ISSN-2231-3745

The Effect of Circuit Training on Selected Motor Fitness Components and Physiological Variables among College Level Basketball Players

Jose Baby*
Ph.D. Scholar,
Tamil Nadu Physical Education and Sports University,
Thodupuzha

Dr. A. M. Moorthy
Principal,
Koviloor Andavar College of Physical Education,
Karakudi, Tamil Nadu

ABSTRACT

Sport is a challenge represented by a lot of standards or traditions. As physical wellness assumes vital job in the achievement of a competitor, the motivation behind this investigation was to discover the impact of high-intensity aerobics on chose engine wellness segments and physiological factors among school level basketball players. For this, an aggregate of 30 basketball players of age bunch 18-25 years were chosen as subjects from Newman College of Arts and Science, Thodupuzha, Kerala State. The haphazardly chosen basketball players were partitioned into Control Group (15) Experimental Group (15). The irregular gathering configuration was utilized as trial plan for this examination. The information gathered from the exploratory gathering and control bunch amid pretest and posttest on speed, quality continuance, dangerous power, cardio respiratory perseverance and resting beat rate were utilized for factual anlaysis to discover critical distinction between the pretest and posttest implies by figuring subordinate 'F' test (ANCOVA) for every factor independently. In all cases 0.05 dimension of certainty was used to test the criticalness. Our outcomes uncovered that there was huge contrast among Basketball players on chose physical wellness segments. The Experimental Group basketball players were observed to be superior to anything the control Group players on all chosen engine wellness and physiological factors among school level basketball players. Consequently this investigation gives knowledge to the usage of successful physical preparing programs for better games results.

Key Words:- Speed, Strength Endurance, Explosive Strength, Cardio Respiratory Endurance and Resting Pulse Rate.

INTRODUCTION

A sport is a sorted out, focused and capable physical movement requiring responsibility and reasonable play. Some view sports as varying from amusements dependent on the way that there are generally more elevated amounts of association and fiscal advantages related with it. Physical wellness is characterized as the ability to complete each day exercises without unnecessary weariness and with enough vitality for possible later use for crises. Studies have over and over appeared successful exercise program ought to be created to improve the physical wellness among competitors. Aerobics program is an accumulation of preparing which improves the solid quality, continuance and cardiovascular wellness of the person. As far as anyone is concerned, no information are accessible on the job of high-intensity aerobics on engine wellness segments, for example, speed, quality continuance, dangerous power etc.and on physiological factors like cardio respiratory perseverance and resting beat rate among school level basketball players. Along these lines current examination was to consider the impact of high-intensity exercise on chosen engine wellness parts and physiological factors among school level basketball players.

ISSN-2231-3745

METHODOLOGY

Thirty basketball players were chosen as subjects from Newman College of Arts and Science, Thodupuzha, Kerala in the age gathering of 18-25. The arbitrary gathering configuration was utilized as trial plan for this examination. The information gathered from the high-intensity exercise gathering and control bunch amid pretest and posttest on speed, quality continuance, hazardous power, cardio respiratory perseverance and resting beat rate were utilized for measurable examination to discover noteworthy contrast between the pretest and posttest implies by figuring subordinate 'F' test (ANCOVA) for every factor independently. In all cases 0.05 dimension of certainty was used to test the noteworthiness.

Group I = Experimental Group (15)

Group II= Control Group I (15)

SELECTION OF VARIABLES

Independent Variable

In the present study, circuit training was considered as independent variable.

Dependent Variables

A. Motor fitness components

- Speed
- Strength endurance
- Explosive power

B. Physiological variables

- Cardio respiratory endurance
- Resting pulse rate.

SELECTION OF TESTS

The reason for the examination was to discover the impact of high-intensity aerobics on chose engine wellness segments and physiological factors among school level basketball players. According to the accessible writing, the accompanying tests were utilized to gather applicable information on the chose ward factors and they were displayed in the table 1(Clarke. et al., 1972).

Table 1

Tests Selection

S.No	Criterion Variable	Name of the Test	Unit of Measurement
1.	Speed	50 mts dash	In Numbers
2.	Strength Endurance	Knee bent Sit-ups	In Numbers
3.	Explosive Power	Standing Broad Jump	In Metres
4.	Cardiovascular respiratory Endurance	Coopers 12 minutes run/ walk test	In Seconds
5.	Resting pulse rate	Radial pulse rate	In beats

ISSN-2231-3745

TEST OF SIGNIFICANCE

This is the essential segment in landing at the end by looking at the theories. The technique of testing the speculations was finished either by tolerating the outcomes got in connection to the dimension of certainty. The dimension of certainty was fixed at 0.05 dimensions which were viewed as adequate for this investigation. The tests are generally called trial of criticalness since we test whether the distinctions among the pretest and post scores of the examples are huge or not. In the present investigation if the acquired qualities were more prominent than the classified esteem, the theories will be acknowledged such that there existed noteworthy contrasts among the methods for gatherings thought about. What's more, if they got qualities were not exactly the required qualities at 0.05 dimension then the speculations will be rejected such that there existed no huge contrast among the methods for the gatherings under investigation.

LEVEL OF SIGNIFICANCE

The obtained results were analyzed statistically using mean, standard deviation and 'F' test to find out the level of significance. The obtained 'F' test ratio was compared to 0.05 level of significance which had a value of 3.34.

RESULT

Analysis of covariance for the pre-test, posttest and adjusted mean of speed on experimental group and control group

In order to measure the motor fitness component speed, 50 meter dash test was performed. The significant mean difference between adjusted initial means and final means among the control and experimental group were analysed using ANCOVA and the result was tabulated in table 2.

Table – 2

Analysis of covariance for the pre-test, posttest and adjusted mean of speed on experimental group and control group

Source	Mean Pre	Mean Post	Adjusted Mean	'F'	Table Value
Experimental Group	8.13	7.84	7.91		
Control Group	8.30	8.25	8.17		
Source	SS	DF	MS	12.99	3.34
Between	0.48	1	0.48		
Within	0.99	28	0.04		

ISSN-2231-3745

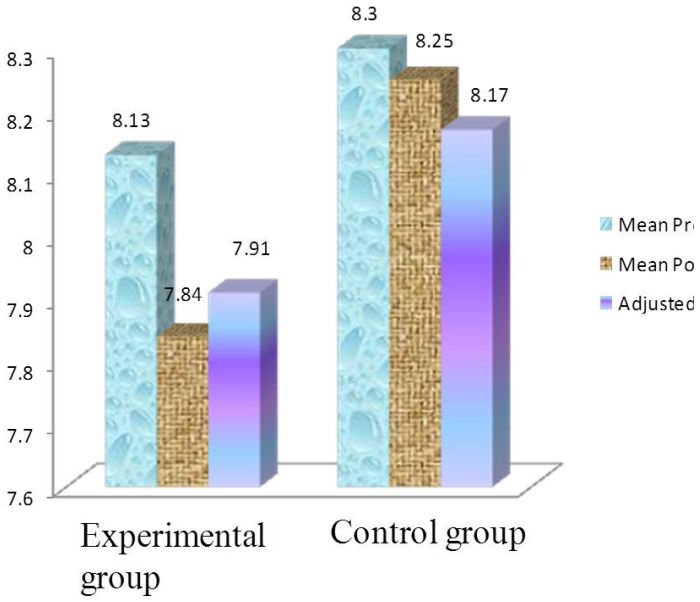

Figure 1. Bar diagram showing the pre-test, posttest and adjusted mean of speed on experimental group and control group

The table 2 shows that the pre and posttest means of experimental group and control group for speed were 8.13, 8.30 and 7.84, 8.25 respectively. The obtained 'F' ratio 12.99 was greater than the table value 3.34. Hence there was significant difference between the experimental and control group.

Analysis of covariance for the pre-test, posttest and adjusted mean of strength endurance on experimental group and control group

In an attempt to evaluate the strength endurance, Knee bent Sit-ups test was performed. The significant mean difference between adjusted initial means and final means among the control and experimental group were analysed using ANCOVA and the result was tabulated in table 3.

Table – 3

Analysis of covariance for the pre-test, posttest and adjusted mean of strength endurance on experimental group and control group

Source	Mean Pre	Mean Post	Adjusted Mean	'F'	Table Value
Experimental Group	32.47	36.20	35.33		
Control Group	30.60	31.07	31.93		
Source	SS	DF	MS	62.16	3.34
Between	77.34	1	77.34		
Within	33.59	28	1.24		

ISSN-2231-3745

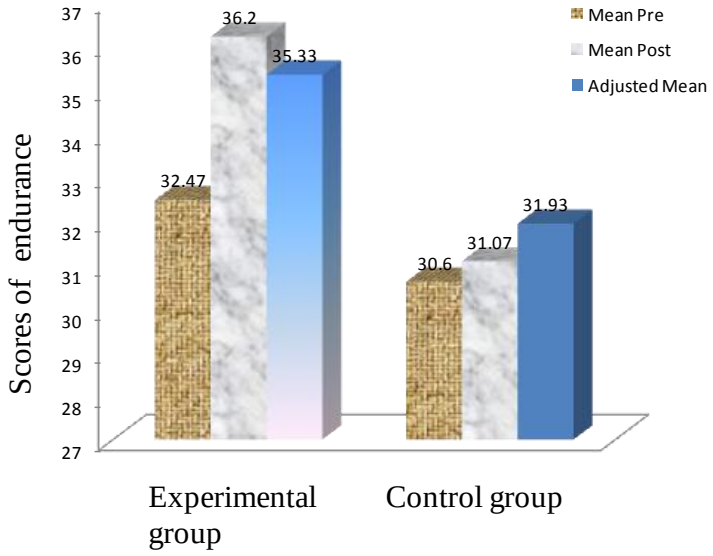

Figure 2. Bar diagram shows that the pre-test, posttest and adjusted mean of strength endurance on experimental group and control group

From the data on strength endurance, the pre and posttest means of experimental group and control group for strength endurance were 32.47, 36.20 and 30.60, 31.07 respectively were calculated. The obtained 'F' ratio 62.16 was greater than the table value 3.34. Thus it shows that there was significant difference between the experimental and control group.

Analysis of covariance for the pre-test, posttest and adjusted mean of explosive power on experimental group and control group

In order to assess the explosive power, the standing board jump test was performed. The significant mean difference between adjusted initial means and final means among the control and experimental group were analysed using ANCOVA and the result was tabulated in table 4.

Table – 4

Analysis of covariance for the pre-test, posttest and adjusted mean of explosive power on experimental group and control group

Source	Mean Pre	Mean Post	Adjusted Mean	'F'	Table Value
Experimental Group	2.64	2.80	2.67		
Control Group	2.32	2.36	2.48		
Source	SS	DF	MS	42.41	3.34
Between	0.16	1	0.16		
Within	0.1	28	0		

ISSN-2231-3745

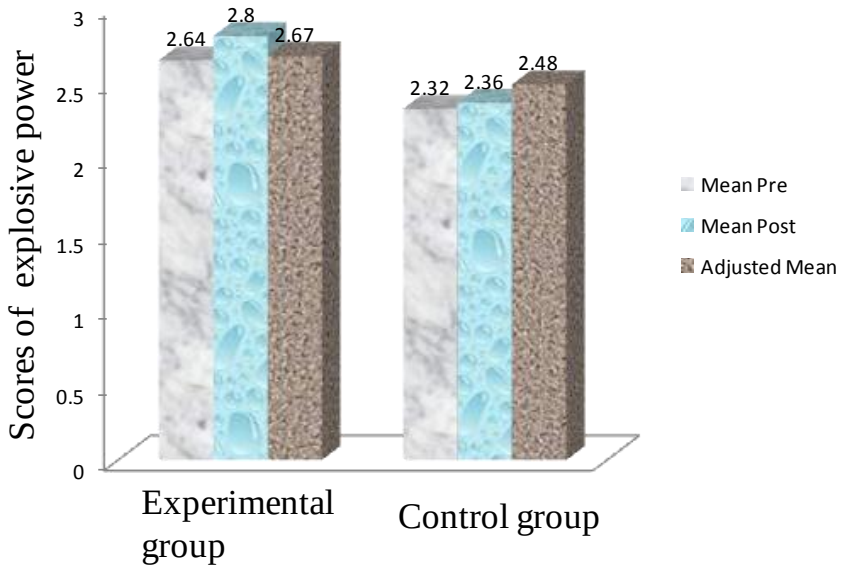

Figure 3. Bar diagram shows that the pre-test, posttest and adjusted mean of explosive power on experimental group and control group

From the table showing the data on explosive power, the pre and posttest means of experimental group and control group for explosive power were 2.64, 2.80 and 2.32, 2.36 respectively were obtained. The obtained 'F' ratio 42.41 was greater than the table value 3.34. Hence there was significant difference between the experimental and control group.

Analysis of covariance for the pre-test, posttest and adjusted mean of cardio respiratory endurance on experimental group and control group

In order to assess the cardio respiratory endurance, Coopers 12 minutes run/ walk test was performed. The significant mean difference between adjusted initial means and final means among the control and experimental group were analysed using ANCOVA and the result was tabulated in table 5.

Table – 5

Analysis of covariance for the pre-test, posttest and adjusted mean of cardio respiratory endurance on experimental group and control group

Source	Mean Pre	Mean Post	Adjusted Mean	'F'	Table Value
Experimental Group	2180.67	2282.00	2168.61		
Control Group	2089.07	2107.33	2084.59		
Source	SS	DF	MS	35.54	3.34
Between	49997.3	1	49997.3		
Within	37981.71	28	1406.73		

ISSN-2231-3745

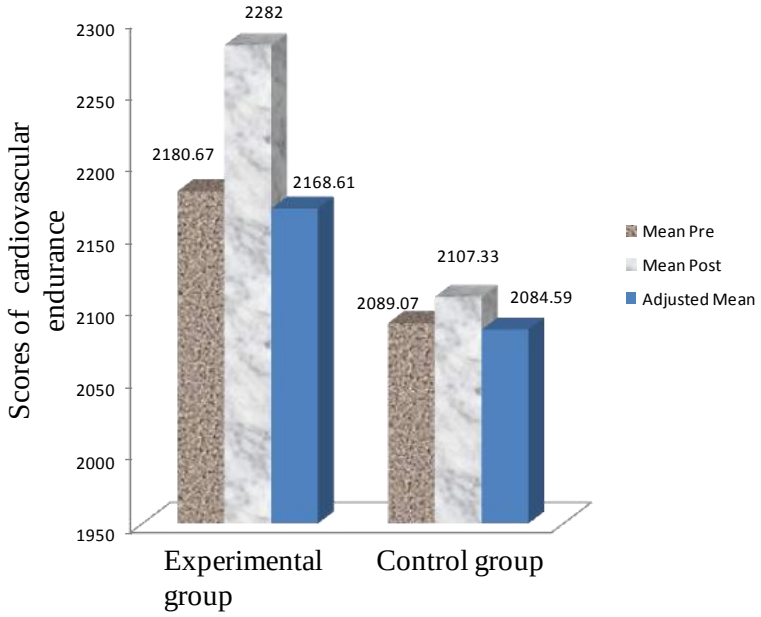

Figure 4. Bar diagram shows that the pre-test, posttest and adjusted mean of cardio respiratory endurance on experimental group and control group

From the table on the data on cardio respiratory endurance, the pre and posttest means of experimental group and control group for cardio respiratory endurance were 2180.67, 2282.00 and 2289.07, 2107.33 respectively were obtained. The obtained 'F' ratio 35.54 was greater than the table value 3.34. Hence there was significant difference between the experimental and control group.

Analysis of covariance for the pre-test, posttest and adjusted mean of resting pulse rate on experimental group and control group

In an attempt to evaluate the resting pulse rate, radial pulse rate was recorded. The significant mean difference between adjusted initial means and final means among the control and experimental group were analysed using ANCOVA and the result was tabulated in table 6.

Table – 6

Analysis of covariance for the pre-test, posttest and adjusted mean of resting pulse rate on experimental group and control group

Source	Mean Pre	Mean Post	Adjusted Mean	'F'	Table Value
Experimental Group	70.73	67.67	67.52	92.48	3.34
Control Group	70.47	69.60	69.74		
Source	SS	DF	MS		
Between	36.93	1	36.93		
Within	10.78	28	0.4		

ISSN-2231-3745

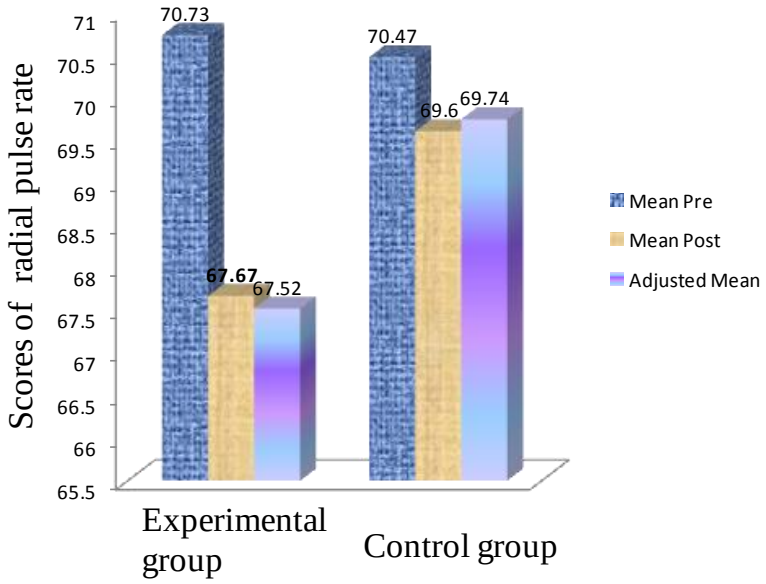

Figure 5. Bar diagram shows that the pre-test, posttest and adjusted mean of resting pulse rate on experimental group and control group

From the table showing the data on resting pulse rate, the pre and posttest means of experimental group and control group for cardio resting pulse rate were 70.73, 67.67 and 70.47, 69.60 respectively were obtained. The obtained 'F' ratio 0.35 was greater than the table value 3.34. Hence there was significant between the experimental and control group.

DISCUSSIONS

- The result of this examinations demonstrates that there was a critical distinction of speed in exploratory gathering, as an aftereffects of 12 weeks of chose high-intensity aerobics program. The 'F' proportion was 12.99. Since there was a distinction in the mean qualities, it demonstrated measurably huge outcome.
- The aftereffect of this examinations demonstrates that there was critical contrast of solidarity continuance in test gathering, as a results of 12 weeks of chose aerobics program. The 'F' proportion was 62.16. Since there was a distinction in the mean qualities, it demonstrated factually critical outcomes.
- The result of this examinations demonstrates that there was huge contrast of unstable power in exploratory gathering, because of 12 weeks of chose high-intensity aerobics program. The 'F' proportion was 42.41. Since there was contrast in the mean qualities, it demonstrated measurably huge outcome.
- The aftereffect of this examinations demonstrates that there was noteworthy contrast of cardio respiratory perseverance in exploratory gathering, as a results of 12 weeks of chose high-intensity exercise program. The 'F' proportion was 35.54. Since there was a distinction in the mean qualities, it indicated factually huge outcome.
- The results of this examination demonstrates that there was noteworthy contrast of resting beat rate in test gathering, as an aftereffects of 12 weeks of chose high-intensity exercise practice. The 'F' proportion was 92.48. Since there was a distinction in the mean qualities, it demonstrated factually critical outcome.

CONCLUSIONS

Inside the impediments of the present examination, the accompanying ends were drawn.

- The aftereffect of the test bunch indicated critical enhancement for speed when thought about inside its posttest. What's more, the control bunch indicated irrelevant enhancement for speed.
- The result of the test bunch demonstrated critical enhancement for quality continuance when looked at inside its posttest. Also, the control bunch indicated irrelevant enhancement for quality continuance.

ISSN-2231-3745

- The aftereffect of the exploratory gathering demonstrated critical enhancement for hazardous power when thought about inside its posttest. Furthermore, the control bunch demonstrated immaterial enhancement for dangerous power.
- The result of the test bunch indicated noteworthy enhancement for cardio respiratory continuance when analyzed inside its posttest. What's more, the control bunch indicated immaterial enhancement for cardio respiratory continuance.
- The result of the test bunch demonstrated critical enhancement for resting beat rate when analyzed inside its posttest. What's more, the control bunch demonstrated irrelevant enhancement for resting beat rate.

REFERENCE

Burkow-Heikkinen L. (2011). “Non-Invasive Physiological Monitoring of Exercise and Fitness” Neurological Research, 33 (1): pp. 3-17.

Charles, A., Bucher., Deborah, A. and Wuest. (1987). Foundations of Physical Education and Sports. *Saint Louis: Times Mirror and Mosby College Publishing*.

Clarke., David, H. and Clarke, H. H. (1972). Advanced Statistics. *Englewood Cliffs, New Jersey: Prentice Hall Inc.*

Singh, H. (1991). Science of Sports Training. *New Delhi: D.V.S. Publication.*

Yang, D. J., Kang, D. M. and Yang, Y. A. e. a. (2009). Improvement of physical fitness and work ability of the middle-aged and aged workers through exercise prescription program. *J Korean Soc Occup Environ Hyg* 19, 297–306.

Williams A.D., Anderson M.J., Selig S., Carey M.F., Febbraio M.A., Hayes A., Toia D., Harrap S.B., Hare D.L. (2010). “Differential response to resistance training in CHF according to ACE genotype”, School of Human Life Sciences, University of Tasmania, Launceston, Australia.

Scholtes V.A., Becher J.G., Comuth A., Dekkers H., Van Dijk L, Dallmeijer A.J. (2010). “Effectiveness of functional progressive resistance exercise strength training on muscle strength and mobility in children with cerebral palsy: a randomized controlled trial”, Department of Rehabilitation Medicine, EMGO Institute for Health and Care Research, VU University Medical Center, Amsterdam, the Netherlands.

Mudge S., Barber P.A. & Stott N.S. (2009). “Circuit-based rehabilitation improves gait endurance but not usual walking activity in chronic stroke: a randomized controlled trial” School of Rehabilitation and Occupation Studies, AUT University, University of Auckland, Auckland, New Zealand.

Dixon C.B. & Andreacci J.L. (2009). “Effect of resistance exercise on percent body fat using leg-to-leg and segmental bioelectrical impedance analysis in adults”, Department of Health Science, Lock Haven University, Lock Haven, Pennsylvania, 2009.

Corresponding Author

Dr. A. M. Moorthy*

Ph.D. Scholar, Tamil Nadu Physical Education and Sports University, Thodupuzha

josebabya@yahoo.com