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COMBINED EFFECT OF PLYOMETRIC OWN BODY RESISTANCE AND MEDICINE BALL TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES OF SCHOOL LEVEL VOLLEYBALL PLAYERS

Physical Education

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ABSTRACT

The purpose of this study was to find out the combined effect of plyometric, own body resistance and medicine ball training on the selected physiological variables of school level volleyball players. The investigator selected forty eight (N=48) male volleyball players who represented for their schools from Sri Ramakrishna Mission Vidhyalaya Swami Shivananda Higher Secondary School (English and Tamil medium), TAT Kalanilayam middle school, GKD Matriculation Higher Secondary Schools Periyanaicken palayam Coimbatore, Tamilnadu, India, were selected as subjects and their ages were ranged from 13 to 15 years. The subjects were divided into two equal groups of twenty four each. Group –I acted as experimental group (Plyometric, Own body resistance and Medicine ball trainings (POBRMBT). Group –II acted as Control Group (CG). Experimental Group was given 12 weeks (Duration – 12 weeks, Session – 3 day/week, Duration of one session – One hour) of plyometric own body resistance and medicine ball training and control group was not given any specific training. The dependent variables namely forced vital capacity (FVC) and peak expiratory flow (PEF) were selected and measured by digital Spiro meter for this study. The data was analysed by the use of paired't' test. The obtained 't' ratio was tested for significance at 0.05 level of confidence. The analysis of the data revealed that there was a significant improvement on the selected criterion variables namely forced vital capacity (FVC) and peak expiratory flow (PEF) by the application of plyometric, own body resistance and medicine ball training (POBRMBT).

KEYWORDS

plyometric, own body resistance, medicine ball training, forced vital capacity (FVC), peak expiratory flow (PEF) and digital Spiro meter.

INTRODUCTION

Volleyball is a team sport in which two teams of six players are separated by a net. Team tries to score points by grounding a ball on the other team's court under the organized rules. It has been part of the official program of the summer Olympic Games since 1964.

The complete rules are extensive. But simply, play proceeds as follows a player on one of the teams begins a rally by serving the ball from behind the back boundary line of the court, over the net and into the receiving teams court. The receiving team must not let the ball be grounded within their court. The team may touch the ball up to three times but individual players may not touch the ball twice consecutively. Typically the two touches are used to set up for an attack, an attempt to direct the ball back over the net in such a way that the serving team is unable to prevent it from being grounded in their court. The rally continues with each team allowed as many as three consecutive touches, until either a team makes a kill, grounding the ball on the opponent's court or winning the rally or a team commits a fault and loses the rally. The team that wins the rally is awarded a point, and serves the ball to start the next rally. The ball is usually played with the hands or arms, but players can legally strike or push the ball with any part of the body. A number of consistent techniques have evolved in volleyball, including spiking and blocking as well as passing, setting, and specialized players positions and offensive and defensive structures. (Lodl, K. 2005).

PHYSIOLOGY

Physiology is concerned with how the body reacts and functions during exercise. The effects of training are critical facet of exercise physiology research, which makes it perhaps the most important of the sports studies because it is concerned with all aspects of how the body adapt to exercise. Exercise physiology includes the function and contraction of the muscles, the working of the nervous system during physical activity, the function of the respiratory system, and the working of the cardiovascular system. (William H. Freeman 2002).

PLYOMETRIC TRAINING

Plyometric training also known as "jump training" has traditionally been reversed for athletes in jump related or athletics based sports. This is mainly due to the similar movements involved in the drills for these two sports but they are also comparable in terms of the forces impacting on the body for example a sprinting athlete will load around 2.5 times body weight during each stride of the race. Plyometric as a term was formed the Greek root "pleythyien" which loosely translated and means "to augment" or "to increase" the term plyometric was coined by American track and field coach in 1975 Fred Wilt. He thinking was to combine two Latin words plyo and metric which again loosely and means "more" and to "measure." (Chu Donald, 1998).

OWN BODY RESISTANCE TRAINING

Own body weight exercises can help stay fit at home, or on the road with little or no equipment. Here are a few of the best own body exercises for maintaining muscle strength and endurance, or creating a great interval training routine at home. Mix and match the exercises to create the perfect workout for traveling, home fitness or simply adding a bit of variety to your typical exercise routine. This can be walking, marching push-ups, sit-ups, and marching in place or stepping side to side. (Elizabeth Quinn, 2014).

MEDICINE BALL TRAINING

Medicine balls are a great way to exercise any area of your body, whether upper, lower, or core. There are different sized exercise balls from 2-12, that you can use for numerous different exercises. Medicine ball training is suitable for all ages, fitness levels and sizes. There are many advantages to training with medicine balls. They allow for improved range of motion, core strength, coordination, flexibility, joint integrity, and upper and lower body strength. The great thing is that you can involve a partner or simply use a solid, sturdy wall. (Joe Downie, 2003).

METHODOLOGY

For this study, forty eight (N=48) male volleyball players from Sri Ramakrishna Mission Vidhyalaya Swami Shivananda Higher Secondary School (English and Tamil medium), TAT Kalanilayam Middle School, and GKD Matriculation Higher Secondary Schools of Coimbatore, Tamilnadu, India, were selected as subjects at random and their ages ranged from 13 to 15 years. The subjects were divided into two equal groups of twenty four each. Experimental Group was given 12 weeks (Duration – 12 weeks, Session – 3 day/week, Duration of one session – One hour) of plyometric own body resistance and medicine ball training and control group was not given any specific training. Experimental Group-I (plyometric own body resistance and medicine ball Trainings (POBRMBT) were given to the experimental group. The subjects were tested in the selected criterion variables namely forced vital capacity (FVC) and peak expiratory flow (PEF) by digital Spiro meter lab test for this study. Before and after the training period the data were collected. The collected data was treated by using paired t-test. The level of confidence was fixed at 0.05 level.

TABLE-I COMPUTATION OF 't' RATIO BETWEEN THE PRE AND POST TESTS ON FORCED VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	M	SD	σ DM	DM	t- ratio	'p' value
Experimental	Pre Test	2.10	0.49	0.76	0.39	5.19*	0.01
	Post Test	2.50	0.51				
Control	Pre Test	2.01	0.32	0.05	0.08	0.15	0.88
	Post Test	1.99	0.44				

* Significance at 0.05 level.

The table I indicates that there was a significant improvement on the forced vital capacity through the plyometric own body resistance and medicine ball training. It reveals that the obtained t-ratio 5.19 is significant because the 'p' value is lesser than the 0.05, level of confidence. So there was a significant improvement on the forced vital capacity between the pre and post tests of the experimental group, whereas the control group showed no significant improvement. Hence the result indicates that the significant improvement on the forced vital capacity was due to the plyometric own body resistance and medicine ball (POBRMBT) training alone.

FIGURE-I FIGURE SHOWING THE MEAN DIFFERENCE OF PRE AND POST TESTS ON FORCED VITAL CAPACITY OF EXPERIMENTAL AND CONTROL GROUPS

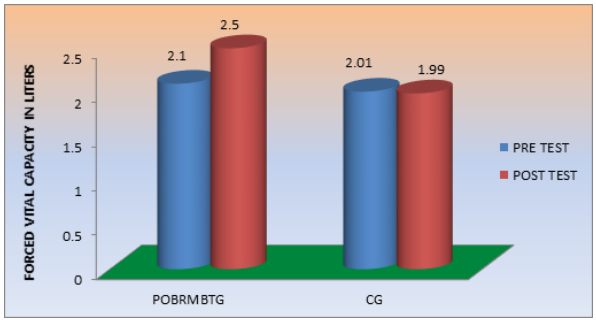


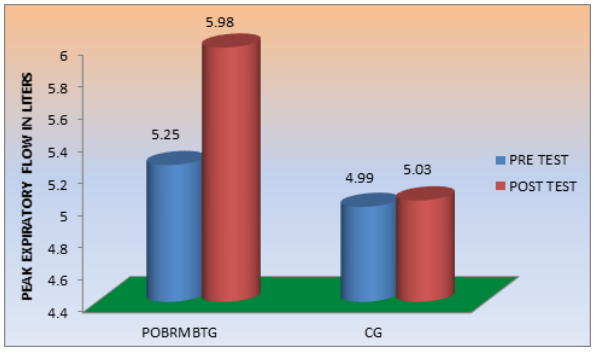
TABLE-II COMPUTATION OF 'T'-RATIO BETWEEN THE PRE AND POST TESTS ON PEAK EXPIRATORY FLOW OF EXPERIMENTAL AND CONTROL GROUPS

Group	Test	M	SD	σ DM	DM	t- ratio	'p' value
Experimental	Pre Test	5.25	1.21	0.15	0.72	4.77*	0.01
	Post Test	5.98	0.99				
Control	Pre Test	4.99	0.74	0.15	0.01	0.10	0.92
	Post Test	1.99	0.44				

* Significance at 0.05 level.

The table II indicates that there was a significant improvement on the peak expiratory flow through the plyometric own body resistance and medicine ball training. It reveals that the obtained t-ratio 4.77 is significant because the 'p' value is lesser than the 0.05 level of confidence. So there was a significant improvement on the peak expiratory flow between the pre and post tests of the experimental group, whereas the control group showed no significant improvement. Hence the result indicates that the significant improvement on the peak expiratory flow was due to the plyometric own body resistance and medicine ball (POBRMBT) training alone.

FIGURE-II FIGURE SHOWING THE MEAN DIFFERENCE OF PRE AND POST TESTS ON PEAK EXPIRATORY FLOW OF EXPERIMENTAL AND CONTROL GROUPS



DISCUSSION OF FINDINGS

The result of the study reveals that the twelve weeks of plyometric, own body resistance and medicine ball training on the selected dependent variables. There was a significant improvement on forced vital capacity through the plyometric, own body resistance and medicine ball training (POBRMBT). It reveals that the obtained t-ratio 5.19 is significant because the 'p' value is lesser than the 0.05 level of confidence. So there was a significant improvement on the forced vital capacity between pre and post-tests of experimental group, whereas control group showed no significant improvement. Hence the results indicate that the significant improvement on the forced vital capacity was due to the plyometric, own body resistance and medicine ball (POBRMBT) training alone. The results of the study were in consonance with the research done by Jwa Jun Kin et al. (2015), Sabaannanth et al (2014).

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CONCLUSIONS

It was concluded that there was a significant improvement on the selected dependent variables namely forced vital capacity and peak expiratory flow by the application of plyometric training, own body resistance training and medicine ball training (POBRMBT).

REFERENCES

1. Lodl, K. (2005). Developing a game plan for good sportsmanship. New Dir Youth Development, (108):127-34, 15.
2. Joe, Downie (2003). Medicine ball training exercises equipment for all
3. Chu, Donald (1998). Jumping into plyometrics (2nd ed.). Champaign, IL: Human Kinetics. pp. 1–4. ISBN: 0880118466.
4. William H. Freeman (2011). Physical Education, Exercise, and Sport Science in a Changing Society. Printed in the United States of America.
5. Ravindra Bali ram Khan Dare, (2016). Influence of Swiss ball training on selected physical physiological and performance related variables among tennis players in pune city. International Research Journal for Humanity Science and English Language, Vol 3(14), pp. 35-41.
6. Jwa Jun Kim, M.S., Gui Bin Song, M.S., & Eun Cho Park. (2015). Effects of Swiss ball exercise and resistance exercise on respiratory function and trunk control ability in patients with scoliosis. Journal of Phys Ther Sci, Vol 27(6), pp. 1775–1778.