

COMPARISION OF ARM STRENGTH AND CARDIO-RESPIRATORY ENDURANCE OF HANDBALL AND BASKETBALL PLAYERS

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ABSTRACT

The purpose of the study was to compare the arm strength, and cardio respiratory endurance between basketball and handball players. Forty male national level players from team games like basketball and handball of Jammu and Kashmir were selected as the sample for the purpose of study on random basis and their age group was ranged between 18 to 27 years. The basketball and handball players were randomly selected from these who were talking part in the national level matches for the session 2012-2014. In order to find out the significance of difference between Basketball and Handball Players in their arm strength and cardio-respiratory endurance, means, SDs and t-ratio were computed. The results of the present investigation indicated that there is no any significant difference between the basketball and handball players of national level in Arm strength. In cardio respiratory endurance, there was a significant difference between the basketball and handball players of national level. Author finally concluded that the Handball players were better in cardio respiratory endurance than basketball players.

Keywords: Arm, Strength, Cardiovascular, Fitness, National level, Handball, Basketball, Players

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INTRODUCTION

Modern concept of physical education has given rise to a global perspective and has

become one of the most viable factors in cross culture integration .Sports has its own language and can provide a medium for international understanding and goodwill among nations .It has assumed great importance not only for self actualization at the national level but for social maturation and survival at the global level.

In 21st century ,physical education is no more a physical training only ,or simply body building ,or merely indulging in play activities or mass drills or pertaining to physical fitness alone .It has emerged as multi-dimensional discipline.

Sports have assumed a world –wide importance .In a shrinking world which is coming nearer and nearer day by day it is playing an important role in bringing people together at national, regional and international level. It does not distinguish between religions, cast, creed or race's It embraces every sport and region of the world.

The decision to carry out a physical fitness program cannot be taken lightly. It requires a lifelong commitment of time and efforts. Exercise must become one of those things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits of fitness and the risks of unfitness (Singh, 2008), you will not succeed. It has been realized that fitness adds not only years to once life, but life once years.

Physical fitness is the capacity to carry out reasonable well various forms of physical activities without being unduly tired and includes qualities important to the individual's health and well being.

Physical fitness means different things to different people. It must be viewed as an individual matter and as such has little meaning unless considered in relation to the specific needs and interests of each individual(Uppal, 1992).

The most important muscles for basketball are those you can see, such as the quadriceps, calves and deltoids, as well as those you can't see as easily, such as the heart. The explosive and fast-paced nature of basketball requires muscles that provide great jumping ability and a powerful serve and spike and are flexible enough to respond to the diving, digging, blocking and running the sport requires.

Some of the most important muscles a basketball player are not those that get the biggest workouts. Instead they are the complementary muscles that help support those that do most of the work. Most of a Basketball players effort comes from muscles in the front of his body, such as arms and quadriceps, so working some of the posterior muscles, such as the hamstrings and the back of the shoulders, could help prevent overuse injuries. These can occur when one set of muscles is significantly stronger and bigger than its counterpart elsewhere in the body.

Basketball requires strength and flexibility in your shoulders to deliver powerful serves and hits of all kinds. Strong triceps and forearms are also valuable. Some helpful exercises for those muscle groups include the military press, upright rows, dumbbell lifts up from your side and triceps curls. Forearm curls focusing on the tops and bottoms of the forearms will also help get your arms in basketball shape.

The heart muscle also needs to be working at maximum efficiency for your best basketball playing. And the best way to do that is to exercise your heart at about 60 to 80 percent of your maximum heart rate about three days a week. That can include treadmill running or biking or simply exercising by playing sports such as basketball and tennis. Those activities will also benefit your other big muscles (<http://www.livestrong.com>).

Handball is relatively uncomplicated team game with twelve players to a side where six court players and a Goalie of one team oppose the same number from be substituted in form the side lines at centre at any time.

Handball is a game of brains over brawn, a truly thinking game .Because of the speed of the game and the way the ball caroms off of the walls, floor and ceiling quick mental reactions are a must .To improve your game you must think in the court as well as play in it .Every shot should be carefully studied, every mistake carefully analyzed. Hand ball requires and teaches quick mental reactions .This is good training for the immediate decisions needed in every day of life situations .It would be very difficult to accurately estimate the number of people currently playing handball in the United States(Jain, 2003).

Vijay Prakesh (2011) concluded that there was significant difference among Basketball, basketball and hockey players in vital capacity. There was no significant difference in resting pulse rate, systolic blood pressure, and diastolic blood pressure among basketball, basketball and hockey players. SuneetaDavi (2009) revealed that handball players were taller and heavier than basketball and athletes. Athletes have less deposition of fat than respective game players viz. Handball and basketball players. Satyanarayana (2002) found that sand training on experimental group improved jump abilities in standing vertical jump, standing broad jump and approach and jump reach respectively, but a significant improvement is not observed in speed and co-ordination dominating abilities in co-coordinating test, court speed test and 30 meter sprint respectively. A non significant improvement in all of the test performances was also seen in control group. Chittibabu (2004)demonstrated that short period of high intensity intermittent training improved neutrophils and lymphocytes percentage. Khalil Khayambashi (1986) concluded that males as the number of steps in the approach increased the height of the jump also increased. For females the number of steps in the approach had no effect on the height of the jump. For males and females and for all approaches the height of the jump that followed the pre-jump take-off was greater than the height of the jump that followed the step close take-off. The main players jumped higher than the female players. A.K.Dey ,P.K.Debnath and J.Nagehaudhuri (1979) suggested that the participation in both the games players efficiency had similar physical growth with similar efficiency level as per the test done. Hooks (1959) concluded that the left shoulder flexion is the best single measure found to predict baseball ability right shoulder flexion ranks second. Bhola (1984) found that the foot length, quality and dynamic power, as well as ankle flexibility had significant relationship with jumping ability using three strides rhythm whereas absolute and relative leg length did not correlate significantly. Sheppard et.al. (2008) demonstrated that in an elite population of basketball players, stretch-shortening cycle performance and the ability to tolerate high stretch loads, as in the depth jump, is critical to performance in the jumps associated with basketball performance.

The purpose of the study was to compare the arm strength, and cardio respiratory endurance between basketball and handball players.

METHODOLOGY

Sample:

Forty male national level players from team games like basketball and handball of Jammu and Kashmir were selected as the sample for the purpose of study on random basis and their age group was ranged between 18 to 27 years.

Design of the Study:

Design of the study was random group design, as the basketball and handball players were randomly selected from these who were taking part in the national level matches for the session 2012-2014 and comparison of arm strength, and cardio respiratory endurance between basketball and handball players was done.

Instrumentation:

1. Pull – Ups

Purpose: To Measure The Power Of Arm. Equipments: A Metal Or Wooden Bar. Test Administration: The palms- forward (over hand) grip was assumed, and the body was lowered to a fully stationary hang (arms and body full extended) the body was raised until the chin was placed over the bar. The body was lowered to a full hang, as in the starting, and the act was repeated as often as possible. Body swinging, knee raising or leg kicking were not permitted. Scoring: The number completed properly to the nearest whole number was recorded, one fair trial was allowed (Bosco and Gustafson, 1983).

2. YMCA 3 Minute Step Test

Purpose: To measure the cardio respiratory endurance of the subject. Equipment: 12 Inch High Bench, Stop-Watch, Metronome, Chairs. Test Administration: The subject listens to the metronome to become familiar with the cadence and begins when ready and the time starts. The subject steps “Up, Up, Down, Down” to the 96 beat per minute cadence, which allow 24 steps per minute. This continues for 3 minutes. After the final step down, the subject sits down and the heart rate was counted for 1 minute. Scoring: The 1 minute recovery heart rate was the score for the test. (James et.al., 1995)

RESULTS AND DISCUSSION

To find out the significance of difference between Basketball and Handball Players in their arm strength and cardiovascular endurance, means, SDs and t-ratio were computed and data pertaining to this have been presented in Table 1-3 and depicted figure 1-3.

TABLE 1
COMPARISON BETWEEN THE MEANS OF BASKETBALL AND HANDBALL PLAYERS IN PULL UPS

Test	Game	Mean	SD	MD	S.E	‘t’ ratio
Pull ups	Basketball players	7.8	1.91	0.95	0.69	1.38
	Handball Players	8.75	2.41			

Insignificant at 0.05 level

t.05 (38) =2.03

The value of basketball and handball players in pull ups is 7.8 and 8.75 respectively. Standard Deviation value of basketball and handball players is 1.91 and 2.41 respectively. Value of t’ ratio is 1.38; this value is not significant at 0.05 level. To be significant at 0.05 level, the value of t’ ratio should be greater or equal to 2.03.

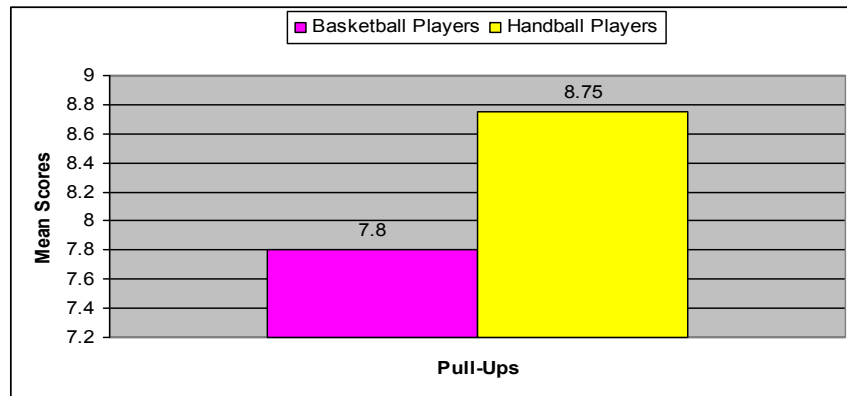


Figure 1.

TABLE 2
COMPARISON BETWEEN THE MEAN OF BASKETBALL AND HANDBALL PLAYERS IN STANDING BROAD JUMP

Test	Game	Mean	SD	MD	S.E	't' ratio
Standing broad jump	Basketball Players	2.12	0.14	0.05	0.056	0.89
	Handball Players	2.17	0.21			

Insignificant at .05 level

$t_{.05 (38)} = 2.03$

The mean value of basketball and handball players is 2.12 and 2.17 respectively. Standard Deviation value of basketball and handball players is 0.14 and 0.21 respectively. Value of 't' ratio is 0.89; this value is not significant at 0.05 level. To be significant at 0.05 level, the value of 't' ratio should be greater or equal to 2.03

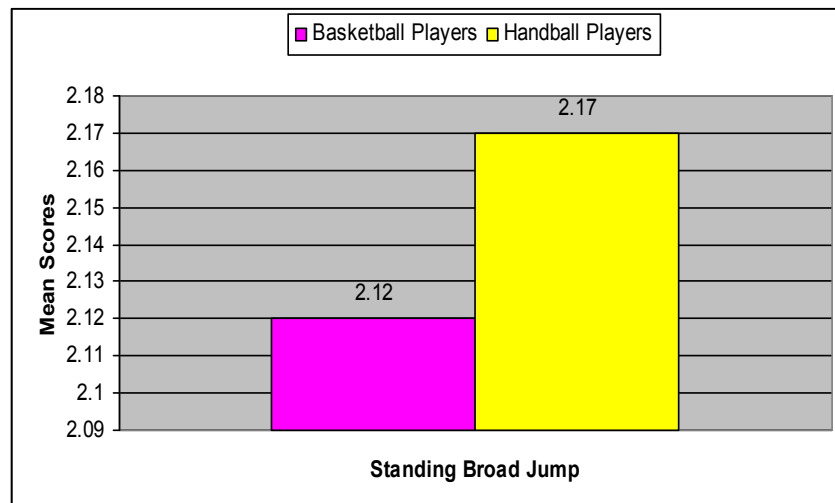


Figure 2.

TABLE 3
COMPARISON BETWEEN THE MEANS OF BASKETBALL AND HANDBALL
PLAYERS IN YMCA 3-MINUTE STEP TEST

Test		Mean	SD	MD	S.E	't' ratio
YMCA 3-minute Step test	Basketball Players	103.00	8.42	8.65	2.73	3.17*
	Handball Players	94.35	8.82			

*Significant at .05 level

t.05 (38) = 2.03

The mean value of basketball and handball players in YMCA3-minute step test is 103 and 94.35 respectively. Standard Deviation value of basketball and handball players is 8.42 and 8.82 respectively. Value of 't' ratio is 3.17, this value is significant at .05 level

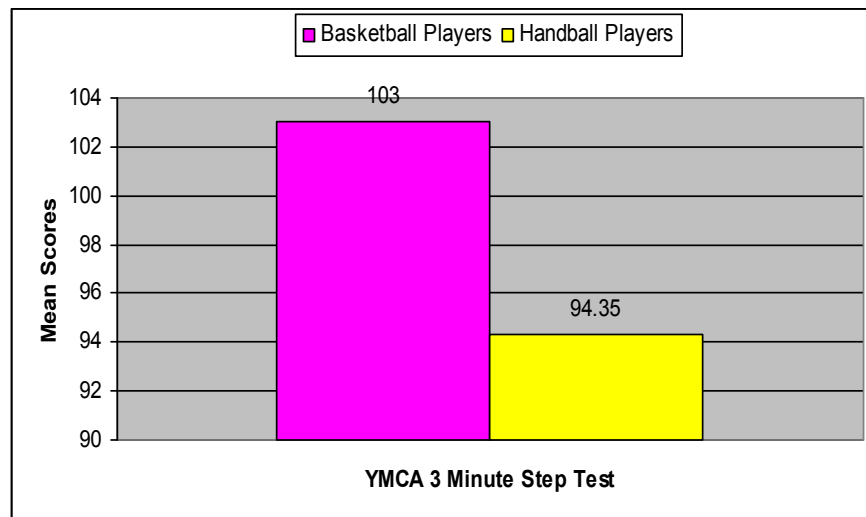


Figure 3

DISCUSSION

The purpose of the study was to compare Arm strength, and cardio respiratory endurance of national level players of basketball and hand ball players of Jammu and Kashmir state. From the analysis of data it was evident that there is no significant difference found in arm strength of basketball and hand ball players. It was also found from the data that there is no significant difference found in basketball and handball players. But from the analysis, there is significant difference found in cardio respiratory endurance of basketball players. It was also hypothesized that "handball players have more arm strength and cardio respiratory endurance than basketball players". After the analysis it was revealed that there was no significant difference between the arm strength of basketball players and handball players. There was significant difference found in cardio respiratory endurance of basketball and handball players. Handball players were better in cardio respiratory endurance than basketball players.

CONCLUSIONS

1. In Arm strength there is no any significant difference between the basketball and handball players of national level.
2. In cardio respiratory endurance there was a significant difference between the basketball and handball players of national level.
3. Handball players were better in cardio respiratory endurance than basketball players.

RECOMMENDATIONS

On the basis of findings of the study it is recommended that similar study may be conducted on female basketball and basketball players. Similar study may be conducted by taking other variables than those selected for the purpose of the study. Similar study may also be conducted by taking subjects of different age groups than those selected for the purpose of the study. It is recommended that the findings of study should be given due consideration while selecting players for specific position in the game.

APPLICATION IN SPORTS

Result of the study will help the coaches in planning the coaching program to develop arm strength explosive and cardio respiratory endurance. It will also motivate the basketball players and handball players to develop arm strength, explosive and cardio respiratory endurance which is a major factor, in their performance in respective field. The study will also help the profession with its comparative findings of the requirement of strength and cardio respiratory endurance of handball and basketball players. The finding of the study will provide scope for further

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