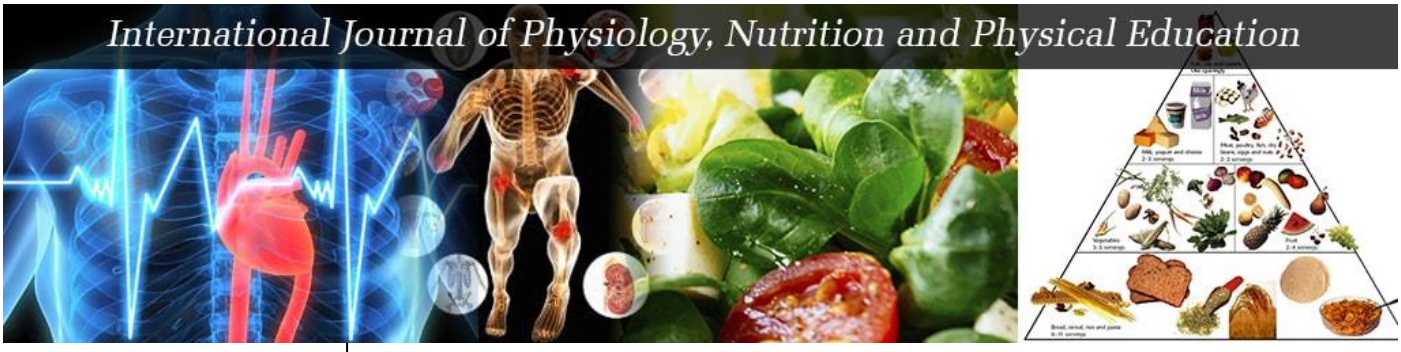

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Effect of cluster training and Pilate training on selected physical fitness variable variables of school basketball players

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Abstract
The ability to reach a high performance, skill related to particular game is essential for basketball players to excel in competitions. The purpose of this study was to study the effect of the cluster training and Pilate training on skill performance of school basketball players. To achieve the purpose of the study 30 school basketball players were randomly selected from Amirta Vidyalayam School, Coimbatore and their age were ranged between 13 and 17 years. The subjects were randomly assigned to two equal groups (n=15). All the subjects were divided in to two groups with 15 subjects each as experimental and control group. Group-I underwent Cluster training and Pilate training for a period of twelve weeks and group-II acted as control who did not participate in any special training other than the regular routine. The physical variables such as leg explosive power, flexibility were selected as dependent variables. Leg explosive power was tested by standing broad jump, flexibility was tested by sit and reach. Pre and post-test random group design was used for this study. The dependent 't' test was applied to determine the difference between the means of two group. To find out whether there was any significant difference between the experimental and control groups. To test the level of significant of difference between the means 0.05level of confidence was fixed. The result of the study shows that, there was a significant improvement takes place on leg explosive power, flexibility of school basketball players due to the effect of twelve weeks of Cluster training and Pilate training and also concluded that, there was a significant difference exists between experimental and control groups on Leg explosive power, flexibility. The control group did not improve the selected criterion variables. This protocol can be recommended to coaches for athletes or individuals as this type of training can be beneficial for increasing performance.

Keywords: Cluster training, Pilate training, leg explosive power, flexibility

Introduction
The present world is a highly competitive one. Everyone is striving to implicate a new formula in their product so as to enhance its quality and to distinguish from others. It helps them to keep their good will and to achieve their goal in time. According to Swami Vivekananda quote's that we will be of what we presume. The industrial sector, it precipitates the impact of raw material in the finishing product. Having a high caliber machines and man power, one cannot make a quality product to the quality of raw material is used. This is so common in all fields specifically in sports. Now a day, the performance of sports participants is an ever changing one because of new innovations in methods used for training and identification the player or athlete. In Europe and in western countries, players and athletes have been located scientifically with the expert team members from the field of physical education, coaching, biomedical engineering, anthropometry, exercise physiology and psychology. Such a mechanism of filtering helps in identifying the quality person for participating in sports. When such a quality person is processed with scientific training, it saves time and energy in terms of coaching and training and aid the athlete to reach their goal in time.

Basketball
The history of basketball begins with the invention of the game in Springfield, Massachusetts in the United States. The Canadian James Naismith invented the first basketball game. The game progressed first in U.S.A. and then throughout the world. As the basketball game has

become popular in American colleges, the professional games followed:

- The American National Basketball Association (NBA) grew to a multi-billion-dollar enterprise by the end of the 20th century, and the basketball became an integral part of American culture with the passage of time.
- FIBA (the International Basketball Federation) founded in 1932.
- Basketball became an Olympic Sport in 1936.

Invention of the game

The game of basketball, as we know it today was created by Dr. James Naismith in 1891 in Springfield, Massachusetts. It was meant to condition young athletes during the winter seasons. It consisted of peach basket and a soccer style ball. He published 13 rules for the new game. He divided his class of 18 into 2 teams: 9 players each and set about to teach them the basics of new game. The objective of the game was to throw the basketball into the fruit baskets which was nailed to the lower railing of the gym balcony. Every time a point was scored, the game was halted so the janitor could bring out a ladder and retrieve the ball. After a while, the bottoms of the fruit baskets were removed. The first public basketball game was played in Springfield, Massachusetts, on March 11, 1892. World basketball was growing, but it was on June 18, 1932 that a real international organization was formed, to coordinate tournament and teams: that day, Argentina, Czechoslovakia, Greece Italy, Lativa, Portugal, Romania and Switzerland founded the International Basketball Federation (Federation international basketball amateur, FIBA) in Geneva. Its work was fundamental for the first inclusion of basketball in the Berlin Olympic Games in 1936.

Cluster training

In alternative set configuration consist of manipulating work and set periods by breaking sets into small clusters of repitions. This type of training has been termed cluster training (CT), inter repitions rest training or intra set rest training 9-12. Theoretical basis of cluster set configurations lies in the short rest periods between cluster of repitions, allowing replacement of muscle phophoreatine improving the quality of each effort and of subsequent training adaptations. In this regard, previous studies have shower cluster training involves higher sustainability of mechanical performance and improved technique in complex resistance exercise & reduced metabolic demand.

Cluster training involves using short, inter- set rest periods (usually ranging anywhere from 10-30 seconds. One such prepares methodology to improve the execution of the basketball player as the preparation which act to allow us to do more reps with a heavier weight. All of the benefits of cluster training arise from the ability to do more reps with a heavier weight. At whatever point you're ready to keep force high while accomplishing more reps you're always going to see an immediate carry over to improvement in strength and muscle gains. Another benefit of cluster training is its ability to break through strength. Seeing as a great many people haven't been presented to group preparing strategies previously it makes sense that they will see their greatest profit by it the first occasion when they do it's.

Pilate training

Pilates has become a popular form of exercise for conditioning andrehabilitation. Pilates has similarities with spinal stabilization training, both aimingto normalize spinal motor control and emphasizing Transversus abdominis and Obliqueinternus abdominals recruitment Richardson Rydeard. Transverses abdominis and OI are activated during Pilates exercises when performed by experienced practitioners Critchley. Pilates training is claimed to increase activation of and OI during athletic ordaily living activities, which is said to improve sporting performance and reduceback pain Muscolino**.** Pilates is a series of low impact contraction exercise. The activities developthe muscles in the core of the body i.e., abdomen hips and back Chang. Theexercise are typically done to strengthen the abdominal muscles, hips and back bylying down on a mat this includes series of controlled movement of the arm and legs Thomson Pilates training is referred to as core strengthening that focus on back extensors and the abdominal muscles tone especially the transverse abdominals, Initially Pilates mat exercise used a wide truncal base of support in prone, side lyingor supine position while moving the limbs to vary torque on truncal muscles (Anderson, 2000). According to advocates, the Pilates method of exercise uses the concept of maintenance of the normal lumbar lordotic curve, called the neutral spine, coupled with movement of the lower and upper extremities to simultaneously enhance mobility through improved flexibility and proximal stability. However, only a few studies with dancers have been performed that demonstrate a positive impact of Pilates style exercises on function and posture (Lange 2001).

Methods

The purpose of the study was to find out the effect of Cluster and Plyometric training. To achieve the purpose of the study, thirty school basketball players were selected from AmirtaVidyalayam School. The subjects were randomly assigned in to two equal groups namely, Cluster and Plyometric training group (PTG) (n=15) and Control group (CG) (n=15). A pilot study was conducted to assess the initial capacity of the subjects in order to fix the load. The respective training was given to the experimental group the 3 days per weeks (alternate days) for the training period of twelve weeks. The control group was not given any sort of training except their routine.

Design

To evaluate physical variable Leg explosive power was tested by standing broad jump test in seconds and Flexibility was tested by sit and reach. The parameters were measured at baseline and after 6 weeks of Cluster and Pilate training were examined.

Training program

The training program was conducted for 45 minutes for session in a day, 3 days in a week for a period of 6 weeks duration. These 45 minutes included 10 minutes warm up, Cluster training and Pilate training for 25 minutes and 10 minutes warm down. Every three weeks of training 5% of intensity of load was increased from 65% to 80% of work load. The volume of cluster and Pilate training prescribed based on the number of sets and repetitions. The equivalent in Cluster and Pilate training is the length of the time each action in total 3 day per weeks (Monday, Wednesday and Friday).

Statistical analysis

The collected data before and after training period of 12 weeks on the above said variables due to the effect of Cluster and Pilate training was statistically analyzed with 't' test to

find out the significant improvement between pre and post-test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. (P<0.05)

Table 1: Computation of 'T' Ratio on Selected physical variables of school basketball players on Experimental Group and Control Group

Group	Variables		Mean	N	Std. Deviation	Std. Error Mean	t ratio
Experimental Group	Leg Explosive Power	Pre	1.10	15	0.20	0.012	3.94*
		Post	1.14	15	0.16		
	Flexibility	Pre	23.45	15	1.24	0.96	2.55*
		Post	25.90	15	1.25		
Control group	Leg Explosive Power	Post	1.06	15	0.19	0.014	1.59
		Pre	1.08	15	0.18		
	Flexibility	Post	23.80	15	1.15	1.14	0.61
		Pre	24.50	15	1.51		

*Significant level 0.05 level degree of freedom (2.14, 1 and 14)

Table I reveals the computation of mean, standard deviation and't' ratio on selected motor fitness parameters namely leg explosive power and flexibility experimental group. The obtained't' ratio leg explosive power and flexibility were 13.03, and 4.54respectively. The required table value was 2.14 for the degrees of freedom 1and 14 at the 0.05 level of significance. Since the obtained't' values were greater than the table value it was found to be statistically significant. Further the computation of mean, standard deviation and't' ratio on selected physical parameters namely Leg explosive power and Flexibility control group. The obtained't'ratio on Leg explosive power and flexibility were 1.68, and 1.33respectively. The required table value was 2.14 for the degrees of freedom 1and 14 at the 0.05 level of significance. Since the obtained't' values were lesser than thetable value it was found to be statistically not significant.

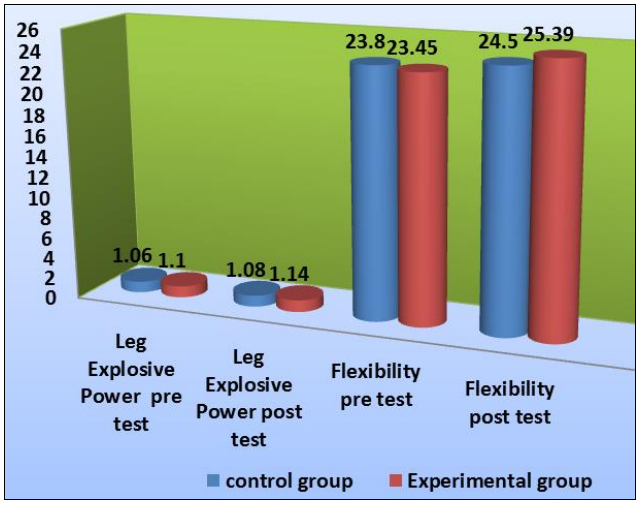

Fig 1.

Discussion findings

The present study experiment the effect of Pilate and cluster training on physical variables of school basketball players. The result of the study indicated that the Pilate training improved the physical variables such as leg explosive power and flexibility.

The findings of the present study had similarity with the findings of the investigations referred in this study. However, there was a significantly changes of subjects in the present study the leg explosive power, flexibility was significantly improved of subject in the group may be due to the in Pilate and cluster training. Collectively, it appears that, from a theoretical standpoint, the inclusion of cluster set configurations has the potential to alter the training stimulus and ultimately magnify the adaptive response. By altering the set configuration, the strength and conditioning professional may have the ability to develop specific adaptive responses that may favor maximal strength, explosive strength and power, or muscular growth Lawton, T. W., Cronin, J. B-2006.The cluster recovery time was 15 seconds which result in increasing maximum force generation capacity and it is approximately 79.7% of its initial capacity Rahimi, R., and Behpur-2005 [2]. The conceptual model of employing a cluster set configuration appears to be a sound model for developing maximal strength, enhancing power generating capacity, or stimulating greater hypertrophy [Haff, G. G., Hobbs,-2008] [3]. Pilates workouts became increasingly popular in community. This popularity makes curiosity the researcher to investigate this new exercise model. There were many studies which were investigated effects of different work load pilates training on different populations reported by Şimşek&Katırcı and Cancela *et al*. 2014 [5]. One of the investigated variables was the flexibility performance in this study. After the six weeks training period flexibility performance of the Pilates group was statistically improved. There were many studies in literature reported that Pilates exercises had positive effect on flexibility performance. Primarily aim of Pilates exercises was the increasing the flexibility and strength of the body as known by the practitioners. It may due to having long duration stretching exercises of the abdominal and leg muscles, as a parallel with the previous studies flexibility performance was one of the improved variables as found in this study.

Conclusion

There was a significant improvement takes place on selected physical variables due to the effect of twelve weeks Pilate and Cluster training. There was a significant difference exists between experimental and control groups on selected physical variables such as leg explosive power and flexibility.

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