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Impact of swiss ball exercise on selected physical fitness parameters of adolescent girls basketball players

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Abstract

This study was designed to investigate the impact of swiss ball exercise on selected physical fitness parameters of adolescent girls. To achieve the purpose of the study 30 adolescent girls' basketball players were selected from Alvernia matriculation higher secondary school. The subjects were randomly assigned to two equal groups (n=15). Group- I underwent swiss ball exercise training (SE) and Group - II was acted as control group (CG). The training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of six weeks. The control group was not given any sort of training except their routine work. The physical fitness parameters were muscular strength (sit ups), flexibility (sit and reach), balance (stoke balance test), agility (4x10 shuttle run). The data collected from the subjects was statistically analyzed with 't' ratio to find out significant improvement if any at 0.05 level of confidence. The result of the muscular strength, flexibility, balance, and agility improved significantly due to impact of swiss ball exercise with the limitations of (diet, climate, life style) status and previous training the result of the present study coincide findings of the investigation done by different experts in the field of sports sciences. Swiss ball exercise training significantly improved muscular strength, flexibility, balance, and agility of adolescent girls basketball players.

Keywords: Swiss ball exercise, muscular strength, flexibility, balance, agility

Introduction

Basketball is a very physically demanding sport. Muscle strength important basketball because while gaining strength, speed and endurance you are also tendon and ligaments which will reduce the changes of injuries, such as sprain and tears. One of the main benefits of strengthening your core is increased balance and in stability. A strong core consists of muscles that work together in coordination to stabilize and support your body. Having strong core stabilizers enables you to maximize strength in your arms and legs. Upper body strength and even fingertip strength all dictate how well you shoot the basketball. Developing muscle strength in your shoulders, wrists and fingertips will allow you to shoot the ball from further away with greater accuracy and less effort. Grip strength is extremely important for basketball players and should be a focal point of a player's basketball training, simply stated, the stronger your hands are the better you are going to be at handling the basketball because stronger hands will give you a better feel for the ball and more control over it.

The hypothesis argued in this paper is that adolescent girls basketball players can significantly increase the physical fitness parameters of muscular strength, flexibility, balance, agility by combining normal technical and tactical sessions with a swiss ball exercise program over a consecutive 6 weeks period. Therefore, the object of this study was to investigate the changes in the parameters produced during 6 weeks of swiss ball exercise training in 15 adolescent girls basketball players.

Methods

Experimental Approach to the Problem

In order to address the hypothesis presented herein, we selected 30 adolescent girls basketball players were selected from Alvernia matriculation higher secondary school. The subjects were randomly assigned in to two equal groups, namely, swiss ball exercise training group (n=15) and control group (n=15).

The respective training was given to the experimental group the 3 days per week (alternate days) for the training period of six weeks. The control group was not given any sort of training except their routine.

Design

The evaluated physical fitness parameters muscular strength assessed were by sit ups test and the unit of measurement was in counts, flexibility were assessed by sit and reach the unit of measurement was in centimeters and balance were assessed by stoke balance test the unit of measurement was in seconds and agility were assessed by 4x10mts shuttle run the unit of measurement was in seconds. The parameters were measured at baseline and after 6 weeks of swiss ball training were examined.

Training programme

The training programme was lasted 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, 15 swiss ball exercise 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 swiss ball exercise training is prescribed based on the number of sets and repetitions.

Statistical analysis

The collected data on above said variables due to the impact of swiss ball exercise 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 fitness parameters of adolescent girls basketball players on experimental group

Experimental Group						T ratio
		Mean	N	Std. Deviation	Std. Error Mean	
Muscular strength	Pre test	24.73	15	0.96	0.26	12.25*
	Post test	28.00	15	1.46	0.26	
Flexibility	Pre test	16.88	15	0.67	0.20	17.58*
	Post test	20.44	15	20.44	0.20	
Balance	Pre test	4.33	15	0.72	0.09	12.47*
	Post test	5.46	15	0.74	0.09	
Agility	Pre test	26.37	15	0.96	0.12	16.33*
	Post test	24.32	15	0.91	0.12	

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

Table II reveals the computation of mean, standard deviation and 't' ratio on selected physical fitness parameters, namely muscular strength, flexibility, balance, and agility of experimental group. The obtained 't' ratio on muscular strength, flexibility, balance, and agility were 12.25, 17.58,

12.47 and 16.33 respectively. The required table value was 2.14 for the degrees of freedom 14 at the 0.05 level of significance. Since the obtained t values were greater than the table value it was found statistically significant.

Table 2: Computation of t ratio on selected physical fitness parameters of adolescent girls basketball players on control group

Control Group						T ratio
		Mean	N	Std. Deviation	Std. Error Mean	
Muscular strength	Pre test	24.46	15	0.83	0.10	1.87
	Post test	24.26	15	0.88	0.10	
Flexibility	Pre test	16.64	15	0.62	0.06	2.06
	Post test	16.51	15	0.66	0.06	
Balance	Pre test	4.26	15	0.70	0.90	1.46
	Post test	4.13	15	0.63	0.90	
Agility	Pre test	26.33	15	0.93	0.06	1.68
	Post test	26.22	15	1.00	0.06	

*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 physical fitness parameters, namely muscular strength, flexibility, balance, and agility of experimental group. The obtained 't' ratio on muscular strength, flexibility, balance, and agility were 1.87, 2.06, 1.46

and 1.68 respectively. The required table value was 2.14 for the degrees of freedom 14 at the 0.05 level of significance. Since the obtained t values were greater than the table value it was found statistically significant.

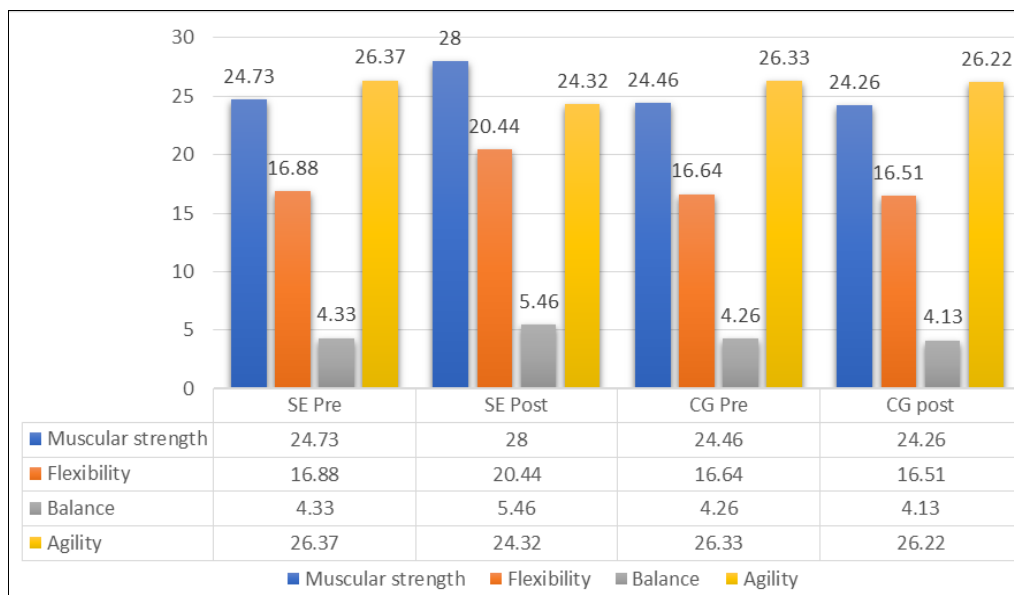


Fig 1: Bar diagram showing the mean value on selected physical fitness parameters of adolescent girls basketball players on experimental and control group

Discussion and Findings

The present study experimented the impact of 6 swiss ball exercise significantly improved the selected Physical fitness parameters of adolescent girls basketball players. The results of this study indicated that swiss ball exercise is more efficient to bring out desirable changes over the muscular strength, flexibility, balance, agility of adolescent girls basketball players. The finding of the present study had similarity with the findings of the investigators referred in this study. Based on the studies in the literature that suggest that exercises such as sit ups, double leg lowering, and push-ups performed on a Swiss-ball increase the level of muscular activity of the abdominals and oblique's more than curl-ups, double leg lowering, and push-up performed on a stable surface (Vera Garcia *et al.*, 2000). Shelvam (2014) [1] examined the study was to find out the effect of swiss ball training significant improvement on agility among netball players. Nurten (2019) [2] Investigated the effects of core strength training on balance, explosive force and agility. Ajit (2017) [3] conducted the effects of wobble board and swiss ball training significant improvement on Balance among school students. Sarika (2019) [4] examined the effects of six weeks Swiss ball exercises & plyometric training techniques on speed & agility in inter-university level male field hockey players. Wonjong (2017) [5] investigate the effects of static and dynamic balance by using Medicine-ball and Swiss-ball exercises. Chandrasekar (2016) investigated the effect of swiss ball training on physical variables among handball players.

Conclusions

It was concluded that 6 weeks of swiss ball exercise significantly improved the muscular strength, flexibility, balance, agility of the adolescent girls basketball players. From the findings it is postulated that the swiss ball exercise is suitable mode to bring out desirable changes over physical fitness parameters of adolescent girls basketball players.

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