GKU Journal of Multidisciplinary Research (GKUJMR)
Volume-1 | Issue-I | September-2025 | ISSN: 3049-298X

GKUJMR Peer-Reviewed Journal

Received: 18.07.2025

Accepted: 16.09.2025

Published: 25.09.2025

Page No: 70 – 76

DOI:10.5281/zenodo.17207222

✉: gkujournal@gku.ac.in

Analysis of Physical Fitness Components Among Athletes and Non-Athletes

[1]Dr. Aarif Majeed, [2]Mr. Lakhveer Singh, [3]Mr. Gurdeep Singh

[1,2,3]Assistant Professor, Faculty of Physical Education, Guru Kashi University, Talwandi Sabo, Bathinda

Email: [1]dmajeed171831@gku.ac.in, [2]lakhveer04041996@gmail.com, [3]gurdeepsingh@gku.ac.in

Abstract – The main goal of this study was to find out how certain aspects of physical health differ between athletes and people who do not play sports. The study examined 120 male students from Guru Kashi University, ages 17 to 23. There were 60 athletes and 60 non-athletes. The four main fitness factors analyzed were Strength, Endurance, Flexibility, and Agility. Standardized tests measured each trait. A t-test with a 0.05 significance threshold showed that the health statuses of the two groups were significantly different. A statistically significant gap was found when comparing athletes to non-athletes in health-related physical fitness. This indicates that regular athletic training influences physical fitness.

Keywords – Agility, Athletes, flexibility, muscle endurance, strength, and non-athletes.

1. INTRODUCTION

Over the last ten years, the public has become increasingly aware of the health benefits of exercise and physical activity. Interest in preventive medicine has thus grown by leaps and bounds. Studies have found that exercise is essential to mitigating risk for cardiovascular disease, as well as recovery from it. This awareness, and emphasis on health and fitness as well as its benefits have led to an explosion of fitness programs in the public, private and corporate sectors. As a result, the employment outlook for fitness and exercise professionals has never been better. More physical education trained persons are becoming involved in preventative and restitutive exercise programming, and the trend is expected to continue. The ability to perform routine functions well without getting tired is called physical fitness. It plays a major part in well-being and health. Over the past 25 years, a series of studies have shown how beneficial regular exercise is for good health. Most people visit physicians for general ailments suck as chronic tiredness due to lack of exercise, according to national health statistics.

2. METHODOLOGY

The method section of a research paper on the differences in physical health between athletes and non-athletes. Here's what to know:

i. **Subject matter**: The study seeks to compare the physical health of athletes with that of non-athletes. It actually examines different aspects of fitness (e.g., strength, endurance, flexibility and agility) to see if health disparities between these two populations exist.
ii. **Participants**: A total of 120 (60 athletes and 60 non-athletes) students from Guru Kashi University formed the sample of the study. The study population age was between 17 and 23 years. These age groups are young adults, a period often considered crucial to physical development and fitness.

iii. **Comparison of the Groups**: The athletes and non-athlete's groups were compared utilizing a t-test. A t-test is a popular statistical test used to compare the means (averages) of two groups and ascertain if the differences observed between them are statistically significant. In other words, the t-test provides a measure of whether the differences that are observed can be explained by what is being measured (in this case athletic training), instead of just flipping a coin.

iv. **Hypothesis Testing at α (0.05):** H o :1 Athletes will score higher on measures of physical health, in comparison to non-athletics. Whether the differences are statistically significant is tested at a significance level of α=0.05. This says if the we think the chance of getting a result as different to what we would have expected at random is less than 5%, then we have evidence of difference. In loose terms, if the p-value is less than 0.05 then we are not justified in rejecting the hypothesis that athletes do better than non-athletes.

3. Results and Tables

- **Muscular Strength**
  - **Test Item:** Grip Dynamometer
  - **Unit of Measurement:** Kilograms
- **Muscular Endurance**
  - **Test Item:** Sit-ups (Bent Knees)
  - **Unit of Measurement:** Counts
- **Flexibility**
  - **Test Item:** Sit and Reach
  - **Unit of Measurement:** Centimeters
- **Agility**
  - **Test Item:** Shuttle Run
  - **Unit of Measurement:** Seconds

Table 3.1 Compares the right-hand grip strength of athletes and non-athletes.

Groups	Mean	S.D.	M.D.	OT	TT
Athletes	32.32	6.36	5.22	4.20	2.0
Non- athletes	27.1	6.02			

Table 3.1 highlights a significant difference in the right-hand grip strength between athletes and non-athletes. The average score for athletes (32.32) is noticeably higher than the score for non-athletes (27.1), resulting in a mean difference (M.D.) of 5.22. The t-test analysis produced a calculated t-value of 4.20, which is greater than the critical t-value of 2.0 at the 0.05 significance level. This statistically confirms that athletes possess superior right-hand grip strength compared to non-athletes, supporting the hypothesis that athletic training improves strength in this area. The results are visually represented in **Graph 3.1**.

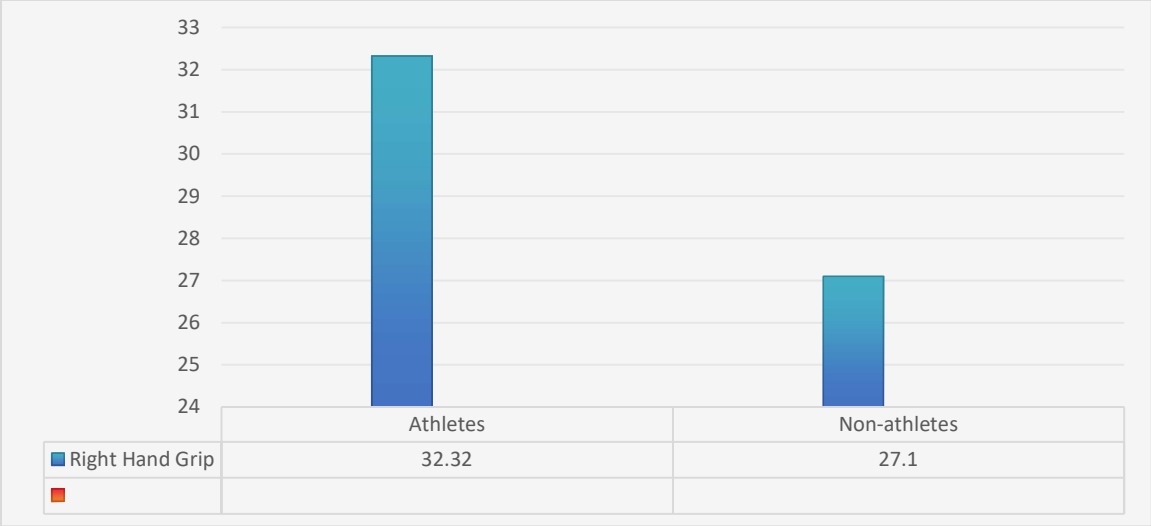


Table 3.2 shows the difference in left-hand grip strength between athletes and non-athletes.

Group	Mean	S.D	M.D	OT	TT
Athletes	28.5	7.40	5.43	5.77	2.0
Non-athletes	23.07	4.06			

Table 3.2 illustrates a clear difference in the mean values between the two groups. The average score for athletes is 28.5, significantly higher than the average score of 23.07 for non-athletes, leading to a mean difference of 5.43. To confirm this, a t-test was performed. The calculated t-value of 5.77 exceeds the critical t-value of 2.0 at the 0.05 significance level. This supports the conclusion that athletes have better left-hand grip strength than non-athletes, confirming the researcher's hypothesis. These findings are shown in **Graph 3.2.**

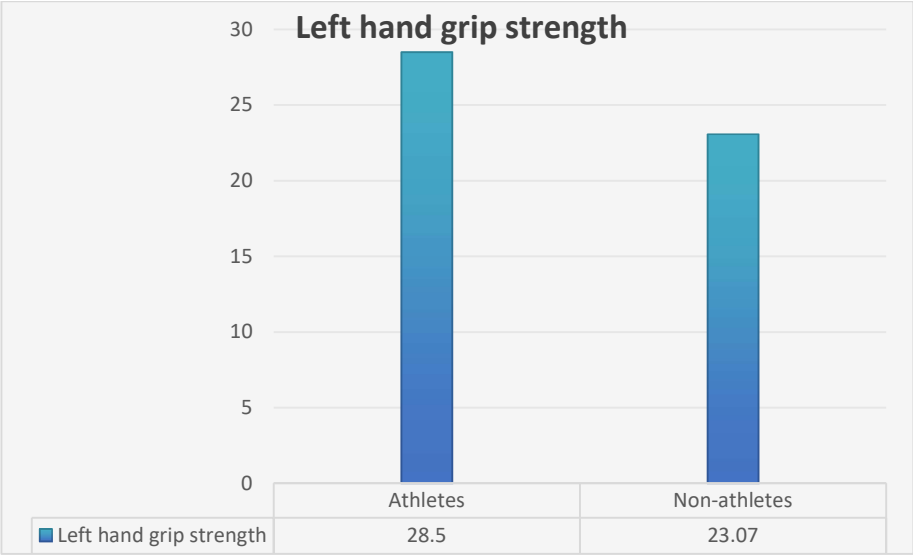


Table 3.3 compares muscular endurance between athletes and non-athletes.

Group	Mean	S.D	M.D	OT	TT
Athletes	38.53	7.43	10	9.65	2.0
Non-athletes	28.53	2.98			

As shown in Table 3.3, the means of two types are quite different. Athletes on an average score 38.53 points and non-athletes' average score is 28.53 points which shows a difference of 10 pts between athletes and non-athletes. We can test if this difference is significant by using a t-test. The calculated t-value of 9.65 is greater than the critical t-value of 2.0 at α =.05. That trained runners beat normal population levels for muscle endurance is a key element for our study to put emphasis on. **Graph 3.3** displays these outcomes.

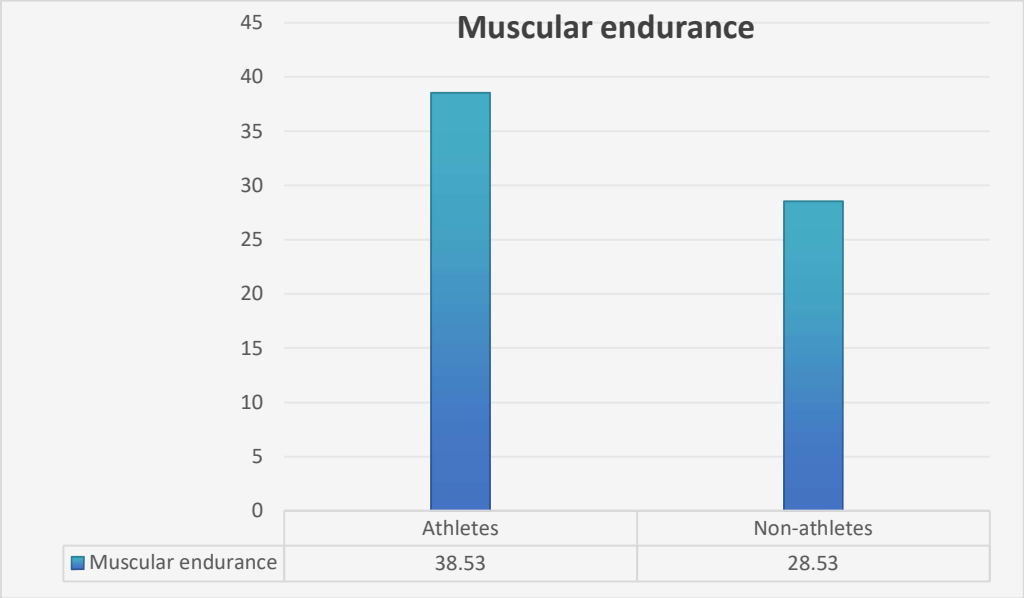


Table 3.4 shows the difference in flexibility between athletes and non-athletes.

Group	Mean	S.D	M.D	OT	TT
Athletes	18.1	4.03	4.53	7.13	2.0
Non-athletes	13.57	3.72			

Table 3.4 demonstrates a clear difference in the mean values. Athletes have an average score of 18.1, which is notably higher than the average of 13.57 for non-athletes, resulting in a mean difference of 4.53. A t-test was conducted to confirm this difference. The calculated t-value of 7.13 exceeds the critical t-value of 2.0 at the 0.05 significance level. This indicates that athletes have better flexibility compared to non-athletes, supporting the researcher's hypothesis. These findings are shown in **Graph 4.**

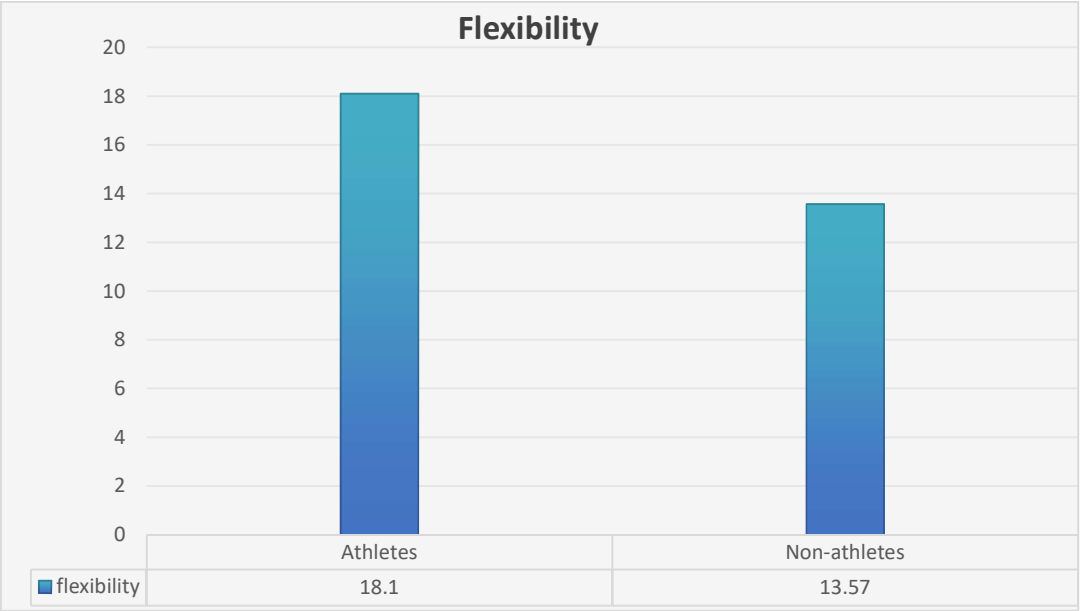
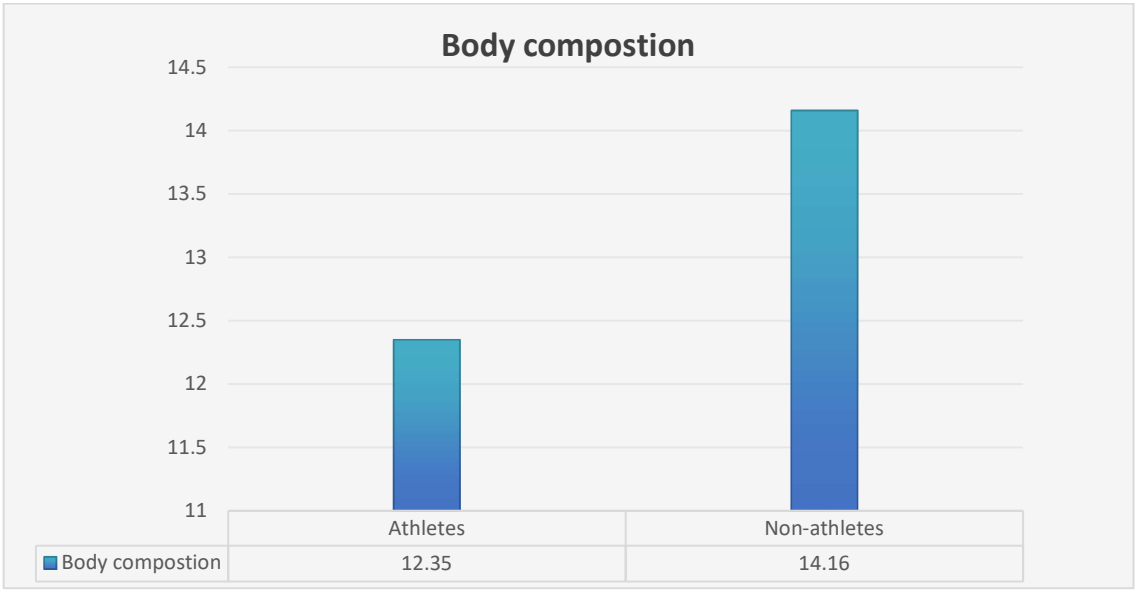


Table 3.5 compares athletes and non-athletes in agility.

Group	Mean	S.D	M.D	OT	TT
Athletes	12.35	0.73	1.81	13.44	2.0
Non-athletes	14.16	0.77			

It can be seen from Table 3.5 that the means of two groups have greater difference. The difference between athletes (12.35) and non-athletes (14.16) is 1.81 points as a mean value. We are able to test this difference via a t test. At the 0.05 level of significance, the calculated t-value of 13.44 is greater than the critical t-value of 2.0. This lends support to the claim of the investigator that athlete perform better in movement times than non-athletes. **Graph 3.5** presents these results.



4. Finding

Statistically athlete and non-athlete also differ significantly by several physical fitness components as per the study. Athletes demonstrated significantly greater right and left-hand grip strength, muscular endurance, flexibility, and agility compared to non-athletes. Statistical analysis indicated that these differences were not coincidental and the absolute values of t-tests between two groups reached a significant difference at significance level of 0.05. These results indicated that athletes have better physical fitness traits due to regular training and exercise which are important for general health and performance. The findings are indicative that regular engagement in sports appears to have beneficial effects on physical fitness (muscular strength, muscular endurance, flexibility and agility) status. These results highlight the significance of physical education and athletic training to benefit children's better health.

5. Conclusion

In conclusion, this research shows that athletes are much better equipped than non-athletes in strength, muscular endurance, flexibility, and agility. The findings reveal strong evidence for the beneficial effects of athletic training on physical fitness. For both handgrip tests, athletes presented higher strength along with greater endurance, flexibility and agility in comparison to non-athletes. This shows the advantages of regular physical exercise, not only in fitness and well-being. Schools and universities had to have students participate more in physical activities as this could lead to better health and fitness. What it shows, too, is that the value of PE and joining in sports is not solely from a participation perspective – they are valuable as long-term health-promoters especially for young adults.

6. Conflicts of Interest

This study was carried out with academic honesty; there was no falsification of data and results were presented honestly without any interference from outside factors. No financial, professional or personal conflicts of interest exist that might have influenced the study findings. This research intends to enhance the understanding of physical health and fitness level differences in athletes on behalf non-athletes, under no bias or external pressure. This research adhered to all the principles of ethical guidelines and was based only on data analysis.

7. Declaration

All research and writing in the article "Analysis of Physical Fitness Components Among Athletes and Non-Athletes" is my own. I have not encountered any prior publication of this material. I promise that the relevant authorities will have the final say if this paper is later deemed invalid under fundamental standards.

References

[1] Ahmad Qureshi (2019), Physical Fitness Among Sports and Non-Sports Persons a Comparative Study. Research Review International Journal of Multidisciplinary, Volume 04, Issue 02

[2] Chouhan Sav Singh, "Comparative Study of Health Status, Mental Health Status, Anthropometric Measurements and Physical Fitness of Rural and Urban Girls of Madhya Pradesh", Ph.D. Thesis, Devi Ahilya Vishwavidyalaya, Indore, 2019.

[3] Deborah A. Wuest & Charles A.Bucher (1992), Foundations of Physical Education & Sports, (B.I. Publication, New Delhi) p.p 347

[4] Deborah Wuest A, Charles Bucher A. (1992), Foundations of Physical Education and Sport, B.I. Publications. New Delhi

[5] Devinder Kansal K. (1996), Test and Measurement in Sports and Physical Education, DVS Publication, Delhi

[6] Dhirendre Singh Chauhn (2018), Comparative Study of Physical Fitness Variables of Urban and Rural Area Players. International Journal of Physical Education and Sports Science, volume 13, Issue No. 04

[7] Harneet Singh (2015), Comparative Study on Selected Physical Fitness and Physiological Variables between Volleyball and Handball Players. European Journal of Physical Education and Sports, Volume 10, Issue 4

[8] Jesuudoss J Samuel, "Analysis of physical fitness variables of Kho-Kho and kabaddi players", International Journal of Physiology, Nutrition and Physical Education, 4 (1), 2019

[9] Kohil Keshav, "A Comparative Study of Physical Fitness Variables Of Male Volleyball Players And Football Players", Research Journal Of Physical Education Sciences, Vol.2, No. 1, January, 2014

[10] Kumar Anuj and Kumar Sandeep, "Comparison of Anthropometric Measurements among the Students of Education and Physical Education", International Journal of Physical Education and Sports Sciences, Vol. 14, Issue 2, 2019

[11] Majeed Aarif & Sayar P.S. (2022), Comparative study of selected anthropometric measurements & physical fitness variables of college students of Jammu and Kashmir, B. Aadhar, Issue NO. 346 (CCCXLVI), p.p 1-5.

[12] Majeed Aarif & Sayar P.S. (2022), Comparison of selected physiological parameters and anthropometric measurements between college level students of two regions of Jammu and Kashmir, International Journal of Yoga, Physiotherapy and Physical Education, Volume 7, Issue 1, p.p 1-4

[13] Malik Ashok, "A Comparative Study of Selected Physical Fitness Components and Physiological Variables of Kho-Kho and Kabaddi Female Players", ISPERYS, 2012.

[14] Mandrekar Sahadev, "A Comparative Study on Physical Fitness Variables of Inter Collegiate Cricket and Football Players of Goa," International Journal of Physiology, Nutrition and Physical Education, 2(1) 2017

[15] Masanovic B. et.al, "Comparative study of anthropometric measurement and body composition between basketball players from different competitive levels: elite and sub-elite" Pedagogics Psychology Medical-biological Problems of Physical Training and Sports, (4), 2019.

[16] Muhammad Zia ul Haq et.al; (2019) Anthropometric Characteristics and Physical Fitness of Urban and Rural 8-10 Years Old School Girls of Bahawalpur, Pakistan. International Journal of Physiotherapy, Volume 6(2), pp. 46-51

[17] Reet Howell et.al (1994), Foundation of Physical Education, (Friends Publication, Delhi) pp 288

[18] Reet Howell, et al. (1994), Foundations of Physical Education, Friends Publications, Delhi

[19] Smt. Bhavya, et al. Comparative Study on Selected Physical Fitness and Physiological Variables between Kabaddi and Kho-Kho Players, International Journal of Research and Analytical Reviews. 2021;8(2):40-44.