard deviation	MD	T Ratio	Level of confidence
Pre-test	89.5	5.19	8.50	4.12*	0.01
Post-test	98	9.27			

*(the table value required for significant at 0.01 level of confidence for the DF 13 is 3.01)

Table III indicates the pre test and past test duration and‘t’ ratio of muscular strength of volleyball player. The pre-test mean and standard deviation values were 89.5 and 5.19 and the post-test mean and 9.27. The obtained‘t’ ratio for these values is 4.12.

The obtained ‘t’ ratio of Muscular Strength of volleyball player was 4.12 which was towards to be significant at 0.01 level of confidence , since the obtained ‘t’ ratio of 4.12 is greater than the table value of 3.01 the study indicates that there is a significant difference between pre-test and post-test data of volleyball players

Figure-1
Bar Diagram shows the Pre and Post Test Mean of Muscular Strength of the Volleyball Players

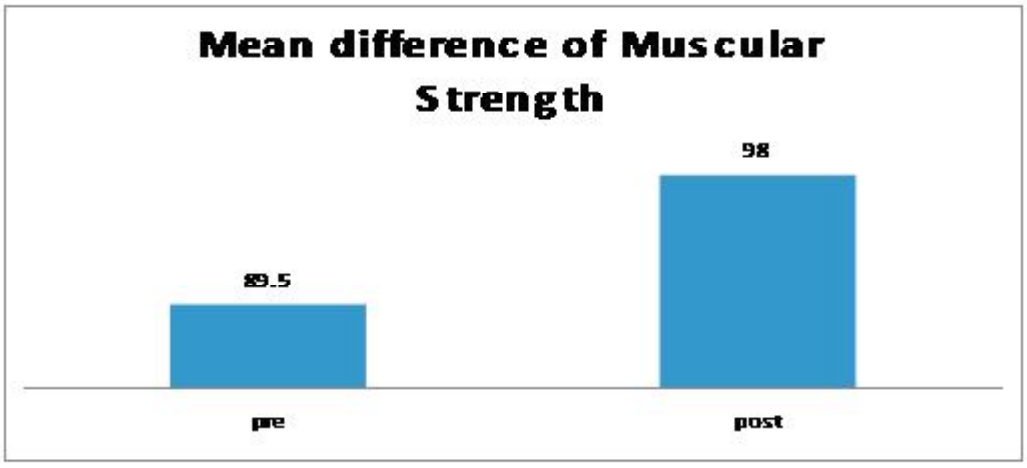


Table-IV
Pre-test and Post-test Mean Standard Deviation and‘t’ ratio of Explosive Power of Volleyball Players

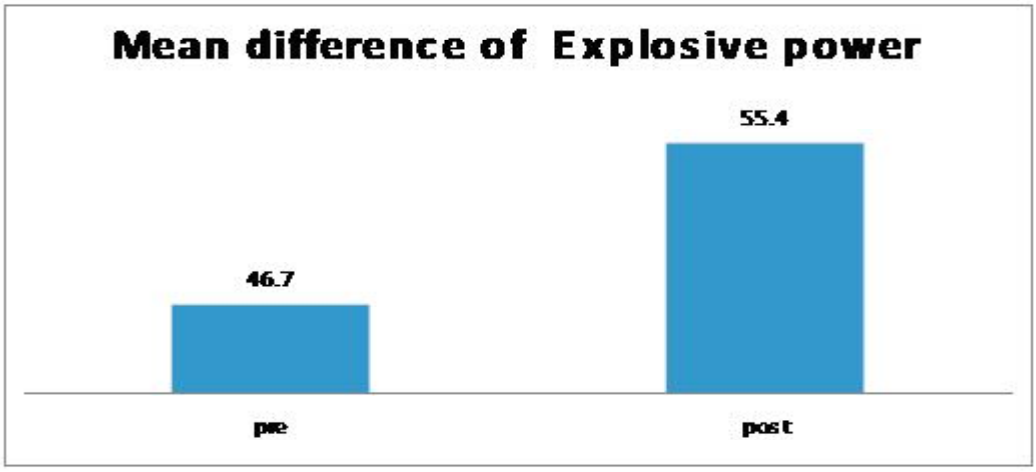
Test	Mean	Standard deviation	MD	T Ratio	Level of confidence
Pre-test	46.7	2.45	8.70	19.40*	0.01
Post-test	55.4	2.17			

*the table value required for significant at 0.01 level of confidence for the DF 13 is 3.01

Table –IV indicates the mean standard deviation and‘t’ ratio of explosive power of volleyball player. The pre-test mean and standard deviation value were 46.7 and 2.45 and the post-test mean and standard deviation were 55.4 and 2.17 the obtained‘t’ ratio for these values is 19.40.

The obtained ‘t’ ratio of explosive power of volleyball player was 19.40 which was found to be significant at 0.01 level of confidence , since the obtained ‘t’ ratio of 19.40 is grater then the table value of 3.01 the result of the study indicates that there is a significant difference between pre-test and post-test data of volleyball players.

Figure-2
Bar Diagram shows the Pre and Post Test Mean of Explosive Power of the Volleyball Players



Conclusions

The finding shows that an increase in upper body strength and lower body strength by 9.5% and explosive power was 18.6% for the volleyball players.

Discussions

The thought behind this study was to look at the changes in strength and explosive power during the competitive seasons among the volleyball players whom are under regular training. To my knowledge it is risk to go for resistance and Plyometric drill during the competitive period rather concentration on tactical and team training. The result shows that the changes in upper body and lower body as well as jumping and throwing are possible during the competitive phase training combination of resistance training moderate load of Plyometric drills. The improvement for upper body and lower body as 9.5%, the jumping and throwing were 18.6% respectively. So designing training programme just to maintain the strength and power during the competition seasons may not have as much advantages for physical performance, however delicate balance must be achieved as practice and competitive demands require by the players.

Several studies are conducted extensively on the independent and combined effect of resistance training and Plyometric training, the results showed that the improvement in strength and explosive power in elite players. When the resistance training is combined with Plyometric .more over the subjects are under regular training, the improvements were observed after the intervention. It is difficult to compare the results on scientific literature because the studies differ in their design factors, including mode, frequency, and intensity frequency of training and training history of subject. It is essential to have further research on these cases and identify other possible means responsible for the observed development after concurrent training.

Heiderscheit, et.al, compared the effect of isokinetic training with Plyometric training over head medicine ball throw on shoulder strength and as expected the isokinetic group improvement in isokenitic strength. On the other Plyometric training group increased softball throw for distance by five times greater than the isokinetic group, another the changes did not reach statistically significant. Medicine ball throw exercise and test were included in this study to assess explosive power and its improvement was observed after six weeks introversion

Improvement of strength during the competition session is different due to time availability and volume of work intensity for resistance training is limited. Baker reported an increase in 1RM bench press in a group of rugby players during competitive season but no change in upper, lower body power of performance. Marques found significant increase in IRM bench press professional team hand ball player after six weeks of resistance training

To conclude these subjects can increase both muscles strength explosive power with moderate and medium intensity

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