

Comparison of physical fitness among inter-collegiate female sportspersons

■ UJWALA ANANDRAO KOICHE

Received : 19.07.2017; Revised : 12.09.2017; Accepted : 22.09.2017

Author for correspondence

UJWALA ANANDRAO KOICHE
Rashtrasant Tukadoji Maharaj
Nagpur University, NAGPUR (M.S.)
INDIA
Email: ujkoche@gmail.com

■ **ABSTRACT**

The purpose of this study was to investigate the difference in physical fitness among inter-collegiate female sportsperson participating different sports (Basketball, Handball and Volleyball). Thirty female sportsperson each from different sports (Basketball, Handball and Volleyball) were randomly selected as subjects for the study. The data on physical fitness performance were obtained by using AAHPER youth fitness test battery on selected subjects. The data was analyzed by using analysis of variance (ANOVA) followed by post-hoc test (LSD) on those variables where F values were significant. The ANOVA was computed for comparing physical fitness parameters (Speed, Agility, Cardio-vascular Endurance, Abdominal strength, Explosive strength of leg and Muscular strength of arm Agility) among inter-collegiate women basketball, hand ball and volleyball players. The obtained F values (Agility= 25.44, Speed=6.44 and Cardio-vascular Endurance=7.77) was found significant at 0.05 level, whereas, the obtain F values for abdominal strength, explosive strength and muscular strength of arm 2.65, 2.23 and 0.17, respectively were not significant at 0.05 level. Further, pair-wised comparison (post hoc test) revealed some significant difference in physical fitness among inter-collegiate female sportspersons.

■ **KEY WORDS** : Physical fitness, Inter-collegiate, Female sportsperson, AAPHER youth fitness

■ **HOW TO CITE THIS PAPER** : Koiche, Ujwala Anandrao (2017). Comparison of physical fitness among inter-collegiate female sportspersons. *Internat. J. Phy. Edu.*, **10** (1&2) : 7-10, DOI : 10.15740/HAS/IJPE/10.1and2/7-10.

Physical fitness plays an important role in the overall personality development of individual. The physical fitness has two components: health related physical fitness and skills related physical fitness. Experts has recommended minimum half an hour of physical activities for every individuals to live healthy life. The important of physical fitness for sports performance is so obvious that coaches and sportspersons give the major parts of sports training for developing physical fitness, as performance of the sportsperson in any sports

activities depend on the level of physical fitness (Agility, speed, explosive strength, endurance, cardiovascular endurance etc) of the sportspersons. The demand of the physical fitness varies from sport to sport, the basketball is highly intensity sports (Paiva and Cesar, 2005), the key fitness factors for basketball game are speed of movement, endurance, and agility (Ziv and Lidor, 2009). The handball is also contact sports, it requires high power and strength to throw the ball (Gorostiaga *et al.*, 2005 and Wallace and Cardinale, 1997). The volleyball game

requires speed and explosive strength and speed to jumping for the spikes and blocks (Gabbett *et al.*, 2008 and Akilan and Shah, 2014).

The women sports are getting more and more popular due to success of some of the female sportsperson at national and international level. The numbers of women participants are comparatively very less as compare to male participants in sports. The man physical training program and schedule are more strenuous and intense as compare to female physical training. Thus, the fitness of women sportsperson has not been upto the demand of the sports. Further, the training intensity of women sports is not very high, keeping in view the physiological and anatomical considerations of the female athletes, Thus, the purpose of this study was to compare the physical fitness of inter-collegiate female sportsperson (basketball, handball and volleyball), who participate in seasonal inter-collegiate competitions.

■ METHODOLOGY

Participants :

Thirty women from each sports (basketball, handball and volleyball) were selected by simple random sampling methods from various colleges across the Nagpur city.

Variables :

Physical fitness variables (speed, agility, cardio-vascular endurance, abdominal strength, explosive strength of leg and muscular strength of arm) were selected for the purpose of this study. Physical fitness test developed by American alliance for physical education, health and recreation (AAPHER), popularly known as AAPHER youth fitness test battery was used for the purpose of collecting data.

■ OBSERVATIONS AND DISCUSSION

The descriptive statistics were computed on the data of physical fitness to observe the nature of the data. The finding of the descriptive statistic (Table 1) shows that the women sports person playing different sports exhibits different fitness, the reason for different descriptive profiles in physical fitness may be due to the different nature and demand of these three sports.

The data was analyzed by using analysis of variance (ANOVA) followed by post-hoc test (LSD) on those variables F values were significant.

The ANOVA (Table 2) was computed for comparing physical fitness parameters (speed, agility, cardio-vascular endurance, abdominal strength, explosive strength of leg and muscular strength of arm agility) among inter-collegiate women basketball, hand ball and volleyball players. The obtained F values (Agility= 25.44, speed=6.44 and cardio-vascular endurance=7.77) was found significant at 0.05 level, whereas, the obtain F values for abdominal strength, explosive strength and muscular strength of arm 2.65, 2.23 and 0.17, respectively were not significant at 0.05 level. Further post-hoc test was conducted to make pair-wise comparison. There was significant difference in agility between basketball and volleyball players (mean difference value:-1.18) at 0.05 level. Further there was significant difference in agility between hand ball and volley ball players (mean difference value:-1.36) at 0.05 level, whereas, there is no significant difference in agility between basketball player and handball players.

There is a significant difference in speed between basketball and volley ball players (mean difference value; -.619) at 0.05 level. Further there is significant difference in speed between handball and volley ball players (mean difference value; -0.713) at 0.05 level. But there was no significant difference in speed between basketball and handball players.

Table 1 : Descriptive statistics of physical fitness of inter-collegiate female basketball, handball and volleyball players

Sr. No.	Variables	Basketball (n=30)	Handball (n=30)	Volleyball (n=30)
		Mean±SD	Mean±SD	Mean±SD
1.	Shuttle run (Seconds)	11.33±.75	11.44±.73	12.51±.91
2.	Sit-ups (Nos.)	31.20±9.20	27±8.42	31.96±9.32
3.	Standing Broad jump (Mts)	1.24±.09	1.22±.07	1.28±.11
4.	Fifty Mts Dash (Seconds)	9.5±.67	9.44±.79	10.16±1.0
5.	Six hundreds Mts Run/Walk (Seconds)	132.63±24.83	129±22.86	151±19.46
6.	Flex Arm hand (Seconds)	26.66±8	25.77±8.49	27.07±9.54

There is a significant difference in cardio vascular endurance between basketball player and volleyball player at 0.05 level (mean difference value is -18.36). Further there is significant difference in cardio vascular endurance between handball and volleyball players (mean difference value is -21.00) at 0.05 level. But there was no significant difference between basketball and handball players at 0.05 level.

The comparison of physical fitness components among intercollegiate women basketball, handball and volleyball player revealed that there is a significant difference in some components of physical fitness namely: agility, speed and cardio-vascular endurance among basketball, handball and volleyball players, whereas, was no significance difference in some components of physical fitness namely: explosively strength of leg, muscular endurance of abdomen and muscular endurance of arm among the intercollegiate women player of these sports.

Similar studies were conducted by other researchers on different sports and age groups. Gaurav *et al.* (2011) found that individual games athletes had significantly higher muscular strength, agility, power, speed and cardiovascular endurance than team games athletes. Significant differences were found between the results of three sports groups (Martial arts, team sports and non-sports) for body weight, body mass index, body height, body fat, skinfold thicknesses, muscular endurance, flexibility and aerobic capacity (Kayihan, 2014). Significant difference was found in favour of Volleyball

group in 50 meter run, standing broad jump in favour of Handball and Hockey groups. Trunk flexibility and sit ups in favour of hockey group (Sehgal, 2013). Silva *et al.* (2013) reported that the anthropometric and physical fitness characteristics differed depending on the team court sport practices. But study conducted by Yadav *et al.* (2016) has not found any significance difference between the means of selected physical fitness variables such as speed, agility, endurance and flexibility between school level basketball and volleyball male players. The reasons for significant difference in some component of physical fitness might be attributed to the nature of the sports and the demand of physical fitness required for these three different sports. Basketball and handball players were found to be better than volley ball players on speed, agility and cardio-vascular endurance, while there is no significant difference on these physical fitness components between basketball and handball players, this result may be due to certain similarity between basketball and hand ball, both these are contact sports and players has to run throughout the court, hence required more co-ordination, speed and cardio-vascular endurance, where as volleyball sport in non-contact sports and it doesn't required player to run fast. But volleyball game also need strength, endurance and explosive speed like other sports like basketball and hand ball, and this may be the reasons that there is no significant difference in explosive strength, muscular endurance of abdomen and muscular strength of arm among inter collegiate women basketball, hand ball and volleyball players Grund

Table 2 : Analysis of variance (ANOVA) for the comparison of physical fitness among inter-collegiate female volleyball, basketball and handball players

Variable	Variance	Sum of squares	df	Mean square	F
Shuttle Run (Seconds)	Between groups	33.06	2	16.53	25.44*
	Within groups	56.52	87	.65	
Sit-ups (Nos.)	Between groups	428.95	2	214.47	2.65
	Within groups	7035.76	87	80.87	
Standing Broad jump (Cm)	Between groups	.04	2	.02	2.23
	Within groups	.87	87	.01	
Fifty Mts Dash (Seconds)	Between groups	9.02	2	4.51	6.44*
	Within groups	60.93	87	.70	
Six hundreds Mts Run/Walk (Seconds)	Between groups	7868.46	2	3934.23	7.77*
	Within groups	44029.93	87	506.09	
Flex Arm hand (Seconds)	Between groups	26.234	2	13.11	0.17
	Within groups	6590.665	87	75.75	

* indicate significance of value at P=0.05



et al. (2000) and Jeet (2003).

Acknowledgement :

Scholar is highly indebted to her Ph. D. Supervisor (Dr. Anil Kumar Karwande, Principal, Ishwar Deshmukh College of Phy. Edu. Nagpur, Maharashtra) for his constant support and encouragement in completing this study.

■ REFERENCES

- Akilan, N. and Shah, S.M. (2014).** Comparison of speed and agility between handball and volleyball players. *Internat. J. Phy. Edu. Fitness & Sports*, **3** (1) : 31-34.
- Gabbett, T.J., Sheppard, J.M., Pritchard-Peschek, K.R., Leveritt, M.D. and Aldred, M.J. (2008).** Influence of closed skill and open skill warm-ups on the performance of speed, change of direction speed, vertical jump and reactive agility in team sport athletes. *J. Strength Cond. Res.*, **22** : 1413–1415.
- Gaurav, V., Singh, A. and Singh S. (2011).** *Indian J. Sci. & Technol.*, **4** (5) : 545-549.
- Gorostiaga, E.M., Granados, C., Ibáñez, J. and Izquierdo, M. (2005).** Differences in physical fitness and throwing velocity among elite and amateur male handball players. *Int. J. Sports Med.*, **26** : 225–232.
- Grund, A., Dilba, B., Forberger, K., Krause, H., Siewers, M., Rieckert, H. and Müller, M.J. (2000).** Relationships between physical activity, physical fitness, muscle strength and nutritional state in 5- to 11-year-old children. *Eur. J. Appl. Physiol.*, **82**(5–6): 425-438.
- Jackson, A.W. and Baker, A. A. (1986).** The relationship of the sit and reach test to criterion measures of hamstring and back flexibility in young females. *Res. Quarterly Exercise & Sports*, **3** : 183-186.
- Jeet, Simran (2003).** A comparison of senior and junior male hockey player. *J. Sport & Sports Sci.*, 46-47.
- Kayihan, G. (2014).** Comparison of physical fitness levels of adolescents according to sports participation: martial arts, team sports and non-sports. *Arch. Budo.*, **10** : 227-232.
- Paiva, Neto A. and César, M.C. (2005).** Body composition assessment in male basketball players in Brazilian National Basketball League 2003. *Rev Bras Cineantropom Desempenho Hum.*, **7** : 35 - 44.
- Sehgal, Nitin (2013).** Comparison between physical fitness variables and adjustment of handball, volleyball and hockey female players. *Academicia: An Internat. Multidisciplinary Res. J.*, **3** (8) :290-298,
- Silva, D.A.S., Petroski, E.L. and Gaya, A.C.A. (2013).** Anthropometric and physical fitness differences among Brazilian adolescents who practise different team court sports. *J. Human Kinetics*, **36** : 77–86.
- Wallace, M.B. and Cardinale, M. (1997).** Conditioning for team handball. *Strength Cond J.*, **19** : 7–12.
- Yadav, S.K.S., Yadav, M. and Kerkata, K. (2016).** Comparison of selected physical fitness variables of school level basketball and volleyball male players. *Internat. J. Physical Edu. & Sports*. **1** (3) : 21-23.
- Ziv, G. and Lidor, R. (2009).** Physical attributes physiological characteristics, on-court performances and nutritional strategies of female and male basketball players. *Sports Med.*, **39** : 547–568.

10th
Year
★★★★★ of Excellence ★★★★★