SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 9 | September 2024 - Peer Reviewed Journal

COMPARISON OF AEROBIC AND ANAEROBIC CAPACITY IN COLLEGE AND UNIVERSITY LEVEL HANDBALL PLAYERS

Mr. R. Stalin[1], Dr. S. Ramesh[2]
[1]*PhD Research Scholar (Physical Education), Sri Vasavi College, Erode, Tamilnadu, India.*
[2] *Director of Physical Education, Sri Vasavi College, Erode, Tamilnadu, India.*

ABSTRACT
The study aimed to compare the aerobic and anaerobic capacity of college-level and university-level male handball players. To do this, sixty players aged 18 to 25 were randomly selected from various departments and colleges affiliated with Bharathiar University in Coimbatore, Tamil Nadu. The players were divided into two equal groups: thirty college-level players and thirty university-level players. The data collected from the players were analyzed using an independent t-test to check for significant differences in their capacities. The results showed a significant improvement in both aerobic and anaerobic capacity between the two groups.
KEYWORDS: *handball, aerobic and anaerobic*

INTRODUCTION

Handball, also known as team handball or Olympic handball, is a sport where two teams of seven players each (six outfield players and one goalkeeper) work together to pass a ball and try to throw it into the other team's goal. A typical match has two halves, each lasting 30 minutes, and the team with the most goals wins.

The term "aerobic" means "with oxygen." It refers to how our bodies use oxygen to produce energy for activities. When we exercise, our bodies need energy, which comes from burning the food we eat. Oxygen is essential for this process. The concept of fitness, particularly aerobic fitness, was popularized by Kenneth Cooper, who played a big role in the fitness movement. Many doctors believe that aerobic exercises are good for the heart and lungs and provide other health benefits.

On the other hand, anaerobic exercise is important for athletes in non-endurance sports and for bodybuilders who want to build strength and muscle. When muscles are trained without oxygen, they develop differently, making them better for short, intense activities. In contrast, aerobic exercises include lower-intensity activities like walking, running, swimming, and cycling, which require a lot of oxygen for longer periods of exercise.

CRITERION MEASURES

The following tests were used to measure the selected variables.

1. Queens college step test was used to measure the aerobic capacity (cardio respiratory Endurance) and score was recorded in minutes
2. Maragariya-kalamen test was used to measure the anaerobic Capacity (speed) and score was recorded in seconds.

METHODS

To achieve the purpose of the study,60 handball men players will be selected as subjects from departments and affiliated colleges of Bharathiar University, Coimbatore, Tamilnadu. The subjects age ranged between 18 and 25 years. The selected men handball players will be assessed by aerobic and anaerobic capacity. The selected 60 handball men subjects will be divided into two equal groups, Group – I named as College level men handball players and Group-II named as University level men handball players.

STATISTICAL ANALYSIS

The descriptive calculation and ‘t’ test were computed. The level of significance will set at 0.05 level of confident.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 9 | September 2024 - Peer Reviewed Journal

TABLE 1
COMPUTATION OF 't' RATIO BETWEEN COLLEGE AND UNIVERSITY LEVEL MEN HANDBALL PLAYERS ON AEROBIC CAPACITY

Variable	Group	N	Mean	Standard deviation	Standard Error Mean	t-ratio
Aerobic	College	30	44.03	2.09	0.38	**11***
	University	30	49.43	1.68	0.30	

*Significant at 0.05 level of confidence (1.69) 1 and 29

Table 1 shows the mean value of aerobic for college and university level men handball players were 44.03 and 49.43 respectively. The obtained "t" ratio value of 11 was higher than the required table value of 1.69 for degrees of freedom, 1 and 29 significant at 0.05 level of confidence. The study also reveals that the university level handball players had more aerobic capacity then college level handball players.

The mean value of college and university level handball players on aerobic were graphically represented in figure.

FIGURE I
Graphical Representation on Mean Values of College and University Level Men Handball Players on Aerobic Capacity

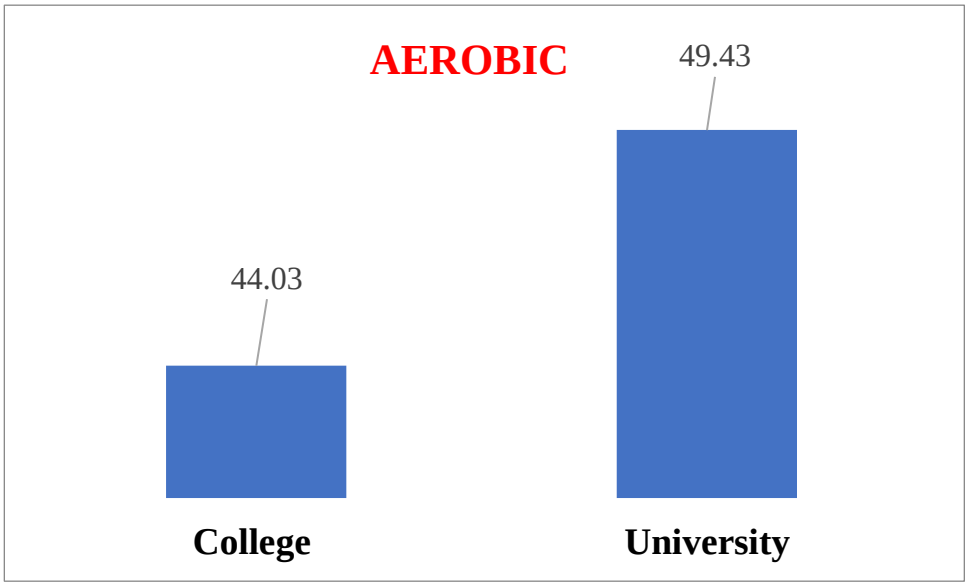


TABLE 2
COMPUTATION OF 't' RATIO BETWEEN COLLEGE AND UNIVERSITY LEVEL MEN HANDBALL PLAYERS ON ANAEROBIC CAPACITY

Variable	Group	N	Mean	Standard deviation	Standard Error Mean	t-ratio
Anaerobic	College	30	368.42	34.71	6.33	**6.96***
	University	30	450.30	54.23	9.90	

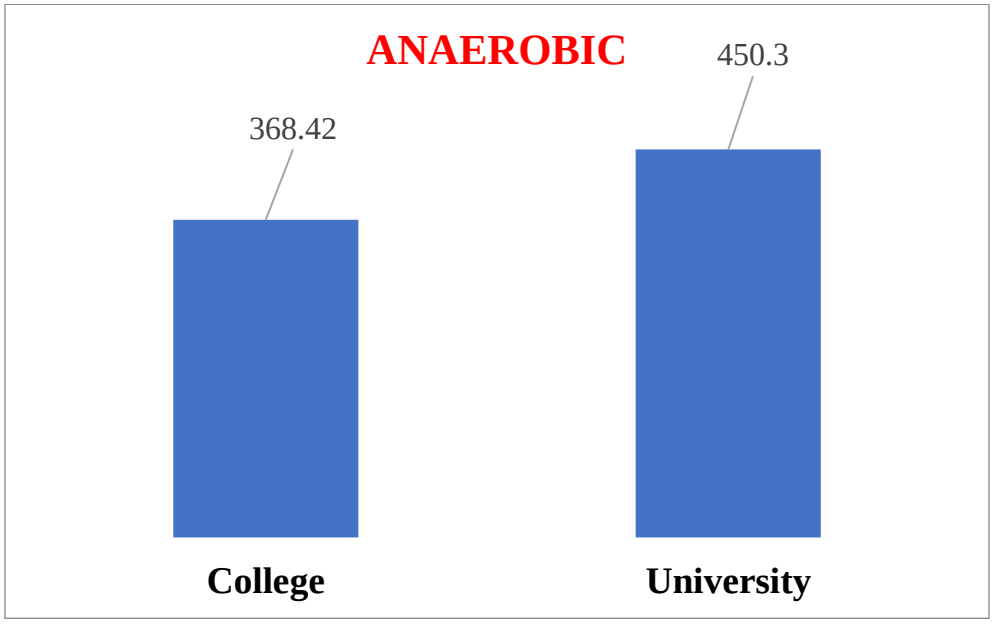
*Significant at 0.05 level of confidence (1.69) 1 and 29

Table 2 shows the mean value of anaerobic for college and university level men handball players were 368.42 and 450.30 respectively. The obtained "t" ratio value of 6.96 was higher than the required table value of 1.69 for degrees of freedom, 1 and 29 significant at 0.05 level of confidence. The study also reveals that the university level handball players had more anaerobic capacity then college level handball players.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 9 | September 2024 - Peer Reviewed Journal

The mean value of college level and university level men handball players on anaerobic capacity were graphically represented in figure II.

FIGURE II
Graphical Representation on Mean Values of College and University Level Men Handball Players on Anaerobic Capacity



DISCUSSION ON FINDINGS

The findings of this study show clear differences in both aerobic and anaerobic capacity between college and university-level male handball players.

First, the results indicate that university-level players have a higher aerobic capacity than their college-level peers. Aerobic capacity is important for endurance during games, allowing players to maintain their performance over longer periods. This suggests that university-level players may have more training experience or higher intensity practices, which can improve their endurance.

Additionally, the study found significant differences in anaerobic capacity as well. University players also scored better in anaerobic tests, which are crucial for short bursts of energy, such as sprinting or quick movements during a match. This means that university players may be better at handling intense moments in the game.

Overall, these results suggest that as players progress from college to university levels, they likely receive more advanced training and competition, leading to improved physical performance. This emphasizes the importance of developing both aerobic and anaerobic capacities in handball training programs to help athletes reach their full potential.

CONCLUSIONS

Based on the results and discussion made into the previous chapter, the Following conclusions have been made:

1. It was concluded that there was a significant difference among college level and university level men handball players on aerobic capacity.
2. It was concluded that there was a significant difference among college level and university level men handball players on anaerobic capacity.
3. It was concluded that university level handball players had better aerobic capacity than college level handball players.
4. It was concluded that university level handball players had better anaerobic capacity than college level handball players.

SJIF Impact Factor (2024): 8.675| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 9 | September 2024 - Peer Reviewed Journal

RFERENCES

1. *Abdul Halik, Senthil Kumaran, Princy and Rajesh (2021). Comparative Study on Psychological Variables between Volleyballers and Basketballers. International Journal for Science and Advance Research in Technology, Volume-7, Issue-5, Pages: 552-554.*
2. *Kodeeswaran, Abdul Halik and Senthil Kumaran (2021). Comparative Study on selected physical fitness Variables between Basketball and football referees. International journal of physical education, sports and health,Volume-8, Issue-3, Pages: 35-37.*
3. *Koulla Parpa , Marcos Michaelides (2022) Aerobic capacity Of professional soccer players Before after COVID-19 infection. Sci Rep ; 12(1): 11850, 2022 07 13.*
4. *Dragutin Stojmenovic, Nenad Trunic, Tamara Stojmenovic(2022) A Comparative Study Of Aerobic Capacity Among Elite Basketball Players According To Five Different Positions In The Team . Journal Of Physical Education And Sport ® (Jpes), Vol. 22 (Issue 10), Pp. 2522 – 2529, October 2022.*
5. *Adam Prokopczyk And Marek Sokołowski(2022) Aerobic Capacity And Restitution Efficiency Level In Relation To The Training Experience And Weekly Training Volume Of Malevand Female Judo National Team Members In The Cadet Age Group (U18) During The Preparatory Period. Int. J. Environ. Res. Public Health 2022, Volume:19 Issue 17), 11142;*
6. *Paulina Hebisz , Rafał Hebisz And Maja Drelak(2021) Comparison Of Aerobic Capacity Changes As A Result Of A Polarized Or Block Training Program Among Trained Mountain Bike Cyclists. Int. J. Environ. Res. Public Health 2021, 18(16), 8865;*
7. *Pooja M Akhtar, Aryaa Bhusari and Murtaza Akhtar, (2018). Comparison of aerobic capacity and current levels of physical activity in yoga practitioners and healthy non-exercising individuals, Journal of yoga and Physiotherapy, ISSN: 2476-1303, Volume 6 issue (3), Page 1 to 5.*
8. *Lokendra Bahadur Kathayat and Ashok Kumar, (2018). Haemodynamic and VO2max profile of Punjabi cricket players, Journal of exercise science & Physiotheraphy, ISSN: 0973-2020, Volume 14 issue No 2. Page 45.*
9. *Pranati Hota, (MPT), Dr.Patitapaban Mohanty, Ph.D., (PT), Mrs.Monalisa Pattanaik (PT), (2017). Comparative study on effect of breathing and aerobic exercise on general health in asymptomatic population. Journal of dental and medical sciences,ISSN:2279-085*
10. *Kalpana Zutshi, Mahvish Qaiser, Nahid Khan(2022) Comparison Of Aerobic And Anaerobic Capacities Among Smoker And Non-smoker Male Collegiate Population.Journal of Communicable Diseases.Volume 53, Issue 2 – 2021, Pg. No. 14-17.*
11. *Dr.Masarat Jabeen, Dr.S.P.Surwase,Dr. Anjali N Shete,Dr.Rahul Jadhav (2020) Comparative Study of Aerobic and Anaerobic Capacity in Football Players and Judo players. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 2 Ser.4 (February. 2020), PP 41-47.*
12. *Dr. Ranbir Singh(2019) Comparative study of aerobic and anaerobic capacity Between intervarsity football & hockey players. International Journal of Yogic, Human Movement and Sports Sciences 2019; 4(1): 283-285.*
13. *Lalita Thakur and vinay pawar Ph D., (2018). Comparison of aerobic and anaerobic capacity of sprinters, jumpers and throwers, Inauguration of journal, ISSN Number: 71995959, Volume 8 issue no (1), page 36-39.*
14. *Harsh Patel, Hassan Alkhawam, Raef Madanich, Niel Shah, Constantine Kosmas,Timothy J Vittorio, (2017), Comparative study on prevent cardio-vascular (CV)Disease and to promote CV health, World Journals of Cardiology, ISSN: 2828- 9526. Volume 9 Issue 2, Page 134-138.*
15. *Laishram Thambal Singh, Oinam Bhagat and Soubam Vinaykumar Singh. (2016), Comparison of aerobic and anaerobic efficiency between handball and basketball players, International Journal of physical education, sports and health, ISSN:2394-1685-9 3, Volume 3 issue no 5, page 397-399.*
16. *Mr. Ni khil Kumar Rastogi,Dr. Brij Kishore Prasad(2014) Comparative Study Of Aerobic Anaerobic Capacity Of Male And Female Players Of Individual Sports.IJMESS Vol.3 No.1(March, 2014). P-ISSN: 2278-0793 and e-ISSN: 2321-3779*
17. *Tadele Ademe, Sangeeta Rain, Molla Deyou, (2013),Comparative effects of aerobic and anaerobic workouts on performance enhancement of selected physical fitness variables among first year sport science students of wolaita sodo university, Ethiopia, International Journal of scientific and research publications, ISSN 2250-3153. Volume 3, Issue 9, page no:1-6.*