



Effect of specific training on motor fitness parameters of school basketball girls

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Abstract

The study was designed to investigate the “effect of specific training on motor fitness parameters of school basketball girls”. To achieve this purpose 30 school level basketball girls were randomly selected from Thiyagi NGR memorial higher secondary school, Coimbatore. They were divided into two groups. The group I was considered as the experimental group and group II was considered as a control group. The investigator did not make any attempt to equate the group. The control group was not given any exercise and the experimental group was given specific training for five days per week. The experimental group was given training for the period of 8 weeks of specific training. The following criterion variables were chosen for namely speed, and leg explosive power. All the dependent variables were assessed before and after the training period of 8 weeks. The collected data on motor fitness parameters due to effect of specific training was analyzed by computing mean and standard deviation. In order to find out the significant improvement if any, ‘t’ test was applied. 0.05 level of confidence was fixed to test the level of significance. The study revealed that the motor fitness parameters were significantly improved due to the influence of specific training of basketball girls.

Keywords : Specific training, motor fitness, speed, explosive power and Basketball

Introduction

Basketball consists of short bursts of intense activity with rest intervals that may be very brief (Dead ball situations) or prolonged (Timeouts, half times). A typical basketball game lasts about 1 hour 45 minutes. Based on these characteristics, it has been estimated that basketball is 80% anaerobic and 20% aerobic (Brittenham, 1996). It has been suggested that of the time spent training, 85% should be devoted to anaerobic training with the remaining 15% of the time devoted to a combination of aerobic and anaerobic training (Wathan and Roll, 1994). In addition to this many of the conditioning workouts will include repeated intervals of sprints, defensive shuffles, or any number of other drills designed to improve the lactate tolerance of the athlete. These drills involve high intensity

efforts (>100% VO₂ max) lasting between 10 and 90 seconds with rest intervals proportional to the work intervals (Reaburn and Jenkins, 1996). Successful basketball players have highly developed skills, but athletic ability, particularly speed, power and coordination may limit a player from reaching his or her potential (Brittenham, 1996).

When designing a program to develop basketball specific speed and agility, the majority of the training should focus on improving the capacity to accelerate the body (Reaburn and Jenkins, 1996).

Basketball requires all four species of speed: reaction speed, explosive speed, velocity and skill (Helin *et al.*, 1982). Speed is known to be strongly inherited as part of the neuromuscular system and achieving biological structural changes is the easiest during early in the childhood. Because

Table - 1. Training schedule

DAY	ACTIVITY	LOAD
MONDAY	Basketball Weight training: Presses: 5 sets X 5 reps Pulls: 5 sets X 5 reps Other lifts	Drills, practice games, Heavy Moderate
TUESDAY	Basketball Plyometrics and speed drills (5 exercises) Jogging and easy intervals	Drills, practice games, conditioning Low-moderate volume, high intensity 2-3 miles, moderate
WEDNESDAY	Basketball Weight Training Squats: 5 sets X 8 reps Pulls: 5 sets X 3 reps Other lifts	Drills, practice games Heavy Light
THURSDAY	Basketball Plyometrics and speed drills (5 exercises) Jogging and easy intervals	Drills, practice games, conditioning Low-moderate volume, high intensity 2-3 miles, moderate
FRIDAY	Basketball Weight training: Presses: 3 sets X 10 reps Pulls: 5 sets X 5 reps Other lifts	Drills, practice games, Light Moderate
SATURDAY & SUNDAY	REST OR RECREATIONAL ACTIVITIES	

the basic work developing the coordination is done in childhood, it is clear that training in childhood plays a crucial role in speed development (Mero Antti, 2004).

The motor performance of basketball players competing at the elite level was examined in several studies. However, to the best of the present authors' knowledge, no study has addressed the motor fitness parameters of school level basketball girls.

Therefore, this study aimed to analyze the motor fitness parameters in school level basketball girls after 8 weeks of the specific training programme. It was expected that a scientific specific training method for basketball girls could be proposed.

Methodology

Subjects

To achieve this purpose 30 school level basketball girls were randomly selected from Thiyagi NGR memorial higher secondary school, Coimbatore as subjects. They were divided into two groups. The group I was considered as the experimental group and group II was considered as a control group. The investigator did not make any attempt to equate the group. The control group was not given any exercise and the experimental group was given specific training for five days per week. The experimental group was given training for the period of 8 weeks of specific training. They understood the purpose of study,

Table – 1. Summary of mean and ‘t’ test for the pre and post tests on speed and explosive power of control and experimental groups

Parameters	Group	Test	Mean	Standard deviation	Mean difference	‘t’ ratio
Speed	CON	Pre	9.50	0.46	0.01	0.43
		Post	9.49	0.45		
	EXP	Pre	9.50	0.46	0.64	3.36*
		Post	8.86	0.59		
Explosive power	CON	Pre	199.13	8.15	10.47	0.86
		Post	188.67	48.43		
	EXP	Pre	221.13	9.22	8.67	4.47*
		Post	229.80	10.05		

* significant at 0.05 level

all procedures involved, voluntarily accepted to undergo all the training procedures.

Design

The evaluated parameters were speed (50 m dash), and explosive power (Vertical jump). The parameters were measured before and after the specific training program. The effects of the training program were examined.

The core weight training exercises are presses (e.g., bench press, incline press, military press, etc.), pulls (e.g., power clean, squat clean, power snatch, split snatch, high pull), and squats (e.g., squats, step-ups, lunges, leg press, ram rack). Other lifts include rotator cuff exercises, crunches, pull-ups, biceps curls, leg curls, etc. After the first two weeks, add more weight on heavy and moderate days. Interval training might include striding the straights and walking at the turns on a 400-m track or running repeatedly 200 - 400 meter strides on a track. Basketball may include informal pick-up games or structured practices aimed at developing skills. The 5 plyometric exercises are side to side ankle hops, standing jump and reach, double leg hops, lateral cone hops, and hexagon drill.

Data analysis

The collected data on motor fitness parameters due to effect of specific training was analyzed by computing mean and standard

deviation. In order to find out the significant improvement if any, ‘t’ test was applied. 0.05 level of confidence was fixed to test the level of significance.

Result

The above table reveals the computation of ‘t’ ratio between the mean of pretest and posttest of control and experimental groups on speed and leg explosive power of school level basketball girls. The mean values of pre and post test of speed and explosive power for the control group were 9.50 and 9.49 199.13 and 188.67 respectively. Since the obtained ‘t’ ratio 0.43 and 0.86 were lesser than the required table value 2.145. It was found statistically not significant for the degree of freedom 1 and 14 at 0.05 level of confidence.

The mean values of pre and posttest of speed and explosive power for experimental group were 9.50 and 8.86, and 221.13 and 229.80 respectively. Since the obtained ‘t’ ratio 3.36 and 4.47 were greater than the required table value 2.145. It was found statistically significant for the degree of freedom 1, and 14 at 0.05 level of confidence.

The results clearly indicated the speed and leg explosive power of experimental group

improved due to the influence of 8 weeks specific training programme.

Discussion

The main findings from this study were the significant increases in the sprinting ability and leg explosiveness after specific training. Several factors may have contributed in the changes speed and explosive power, including a better synchronization of body segments, increased coordination levels, and a greater muscular strength/force. These factors may be related to a more effective skill domain in vertical jump, contributing to the improvement in the basketball shooting technique. Another explanation for the success of this program may be due to the use of a high training load during plyometrics, contributing to enhanced motor unit recruitment, thus increasing training effects.

The game of basketball is recreational and a competitive game. It helps the promotion of health, body control, alertness, co-ordination and team spirit (Chan, 1999). Speed is the main goal of physical training in modern basketball. Speed is the most visible physical part of the game. A player, who is very quick, can solve many situations during the game with one single explosive performance. The most important conditions for speed in basketball are offered by skills and power (Forsman *et al.*, 2006). Speed is the ability what a player need to execute a movement with the greatest possible acceleration and velocity. A basketball game lives on fast sprints, sudden turns and crossovers. If there's an opportunity, a player wants to immediately react with lightning speed. A player who is too slow and reacts late mostly loses his duels and that kind of player is not reliable to pass the ball on to and cannot be dangerous at the basket (Barth and Boesing, 2010).

According to Forsman *et al.* (2006), strength can only be developed with meaningful training. A basketball player should reach a high basic

strength level because, it has several beneficial influences to moving in the court through from speed, explosive- and situation power. It is also important to maintain the already reached basic strength level and keep it in a right shape to get the speed out of it. According to Gaskill and Sharkey (2006), when an athlete develops speed and power, she/he will become more agile. According to studies made by (Kiiskinen, 2005). the game requires reaction speed, velocity and speed endurance and this means, that basketball player's anaerobic endurance efficiency of a performance has to be on a high level.

Conclusions

In light of the results of the study and the limits of the sample and the framework of statistical treatments used, the following conclusions were made.

1. It was concluded that eight weeks of the specific training programme produced significant improvement in speed of school level basketball girls.
2. Eight weeks of specific training programme produced significant improvement in the explosive power of school level basketball girls.

Recommendations

The proposed training programme can be a part of physical preparation of basketball players, to improve their skill and playing ability.

It is necessary to raise awareness of the trainers with the importance of the specific exercises in the direction of the skill.

Studies may be conducted in the same area on different samples in terms of age and gender. There is a need to undertake more researches in this area.

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