



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 4.69
IJPESH 2015; 2(2): 06-08
© 2015 IJPESH
www.kheljournal.com
Received: 03-09-2015
Accepted: 04-10-2015

Anil Kumar
Research Scholar, Department of
Physical Education, C.D.L.U.,
Sirsa, Haryana, India.

International Journal of Physical Education, Sports and Health

Aerobic and anaerobic capacity between rural and urban wrestling female players of Haryana- A Comparative study

Anil Kumar

Abstract

The purpose of the study was to compare the aerobic and anaerobic capacity between rural and urban wrestling female players of Haryana. The study was conducted on 80 players (N=80) 40 Rural and 40 Urban wrestling female players from Hisar District of Haryana. For the study, The aerobic capacity was measured by 9-minute run and walk test scoring will be in meters and nearest to 25 meters and anaerobic capacity was measured by 50-meter dash and the score was that time elapsed in the nearest 1/10th of a second. The 'T' test was used for statistical analysis of data and level of significance was set at 0.05 levels.

Keywords: Aerobic capacity, Anaerobic capacity, Rural, Urban, Wrestling Female.

Introduction

The aerobic capacity indicates the general magnitude of aerobic metabolic processes in the human body and an athlete, and represents larger part of the total energy capacity that he owns (Ponorac, Matavulj, Grujić, Rajkovača, & Kovačević, 2005) [32]. On the other hand, the term "maximal oxygen consumption" generally refers to the intensity of the aerobic process and represents the ability of a body to, at a certain point, consume the greatest amount of oxygen (Živanić, Životić-Vanović, Mijić, & Dragojević, 1999). Maximal oxygen consumption or maximal aerobic capacity is the best indicator of cardiorespiratory endurance and aerobic fitness (Stojiljković, Radovanović, & Savić, 2010). Through the evolution of basketball over time three playing positions were defined: guard, wing and center; and each has its own characteristics and role in the game. The characteristics of each position are reflected in the anthropometric (Jeličić, Sekulić, & Marinković, 2002) [17], situational (Marinković, 2010; Sindik & Jukić, 2011; Trninić, Jeličić, & Jelaska, 2011) [22, 37] and functional peculiarities of the players. The players in center positions move mostly near the basket, and with their body domination they perform jumps and movements in the area, while on the other hand, the guards have an important role in the organization of the game and activities in the external position (Krause, 1991) [20]. Wingers are tasked to support the guards in the offense and the centers in the defense, thereby their role is a little more complex (Jordan & Martin, 1995) [18]. Due to the different roles and tasks that must be manifested in the game, the players are also different according to their physiological aspect. The energy systems that are involved are different for each playing. The Differences in Aerobic Capacity of Basketball Players in Different Playing Positions 75 position. Therefore their maximum aerobic capacity is different and according to different studies they showed a range of 40 (ml·kg⁻¹·min⁻¹) up to 75 (ml·kg⁻¹·min⁻¹) (Matković, Matković, & Knjaz, 2005) [24]. There is a smaller number of studies which specifically address maximal oxygen consumption in university basketball players. However, some that stand out indicate that American university players have a maximum oxygen consumption of 65.2 ± 6.2 (ml·kg⁻¹·min⁻¹) (Tavino, Bowers, & Archer, 1995) while other authors have collected data that they have Vo₂max values of 53.0 ± 4.7 (ml·kg⁻¹·min⁻¹) (Caterisano, Patrick, Edenfield, & Batson, 1997) [4]. Latin, Berg, & Baechle (1994) [21] investigated the aerobic capacities of a university basketball team and obtained data that guards have an average value of maximal oxygen consumption 56.0 (ml·kg⁻¹·min⁻¹), wings of 56.0 (ml·kg⁻¹·min⁻¹) and the centers of 55.0 (ml·kg⁻¹·min⁻¹).

Correspondence
Anil Kumar
Research Scholar, Department of
Physical Education, C.D.L.U.,
Sirsa, Haryana, India.

Objective: The purpose of the study was to compare the aerobic and anaerobic capacity between rural and urban wrestling female players of Haryana

Methods: To achieve the purpose, 80 wrestling female players (40 urban and 40 rural Players) of Hisar District were selected for the current study. The ages of the players were 14 yrs to 19 yrs. The aerobic and anaerobic capacity of the wrestlers was measured with help of cooper's 12 min. run/ walk test and 50

mts dash test.

Statistical Analysis: To compare the aerobic and anaerobic capacity between rural and urban wrestling female players of Haryana 't' test was applied. The level of significance was set at 0.05.

Result and Discussion of finding

Table 1: Mean Scores and standard deviation of Aerobic and Anaerobic capacity between rural and urban wrestling female players of Haryana

Game	N	Aerobic Capacity				Anaerobic Capacity			
		Mean	S.D	S.E.D	'T'	Mean	S.D	S.E.D	'T'
Urban Wrestling female players	40	2.63	.45	.72	2.175	6.82	.41	.65	4.65
Rural wrestling female players	40	2.40	.43	.69		6.42	.28	.43	

NS=Not Significant at 0.05 level

The mean values of urban and Rural wrestling female players on aerobic and anaerobic capacity mean score were 2.63 and 2.40 respectively S.D were .45 and .43 respectively and S.ED were .72 and .69 respectively the anaerobic capacity mean score were 6.83 and 6.42 respectively S.D were .41 and .28 respectively and S.E.D were .65 and .43 respectively. The results of study showed that there was no significant difference that exists between rural and urban wrestling female players on aerobic and anaerobic capacity. We can say that rural wrestling female players are having better aerobic and anaerobic capacity as compare to rural wrestling female players of Haryana.

The mean values of rural and urban wrestling female players on anaerobic capacity were 6.83 and 6.42 respectively S.D were .41 and .28 respectively. The obtained' value was 4.65 significance of 0.05 level of confidence with DF 38. The results of study showed that there was no significant difference that exists between rural and urban wrestling female players on anaerobic capacity. The rural wrestling female players are having better anaerobic capacity i.e. 6.42 minutes as compare to urban female players i.e. 6.83 sec.

Table 2: The mean and standard deviation of aerobic capacity between rural and urban wrestling female players of Haryana in 50 yards run and walk

Variables	Game	N	Mean	S.D	S.E.D	D.F	't' ratio
Aerobic capacity	Urban Wrestling F.P	40	2.63	.45	.72	38	2.175
	Rural Wrestling F.P	40	2.40	.43	.69	38	

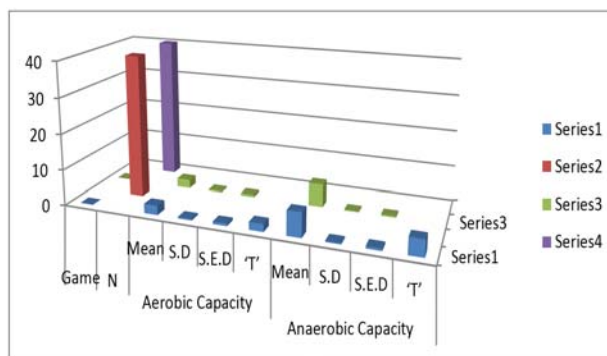
NS= Not Significant at 0.05 level

The mean values of rural and urban wrestling female players on aerobic capacity were 2.63 and 2.40 respectively S.D were .45 and .43 respectively. The obtained' value was 2.175 significance of 0.05 level of confidence with DF 38. The results of study showed that there was no significant difference that exists between rural and urban wrestling female players on aerobic capacity. The rural players are having better aerobic capacity i.e. 2.40 minutes as compare to urban wrestling players i.e. 2.63.

Table 3: The mean and standard deviation of anaerobic capacity between rural and urban wrestling female players of Haryana in 60 yards run test

Variables	Game	N	Mean	S.D	S.E.D	D.F	't' ratio
Anaerobic capacity	Urban Wrestling F.P	40	6.83	.41	.65	38	4.65
	Rural Wrestling F.P	40	6.42	.28	.43	38	

NS= Not Significant at 0.05 level



Graph 1: Graphical representation of Aerobic and Anaerobic capacity between Rural and Urban football male players of Haryana

Conclusion: From the result of the present study it was concluded that:

- ✓ No Significant difference was found in aerobic capacity between rural and urban wrestling female players of Haryana.
- ✓ Rural wrestling female players are having better aerobic capacity than urban wrestling female players of Haryana.
- ✓ No Significant difference was found in anaerobic capacity between rural and urban wrestling female players of Haryana.
- ✓ Rural wrestling female players are having better anaerobic capacity than urban wrestling female players of Haryana.

References

1. Bergh U, Thorstensson A, Sjodin B, Hulten B, Piehl KJ, Karlsson J. Maximal oxygen uptake and muscle fiber types in trained and untrained humans. *Medicine & Science in Sports & Exercise* 1978; 10:151-154.
2. Bolonchuck WW, Lukaski HC, Siders WA. The structural, functional, and nutritional adaptations of college basket- ball players over a season. *Journal of Sports Medicine and Physical Fitness* 1991; 31(2):165-172.

3. Carda RD, Looney MA. Differences in physical characteristics in collegiate baseball players. A descriptive position by position analysis. *Journal of Sports Medicine and Physical Fitness*. 1994; 34(4):370-376.
4. Caterisano A, Patrick B, Edenfield W, Batson M. The effects of a basketball season on aerobic and strength parameters among college men: Starters vs. reserves. *Journal of Strength and Conditioning Research*. 1997; 1(11):21-24.
5. Ciuti C, Marcello C, Macis A, Onnis E, Solinas R, Lai C *et al.* Improved aerobic power by detraining in basketball players mainly trained for strength. *Sports Medicine Training and Rehabilitation* 1996; 6:325-335.
6. Crisafulli A, Melis F, Tocco F, Laconi P, Lai C, Concu A. External mechanical work versus oxidative energy consumption ratio during a basketball field test. *Journal of Sports Medicine and Physical Fitness*. 2002; 44(2):409-417.
7. Douglas B, McKeag MD, Hoffman JR. *Handbook of Sports Medicine and Science: Basketball*. Oxford: Blackwell Science, 2003.
8. Erčulj F, Dežman B, Vučković G, Perš J, Perše M, Kristan M. An analysis of basketball players' movements in the Slovenian basketball league play-offs using the SAGIT tracking system. *Facta Universitatis series Physical Education and Sport* 2008; 6(1):75-84.
9. The Differences in Aerobic Capacity of Basketball Players in Different Playing Positions, 79
10. Gillam G. Identification of anthropometric and physiological characteristics relative to participation in college basketball. *National Strength & Conditioning Association Journal*. 1985a; 7:34-36.
11. Gillam G. Physiological basis of basketball bioenergetics. *National Strength & Conditioning Association Journal*. 1985b; 6:44-71.
12. Hoffman JR, Maresh CM. *Physiology of basketball*. In: Garrett, W.E., & Kirkendall, D.T. (Eds), 2000.
13. *Exercise: Basic and Applied Science*. Baltimore, MD: Lippincott Williams & Wilkins, 733-744.
14. Hoffman JR, Fry AC, Howard R, Maresh CM, Kraemer WJ. Strength, speed, and endurance changes during the course of a division I basketball season. *Journal of Applied Sport Science Research*. 1991; 5:144-149.
15. Hoffman JR, Tenenbaum G, Maresh CM, Kraemer WJ. Relationship between athletic performance tests and playing time in elite college basketball players. *Journal of Strength and Conditioning Research*. 1996; 10:67-71.
16. Idström JP, Harihara Subramanian V, Chance B, Schersten T, Bylund-Fellenius AC. Oxygen dependence of energy metabolism in contracting and recovering rat skeletal muscle. *American Journal of Physiology*. 1985; 248:40-48
17. Jeličić Sekulić MD, Marinković M. Anthropometric characteristics of high level European junior basketball players. *Collegium Antropologicum*, 2002; 26:69-76.
18. Jordan F, Martin J. *Basket performance*. Paris: Edition Amphora, 1995.
19. Karalejić M, Jakovljević S. Testiranje i merenje u košarci (Testing and measurement in basketball). Belgrade: Basketball Federation of Serbia. In Serbian, 1998.
20. Krause J. *Basketball skills and drills*. Champaign, IL: Human kinetics, 1991.
21. Latin RW, Berg K, Baechle T. Physical and performance characteristics of NCAA division I male basketball players. *The Journal of Strength & Conditioning Research*. 1994; 8:214-218.
22. Marinković D. Tehničko-taktička aktivnost igrača neposredno pre postizanja koša, na Evropskom prvenstvu „Poljska" (Technical-tactical activity of the player just before the scoring, on the European, (2009-2010).
23. Championship, „ Poland". Bachelor's Thesis, Novi Sad: Faculty of Sport and Physical Education, University of Novi Sad. In Serbian, 2009
24. Matković RB, Matković B, Knjaz D. Fiziologija košarkaške igre (Physiology of the basketball game). *Hrvatski športskomedicinski vjesnik*, In Croatian 2005; 2:113-124.
25. McInnes SE, Carlson JS, Jones CJ, McKenna MJ. The physiological load imposed on basketball players during competition. *Journal of Sports Sciences*. 1995; 13:387-397.
26. McKeag D. *Basketball - Olympic handbook of sports medicine*. Oxford: Blackwell Publishing, 2003.
27. Miller S, Bartlett R. The relationship between basketball shooting kinematics, distance and playing position. *Journal of Sports Sciences*. 1996; 14:243-253.
28. Narazaki K, Berg K, Stergiou N, Chen B. Physiological demands of competitive basketball *Scandinavian Journal of Medicine & Science in Sports*. 2009; 19(3):425-432.
29. Ostojić SM, Mazić S, Dikić N. Profiling in basketball: Physical and physiological characteristics of elite players. *Journal of Strength and Conditioning Research*. 2006; 20(4):740-744.
30. Parr RB, Wilmore JH, Hoover R, Bachman D, Kerlan R. Professional basketball players: Athletic profiles. *Physician and Sportsmedicine* 1978; 6:77-84.
31. Piiper J, Spiller P. Repayment of O₂ debt and resynthesis of high-energy phosphates in gastrocnemius muscle of the dog. *Journal of Applied Physiology*. 1970; 28:657-662.
32. Ponorac N, Matavulj A, Grujić N, Rajkovača Z, Kovačević P. Maksimalna potrošnja kiseonika (VO₂max) kao pokazatelj fizičke sposobnosti sportiste. *Acta Medica Mediana* 2005; 44(4):17-20.
33. Rodriguez-Alonso M, Fernandez-Garcia B, Perez-Landaluce J, Terrados N. Blood lactate and heart rate during national and international women's basketball. *Journal of Sports Medicine and Physical Fitness*. 2003; 43:432-436.
34. Roper S. *Outdoor recreation in America – executive summary*. Washington, D.C: Recreation Roundtable/ USDI publication, 1996. Available at: <http://www.funoutdoors.com/node/view/1110>
35. Sallet P, Perrier D, Ferret JM, Vitelli V, Baverel G. Physiological differences in professional basketball players as a function of playing position and level of play. *The Journal of Sports Medicine and Physical Fitness*, 2005; 45(3):291-294.
36. Scheller Jr A, Rask B. A protocol for the health and fitness assessment of NBA players. *Clinical Journal of Sport Medicine*. 1993; 12(2):193-205.
37. Sindik J, Jukić I. Differences in situation efficacy indicators at the elite basketball players that play on different positions in the team. *Collegium Antropologicum* 2011; 35(4):1095-1104.