

EFFECT OF SIX WEEK TRAINING PROGRAMME ON PHYSICAL FITNESS OF FIFTEEN YEARS OLD BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study was to assess the effect of six week training program on physical fitness of fifteen years old basketball players. For this purpose, fifteen basketball players of Bilaspur division (Chhattisgarh), were selected as the subjects of the study. The age of the subjects was fifteen years old. A training programme was carried for a period of 6 weeks. During the testing, all of the subjects were healthy. Measurement for various variables taken at the beginning (Pre-test) and after 6 weeks training programme (Post-test). The Mean, SD, and 't' test were computed through SPSS 16.0 program by the investigator for the collected data. The difference of pre-test and post test scores were taken into account and level of significance was set at .05 level of confidence. The results of the study indicated that the female basketball players had improved their results through the initial and final testing in the agility run, vertical jump and standing broad jump after the six week training programme. Significant improvement was not seen in single limb balance and sprints performance of female basketball players by means of six week training programme. The six-week sand training program have an effect also on the statistically relevant increase in the explosive type strength of the leg muscles and agility, which in turn leads to an increase in the vertical jump standing long jump. and agility run.

Keywords: Physical Fitness, Training Programme, Performance, strength

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INTRODUCTION

Basketball is a team sport in which two teams of five active players each try to score points against one another by placing a ball through a 10 feet (3.048 m) high hoop (the goal) under organized rules. Basketball is one of the most popular and widely viewed sports in the world (2008).

Points are scored by throwing (shooting) the ball through the basket above; the team with more points at the end of the game wins. The ball can be advanced on the court by bouncing it (dribbling) or passing it between teammates. Disruptive physical contact (foul) is not permitted and there are restrictions on how the ball can be handled (violations).

Women's basketball began in 1892 at Smith College when Senda Berenson, a physical education teacher, modified Naismith's rules for women. Shortly after she was hired at Smith, she went to Naismith to learn more about the game. Fascinated by the new sport and the values it could teach, she organized the first women's collegiate basketball game on March 21, 1893, when her Smith freshmen and sophomores played against one another. Her rules were first published in 1899 and two years later Berenson became the editor of A.G. Spalding's first Women's Basketball Guide, which further spread her version of basketball for women.

Komi and Bosco (1978) compared the vertical jump performance of men and women under 3 conditions: squat jump (SJ), countermovement jump (CMJ), and depth jump (DJ). All subjects attained the greatest jump heights in the DJ condition, followed by the CMJ and SJ conditions.

Blattner and Noble (1979) compared a DJ training group, an isokinetic training group, and a control group. They found both the DJ and isokinetic groups jumped significantly higher than the controls.

Clutch and colleagues (1983) compared CMJ training to DJ training when combined with weight training. They found no significant differences between the DJ and CMJ training groups, as both groups improved their vertical jump ability by 8.4 cm after 4 weeks of training.

Dursenev and Raevsky (1978) felt that depth jumps from 2 meters or higher were superior for improving muscle strength.

Brown et al. (1986) found significant improvement in vertical jump height following a 12-week DJ training program in male basketball players when compared to controls. Other researchers found that DJ training increased vertical jump ability in subjects who were participating in an activity that required jumping, and that any form of jump training increased vertical jump height in subjects whose activity did not require jumping. However, we are unaware of any research that has directly compared the effects of CMJ vs. DJ training for improving energy production as well as vertical jump

The purpose of the study was to assess the effect of six week training program on physical fitness of fifteen years old basketball players. It was hypothesized that significant difference may exist among fifteen years old female basketball players between the pre-test and post tests of specific physical fitness, who utilized training program of six weeks.

METHODOLOGY

Selection of Subjects:

The sample consisted of fifteen basketball players of Bilaspur division (Chhattisgarh), were selected as the subjects of the study. The age of the subjects was fifteen years old. A training programme was carried for a period of 6 weeks. During the testing, all of the subjects were healthy. Measurement for various variables taken at the beginning (Pre-

test) and after 6 weeks training programme (Post-test).

Training Programme:

Prior to the realization of the training programme by the basketball players were trained for three weeks using a preliminary period training programme for a duration of 90 to 120 minutes. The basic aim during this period was to increase the basic abilities. The initial measuring took place following the completion of this phase of the preliminary period. The final measuring took place three days after the completion of the six week training programme.

Load dosing was done for every subject individually. As the starting values in load dosing for training, the values of the maximum attempts for all of the exercises contained in the explosive leg strength exercises were used. In creating the individual programs, we adhered to the principle that load during the first week should be 70% of the maximum, 80% during the second, 90% during the third, 80% during the fourth, 90% during the fifth and 100% during the sixth (See-Appendix-I)

Description of Tests:

The process of the initial and final measuring was carried out with the use of the following measuring instruments which cover the area of explosive strength, agility, speed and balance (See Appendix-II).

Administration of Test & Collection of Data:

All the tests were explained to the subjects prior to its administration. The chance to practice the prescribed tests to the subjects was also provided to become familiar with these.

Measurement for various variables were taken at the beginning (pre- test) and after six weeks (post-test). The data was collected before and after six weeks by using standard tests for 15 years old basketball players.

Scoring of Data:

All the subjects were pre-tested post-tested on balance time, speed, agility, vertical jump and standing broad jump and scoring of data for each test was done as follows:-

Single leg balance up to a total of 30 second, Time taken to cover the 50 meter sprint recorded in seconds, total time taken to complete the 6x10 meter shuttle run recorded to 1/10th of a second, Maximum horizontal distance jumped from ground level and reach at same ground level (standing broad jump), Maximum vertical distance jumped from ground level and reach vertically at highest level (standing vertical jump) and Maximum vertical distance jumped with one hand from ground level to attained maximum height by the basketball players were recorded in to nearest Meter-centimeter.

Statistical Analysis of Data:

The Mean, SD, and 't' test were computed through SPSS 16.0 program by the investigator for the collected data. The differences in the mean gain of each group for selected variables were tested for significance of difference by independent 't' test. The difference of pre-test and post test scores were taken into account and level of significance was set at .05 level of confidence.

RESULTS AND DISCUSSION

The Mean, S.D. and 't' test were computed through SPSS 16.0 program by the investigator for the collected data. The differences in the mean gain for selected variables were tested for significance of difference by paired 't' test. The difference of pre-test and post test scores were taken into account. The level of significance was set at .05 level of confidence and data pertaining to this have presented in table 1&2.

TABLE 1

DESCRIPTIVE STATISTICS ON PRETEST AND POST TEST OF SPECIFIC PHYSICAL FITNESS OF FEMALE BASKETBALL PLAYERS

Specific motor abilities	Pre-test		Post-test	
	Mean	SD	Mean	SD
Single-limb balance time (seconds)	27.07	1.91	26.20	0.86
Agility run (seconds)	5.71	0.91	6.73	0.79
Sprint (seconds)	3.06	0.88	3.53	0.51
Vertical jump (cm)	42.33	3.92	60.07	3.42
Standing broad jump	231.87	9.79	240.33	8.71

The mean scores of various specific motor abilities i.e. single-limb balance, pro-agility run, sprints. Vertical jump and standing broad jump on pre-test and post-test of female basketball players have been depicted in figures 1 to 5.

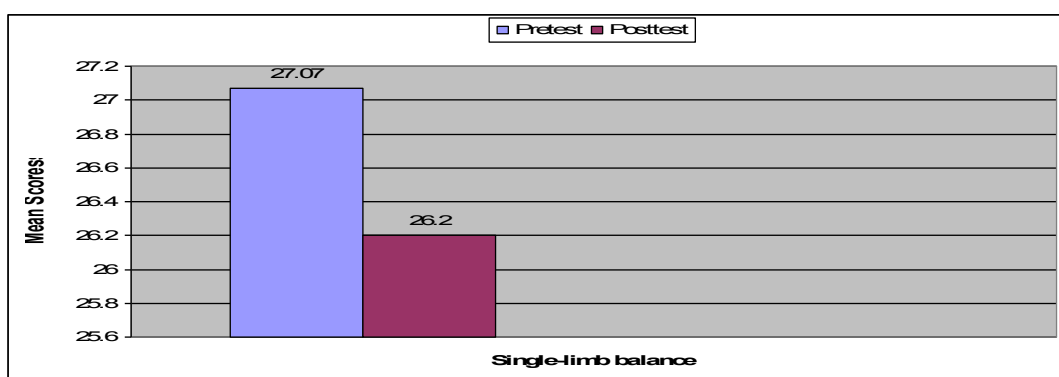


Fig.1: Mean Scores on Pretest and Posttest for Single Limb Balance of Female Basketball Players

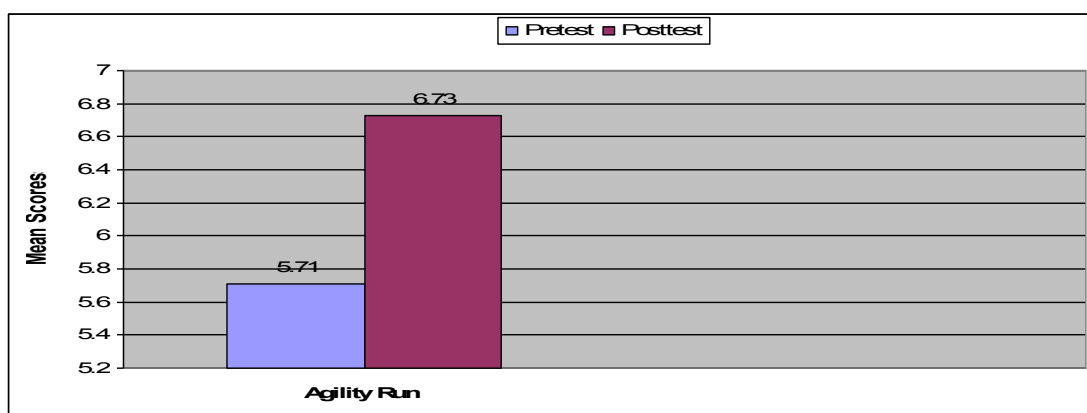


Fig.2: Mean Scores Pretest and Posttest for Agility Run of Female Basketball Players

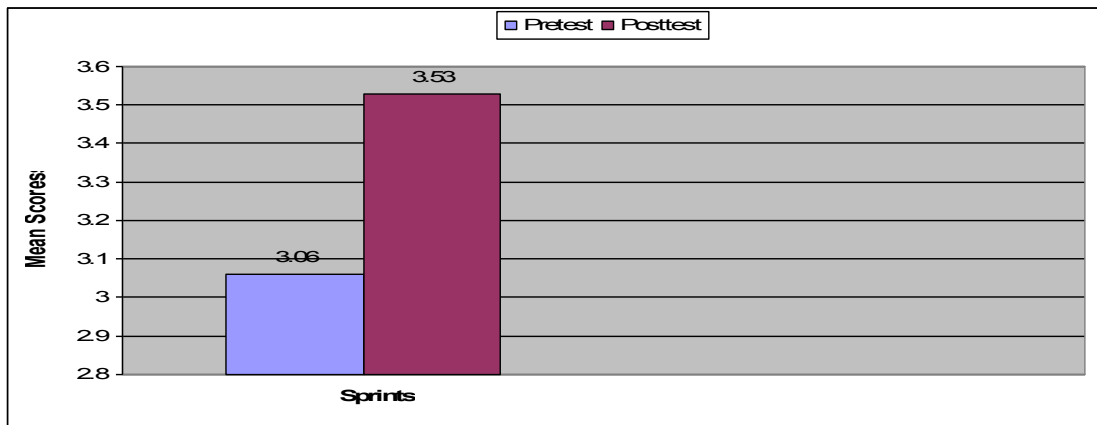


Fig.3: Mean Scores Pretest and Posttest for Sprints of Female Basketball Players

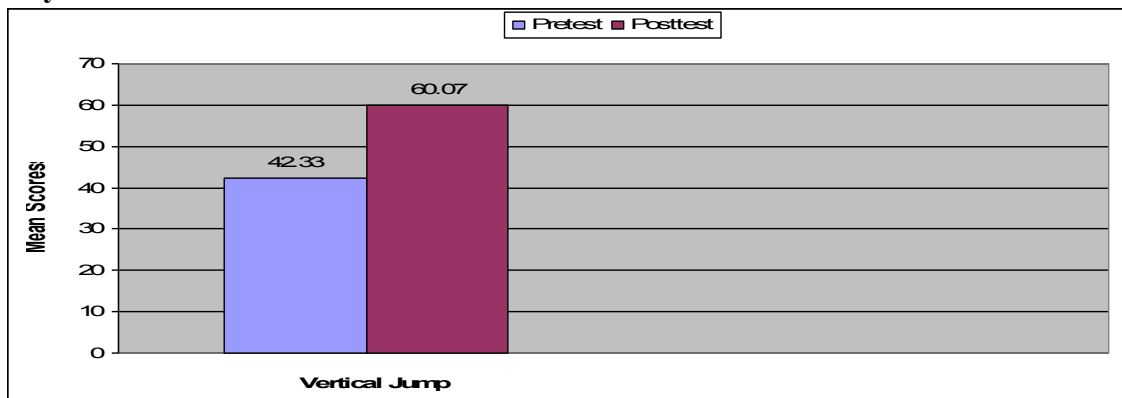


Fig.4: Mean Scores Pretest and Posttest for Vertical Jump of Female Basketball Players.

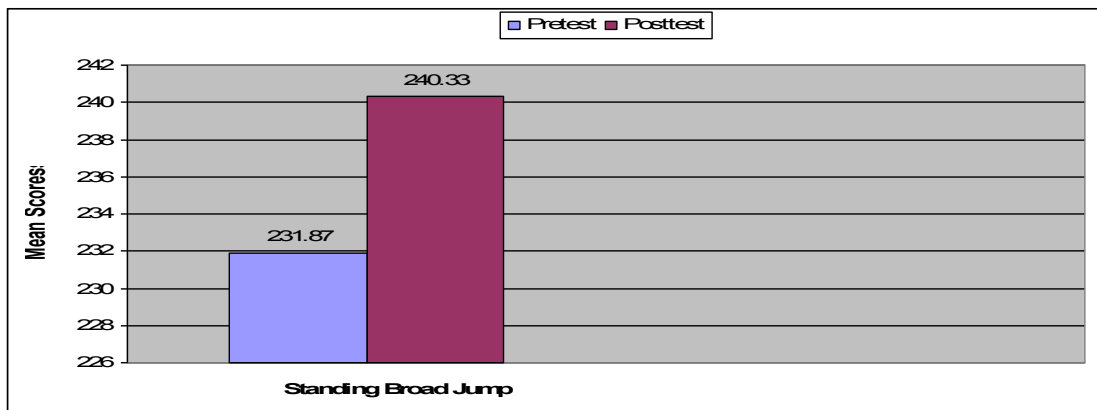


Fig.1: Mean Scores on Pretest and Posttest for Standing Broad Jump of Female Basketball Players

TABLE 2
SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON SPECIFIC
PHYSICAL FITNESS OF FEMALE BASKETBALL PLAYERS

Variables	Sex	Mean	MD	σ DM	t-ratio
Single-limb balance time	Pretest Post-test	27.07 26.20	.87	0.54	1.60
Vertical jump	Pretest Post-test	42.26 60.01	17.75	1.35	13.11*
Agility run	Pretest Post-test	5.71 6.73	1.02	0.31	3.27*
Sprint	Pretest Post-test	3.06 3.53	0.47	0.25	1.90
Standing broad jump	Pretest Post-test	231.87 240.33	8.46	3.38	2.50*

Significant at .05 level, $t_{.05 (28)} = 2.05$

It is clearly evident from Table 2 that the statistically significant differences was found between pretest and post test mean score of female basketball players in their vertical jump, agility run and standing broad jump, as the obtained t-values of 13.11, 3.27 and 2.50 were higher than the required $t_{.05 (28)} = 2.05$ to be significant. No statistically significant difference between pretest and post test mean score of female basketball players in their single-limb balance time, and sprint run, as the obtained t-values of 1.60 and 1.90 respectively were lesser than the required $t_{.05 (28)} = 2.05$

DISCUSSION

The objective for this study was to determine the effect of six week training programme on specific physical fitness of female basketball players. The t-ratio was utilized to achieve this objective.

Results of the descriptive analysis of data indicated that the female basketball players had improved their results through the initial and final testing in the agility run, sprints. Vertical jump and standing broad jump except single-limb balance time of physical fitness after the six week training programme.

Results of the analysis of the differences between the initial and final measuring by t-test indicated that the statistically significant differences were found among female basketball players between the initial and final measuring of explosive strength of the legs through standing broad jump and vertical jump test and agility run. But they did not differ significantly between the initial and final testing of single limb balance time and speed. Results of analysis also indicated that they had improved their results at some extent after the availing six weeks training programme.

It was hypothesized that significant difference may exist among fifteen years old female basketball players between the pre-test and post tests of specific physical fitness, who utilized training program of six week. is partially accepted, as the mean scores of pre-test and post tests of standing broad jump, agility and vertical jump of female basketball players clearly indicates the statistically significant of differences in their vertical jump, agility and standing broad jump motor abilities. But the insignificant differences existed among junior female basketball players on pretest and post-test measuring of other specific physical

fitness i.e. single limb balance time and speed.

CONCLUSIONS

Within the frame-work of the present investigation, the following conclusions may be drawn:

1 The six-week sand training program have an effect on the statistically relevant increase in the explosive type strength of the leg muscles and agility, which in turn leads to an increase in the vertical jump standing long jump. and agility run.

2. By means of the analysis it has been established that the difference in the resulting vertical jump and standing broad jump is beneficently relevant for the female basketball players of 15 years old after the six week training programme.

3. Significant improvement was not seen in single limb balance and sprints performance of female basketball players by means of six week training programme.

BIBLIOGRAPHY

- Komi, P.V. and Bosco, C. "Utilization of Stored Elastic Energy in Leg Extensor Muscles by Men and Women" Journal of Sports Science and Medicine 10 (1978):261-265.
- Kansal, D. K. Test and Measurement in Physical Education, Delhi : D. V. S. Publication, 1996.
- Brown, M., Mayhew, I., and Boleach, L. "Effect of Plyometric Training on Vertical Jump Performance in High School Basketball Players". Journal of Sports Medicine and . Physical Fitness. 26 : 1 (1986)
- Blattner, S. & Noble, L. "Relative Effects of Isokinetic and Plyometric Training on Vertical Jumping Performance". Research Quarterly, 50 : 4 (1979) : 583-588.
- Clutch., D. et. al. "The Effect of Depth Jumps and Weight Training on Leg Strength and Vertical Jump". Research Quarterly of Exercise. and Sport 54 (1983):5-10.
- Dursenev, L. I. and Raevsky, L.G. "Strength Training of Jumpers". Soviet. Sports Revolution. 10 (1978) :53-55.
- Singh, Hardayal Science of Sports Training , Delhi : D. V. S. Publication), 1997.
- <http://www.guardian.co.uk/football/2008/dec/06/football-brand-globalisation-china-basketball>. Retrieved on 2008-12-24.

Appendix-I

Week 1, training sessions 1 and 2, 70% load

The zig-zig running	-3sets of 30 meter
The box jump sideways	-2 sets, 30 sec., height of the box: 20 cm.
Tuck Jump	-2 sets, 9 Jumps.
Vertical jumps	-2 sets, 8 Jumps.

Week 2, training sessions 3 and 4, 80% load

The zig -zig running	-3sets of 30 meter
.The box jump sideways	-3 sets, 30 sec., height of the box: 20 cm.
Tuck Jump	-3 sets, 10 Jumps.
Vertical jumps	-3 sets, 9 Jumps.

Week 3 , training sessions 5, 6 and 7, 90% load

The zig-zig running	- 4sets of 30 meter
The box jump sideways	-3 sets, 60 sec., height of the box: 30cm.
Tuck Jump	-3 sets, 12 Jumps.
Vertical jumps	-3 sets, 11 Jumps.

Week 4, training sessions 8 and 9, 80% load

The zig-zig running	-3sets of 30 meter
The box jump sideways	-3 sets, 60 sec. height of the box: 30 cm.
Tuck Jump	-3 sets, 10 Jumps.
Vertical jumps	-3 sets, 9 Jumps.

Week 5 , training sessions 10, 11 and 12, 90% load

The zig-zig running	-3sets of 20 meter
The box jump sideways	-3 sets, 90sec height of the box: 30 cm.
Tuck Jump	-3 sets, 11 Jumps.
Vertical jumps	-3 sets, 11 Jumps.

Week 6, training sessions 13, 14 and 15, 100% load

The zig-zig running	- 4sets of 30 meter
The box jump sideways	-3 sets, 90sec.,height of the box: 30 cm.
Tuck Jump	-3 sets, 13 Jumps.
Vertical jumps	-3 sets, 12 Jumps.

Appendix-II

1. SHUTTLE RUN

Purpose: To measure speed and agility

Facilities and Equipment: Two lines parallel to each other and 10 yard apart were marked on the field. Stop watch, wooden blocks and whistle were the equipments.

Procedure: The subject stood in front of one of the lines with two wooden blocks beyond the other line. On the signal start the subject run to the blocks, take one, and returns to the second block, take one, and returns to the second block, which is carried across the starting line on the way back.

Scoring: The score was the total time taken to complete the course recorded to 1/10th of a second.

2. 50 YARD DASH

Purpose: To measure speed

Facilities and Equipment: Hockey ground with starting line a 50 yard course and a finish line. two stopwatches.

Procedure: After a short warm up period the subject takes a position behind the starting line. Best results are obtained one line was used as a starting line and the other as the finish line on the signal Ready? Go! The subjects start running at their best to reach the finish line at their earliest.

Scoring: The score was the time taken to complete the course to the nearest 1/10th of a second between the starting signal and the instant the subjects crossed the finishing line.

3. STANDING BROAD JUMP

Purpose: To measure strength & power of the legs muscles.

Facilities and Equipment: Tape measure and space on the floor or an outdoor jumping pit.

Procedure: The subject stands behind a takeoff line with his feet several inches apart. Before, jumping the student dips at the knees and swings the arms backward. She then jumps forward by simultaneously extending the knees and swinging the arms forward. Two trials are permitted. Measurement was from the closest heel mark to the takeoff line.

Marking: The score was the best of three distances recorded in centimeters and inches only the best trial was recorded.

4. VERTICAL JUMP

The vertical jump is measured using a wall test. Two trials for flat-footed vertical jump were performed. and we recorded the highest jump in centimeters/meters

5. SINGLE LIMB BALANCE

. Hand-held timer was used by researcher to measure the duration of time (± 0.5 s) the subject balanced up to a total of 30 seconds. If athletes lost their balance, the time was recorded when they contacted the ground with the non-weight bearing leg.