



## JUARA: Jurnal Olahraga

E-ISSN 2655-1896 ISSN 2443-1117

<https://doi.org/10.33222/juara.v6i2.1243>



### Comparisons of Some Selected Physiological and Physical Aspects of Snow Skaters and Rock Climbers of Jammu and Kashmir

Nazir Ahmad Dar<sup>1</sup>, showkat Ahmad Dar<sup>2</sup>

<sup>1</sup>Sant Gadge Baba Amravati University Amravati, India

<sup>2</sup>Ishwar Deshmukh College of Physical Education, India

\*e-mail: [nazirdar21@gmail.com](mailto:nazirdar21@gmail.com)<sup>1</sup>, [showkat7866@gmail.com](mailto:showkat7866@gmail.com)<sup>2</sup>

#### Info Artikel

##### Article History:

Received 18 February 2021

Approved 12 April 2021

Published 14 April 2021

##### Keywords:

Tidal Volume,  
Flexibility, BMI,  
Endurance Vo2max.  
Spirometer

#### Abstract

*Researchers have shown their interest in taking up this issue to assess and compare several physical and physiological variables between snow skaters and rock climbers JAMMU and KASHMIR. The investigators limited their studies to physical and physiological variables: flexibility, BMI, tidal volume, and cardiovascular endurance. The study was conducted on 60 players, all subjects were from JAMMU and KASHMIR, and the sampling technique adopted for topic selection from both groups was carried out through the random sampling method. Data for comparing various physical and physiological variables is collected through standardized and scientifically approved testing devices. The standard deviation calculated from the snow-skaters' four variables and rock-climbing JAMMU and KASHMIR, namely the mean and standard deviation of the rock climber's tidal volume, is  $(455.74 \pm 78.94)$ , and the mean and standard deviation of the tidal volume of the snow rate. Skaters were  $(497.3 \pm 82.07)$ , with a mean difference of 42.56. The mean and standard deviation of rock climbers' BMI were  $(20.76 \pm 1.04)$  and snowboarding  $(23.54 \pm 1.89)$ , respectively, with a mean difference of 2.77. The mean and standard deviation of rock climber flexibility is  $(24.65 \pm 4.3)$  and snow skater sane is  $(21.74 \pm 4.01)$  with a mean difference of 2.91, mean and standard deviation of vo2 Max snow skater is  $(58.24 \pm 3.68)$  and the mean and standard deviation of vo2max calculated from the rock climber is  $(70.4 \pm 4.03)$  with a mean difference of 11.8. Therefore rock climbers were excellent at all BMI, lung tidal volume, and endurance but lower in flexibility than snow skaters. The practical implications of this study show that rock climbing is better for overall health than snowboarding. Not much effort is required for snowboarding as it is necessary for rock climbing, which may cause better physical and physiological development of the rock climbing profile.*

© 2021 Nazir Ahmad Dar, showkat Ahmad Dar

Under the license CC BY-SA 4.0

✉ Alamat korespondensi: Sant Gadge Baba Amravati University Amravati, India

E-mail : [nazirdar21@gmail.com](mailto:nazirdar21@gmail.com)

## INTRODUCTION

Rock climbing has increased in popularity as both a recreational physical activity and a competitive sport. Climbing is physiologically unique in requiring sustained and intermittent isometric forearm muscle contractions. The determinants of climbing performance are not precise but may be attributed to trainable variables rather than specific anthropometric characteristics., AW Sheel (July 2016). The foundation of mountain climbing: Alfred Wills, who is said to be both the founder of mountaineering and the person who initiated the Golden Age of British exploration and mountain climbing with his ascent of the Wetterhorn in 1854 (Thompson, 2011). Although the Wetterhorn had been ascended numerous times before (eight), it was the style in which Wills climbed and the way he wrote of the endeavor in his later book *Wandering Amongst the High Alps* (Wills, 1856) which proclaimed him as the founder. The author refers to those who climb for science, botany, and geology, yet he also talks of his ascent as a need for physical exercise and self-improvement (Wills, 1856). Furthermore, Wills suggested that it was the duty of any self-respecting English gentleman to undertake such adventures. Alfred Wills's ascent was classed as the beginning of the Golden Age. However, this seems unfair as the earlier publicized ascent of Mont Blanc in 1851 by Albert Smith was far more courageous (Thompson, 2011).

Unfortunately, the soon-to-be Alpine Club (which formed in 1857) did not regard Smith as 'respectable,' and Wills was unfairly given the founding honor. Climbing was becoming more accessible to the lower classes. Many British rock climbers were tradespeople who had lower-middle-class occupations. This was especially so in the Northern areas of Britain, where tradespeople, manufacturers, and shopkeepers dominated the Lake District. Before this, one of the greatest booms to the sport came during the second half of the 19th Century with the introduction of British railways (Hankinson, 1977).

Sports and games have an essential role in the overall development of an individual. Various sports are played across the globe for entertainment and physical, physiological, and psychological fitness. Sports and games have changed the lifestyles of societies as they become more driven to sports activities. It has become a profession through which we acquire fitness, but we can earn our livelihood at national and international levels. Those who excel well in sports and become excellent players of the game can make millions. As we see in the present time, many players of various sports categories are millionaires. Adventurous sports activities have also driven masses toward them. It is their attitude toward adventurous sports which makes them good in these sports activities. Youth are most attracted to adventurous sports like skating, rafting, mountaineering water sports. The landscape of KASHMIR provides a very suitable atmosphere and conditions for

adventurous sports like in terms of snow sports, ice skating, water sports, and mountaineering. Athletes across the globe come to Kashmir to participate in various adventurous sports organized every year.

Physical health is a state of fitness and well-being, especially the capability of the body to perform sports, occupations, and daily activities in a better way. Good health is usually achieved through proper nutrition, moderately strenuous exercise, and adequate rest. The ability of the human body to perform an activity or given activities with the best performance without any discomfort

or hindrance is its sound fitness.

It plays an essential role in all sports endeavors. We have seen that a player cannot perform healthy fitness directly impacts one's performance. It is a prerequisite of all sports activities to be sound mentally, physically, and physiologically. All players are trained with a progressive training load with many repetitions for performing better in sports. There are various physiological components such as strength, agility, speed endurance, vital capacity, cardiovascular endurance, tidal volume, etc., which are being developed through training.

In physiology, we study the function of various systems of the human body. The different methods of the body have a direct impact on the overall performance in sports activities. The cardiovascular, respiratory variables are directly dependent on the sound functioning of the heart and lungs. Vital capacity and endurance mainly depend on the

smooth and sound functioning of the heart and lung to provide oxygen and blood to the organs used during play. Soundness or wellness of the heart and lungs increases players' endurance and enables them to perform for more extended periods without undue fatigues.

Although the researcher has taken all the precautions were are but still some limitations. The research had not controlled the prevailing environmental conditions. The food and other habits were not in the control of the researcher. The family background and weather conditions were not in control of the researcher. It was hypothesized that there would be significant differences in physical and physiological variables between snow-skaters and rock-climbers of Jammu and Kashmir.

## **METHODS**

The method that was applied to assess and compare order to evaluate and compare a few physical and physiological variables between snow-skaters and rock-climbers. The researchers delimited his study on following physical and physiological variables like flexibility, BMI, tidal volume, cardiovascular endurance. The study was conducted on 60 players, out of which 30 were snow-skaters and 30 rock-climbers. All the subjects were from JAMMU and KASHMIR, and the sampling technique adopted for the selection of topics from both the group was carried out through random sample method of sampling.

The researchers showed interest in studying the subjects from the age group of 25-30 years old. The data for comparison of various physical and physiological variables were collected through standard testing kits meant and approved scientifically. The different apparatus that were applied to assess the physical and physiological variables between snow-skaters and the rock-climbers are sit and reach test scale for flexibility weighing machine and stadiometer for BMI, spirometer for tidal volume and vo2max bench and stopwatch for cardiovascular the recorded data that was for above discussed physical and physiological variables

from snow-skaters, and rock-climbers was written in separate columns and were

Table- 1 tidal volume of lung between rocks-climbers and snow skaters Jammu and Kashmiri

Group	Mean	S.D.	M.D.	D.F.	O.T.	T.T.
Snow-skaters	455.74	78.94	42.56	58	2.43	2.00
Rock-climbers	497.3	82.07				

\*Level of Significance = 0.05

Tabulated 't' 0.05 (58) = 2.00

Table-1 shows the mean difference of tidal volume of lungs compared between snow-skaters and rock-climbers of Jammu and Kashmir as the verified mean of both the groups snow-skaters and rock-climbers was as 455.74 and 497.3. Respectively, this implies that means of tidal volume of lungs in the rock-climbers group was more significant than high snow-skaters of Jammu and Kashmir, with a mean difference of 42.56. It was also necessary to calculate the standard

cross-checked variables Then the analysis of data was carried out by applying average., standard deviation and through a formula of statistical technique 't'- test.

## FINDINGS AND DISCUSSION

Keeping in mind the study's limitations, the researcher's findings were presented in separate tables for verification and comparison. All analyses were performed using Statistical software for comparison was (SPSS) and Microsoft Excel (2007). All data are presented as mean ± SD unless otherwise stated. For all analyses, the critical -level was set at 0.05.

deviation of the data related to a tidal volume of lungs of both snow-skaters and rock-climbers before applying T-test for checking portentous variation or difference and the authentication of hypothesis, the standard deviation of data related to tidal volume of lungs from snow-skaters and rock-climbers group which was estimated as 78.94 and 82.07 respectively. T-test was used to compare the tidal volume of lungs between both snow-skaters and rock-climbers. As the 't-test was applied, it was found that there is a significant

difference in the tidal volume of lungs among snow-skaters and rock-climbers of Jammu and Kashmir high- as the obtained value of calculated 't' (2.43) was greater than tabulated 't' (2.00) when the level of significance was at 0.05, which shows that there is a portentous

difference in the tidal volume of lungs between snow-skaters and rock-climbers of Jammu and Kashmir. Hence rock-climbers were having a high tidal volume of lungs than snow skaters.

Table- 2 Body mass index comparison between rocks- climbers and snow skaters Jammu and Kashmiri

Group	Mean	S.D.	M.D.	D.F.	O.T.	T.T.
Snow-skaters	23.54	1.89				
Rock-climbers	20.76	1.04	2.77	58	2.003	2.00

\*Level of Significance = 0.05

Tabulated't' 0.05 (58) =2.00

Table-2 shows the mean difference of body mass index compared between snow-skaters and rock-climbers of Jammu and Kashmir as the verified mean of both the groups snow-skaters and rock-climbers was as 20.76and 23.54.respectivelyand. This implies that the mean body mass index in the rock-climbers group was less than snow-skaters of Jammu and Kashmir, with a mean difference of 2.77. It was also necessary to calculate the standard deviation of the data related to a tidal volume of lungs of both snow-skaters and rock-climbers before applying T-test for checking portentous variation or difference and the authentication of hypothesis, the standard deviation of data related to body mass index of snow-skaters and rock-climbers group

which was estimated as 1.89 and 1.04 respectively. T-test was used to compare the body mass index between both snow-skaters and rock-climbers.

As the t-test was applied, it was found that there is a significant difference in body mass index among snow-skaters and rock-climbers of Jammu and Kashmir high- as the obtained value of calculated 't' (2.003) was greater than tabulated 't' (2.00) when the level of significance was at 0.05, which shows that there is a portentous difference in body mass index between snow-skaters and rock-climbers of Jammu and Kashmir. Hence rock-climbers had low body mass index, and snow-skaters were found high in Body Mass Index (BMI).

Table- 3 Flexibility comparison between rocks- climbers and snow Skaters of Jammu and Kashmiri

Group	Mean	S.D.	M.D.	D.F.	O.T.	T.T.
Snow-skaters	21.74	4.01				
Rock-climbers	24.65	4.3	2.91	58	2.144	2.00

\*Level of Significance = 0.05

Tabulated 't' 0.05 (58) = 2.00

Table-3 shows that the mean difference of flexibility in comparison between snow-skaters and rock-climbers of Jammu and Kashmir as the verified mean of the flexibility of now-skaters and rock-climbers was as 21.74 and 24.65.respectivelyand. This implies that means of flexibility in the rock-climbers group was more significant than snow-skaters of Jammu and Kashmir, with a mean difference of 2.77. It was also necessary to calculate the standard deviation of the data related to flexibility of both snow-skaters and rock-climbers before applying T-test for checking portentous variation or difference and the authentication of hypothesis, the standard

deviation of data related to flexibility of snow-skaters and rock-climbers group which was estimated as 4.01 and 4.3 respectively. T-test was used to compare the flexibility between both snow-skaters and rock-climbers. As the 't-test was applied, it was found that there is a significant difference in flexibility among snow-skaters and rock-climbers of Jammu and Kashmir high as the obtained value of calculated t is greater than tabulated 't' (2.144) was greater than tabulated 't' (2.00) when the level of significance was at 0.05, which shows that there is a portentous difference in flexibility between snow-skaters and rock-climbers of Jammu and Kashmir.

Table- 4 Cardiovascular endurance between rocks-climbers and snow skaters Jammu and Kashmiri

Group	Mean	S.D.	M.D.	D.F.	O.T.	T.T.
Snow-skaters	58.24	3.68				
Rock-climbers	70.4	4.03	11.8	58	2.06	2.00

\*Level of Significance = 0.05

Tabulated 't' 0.05 (58) = 2.00

Table-4 shows that the mean difference of cardiovascular endurance in comparison between snow-skaters and rock-climbers of Jammu and Kashmir as the verified mean of both the groups snow-skaters and rock-climbers was as 58.24 and 70.04. Respectively, and this implies that mean on the cardiovascular endurance in the rock-climbers group was less than snow-skaters of Jammu and Kashmir with a mean difference of 11.8. It was also necessary to calculate the standard deviation of the data related to

cardiovascular endurance of both snow-skaters and rock-climbers before applying T-test for checking portentous variation or difference and the authentication of hypothesis, the standard deviation of data related to cardiovascular endurance of snow-skaters and rock-climbers group which was estimated as 3.68 and 4.03 respectively. T-test was used to compare the cardiovascular endurance between both snow-skaters and rock-climbers.

As the t-test was applied, it was found that there is a significant difference in

cardiovascular endurance among snow-skaters and rock-climbers of Jammu and Kashmir high as the obtained value of calculated 't' (2.06) was greater than tabulated 't' (2.00) when the level of significance was at 0.05, which shows that there is a portentous difference in body mass index between snow-skaters and rock-climbers of Jammu and Kashmir. Hence rock-climbers were having high endurance than snow-skaters.

## CONCLUSION

Considering the limitations of the undertaken study and from the statistical analysis of data related to selected physical and physiological variables between snow-skaters and rock-climbers, it was seen that there were found significant differences in the physical and physiological variables between snow-skaters and rock-climbers. Thus the researcher's hypothesis based on his assumptions was accepted as there was found significant difference between physical and physiological variables between snow-skaters and rock-climbers of Jammu and Kashmir. Snow-skaters were found suitable in flexibility as compared to rock-climbers, while as rock-climbers were found good in the tidal volume of lungs BMI and endurance than snow-skaters

## REFERENCES

Reference entry is arranged in the Aguilar Cordero, et.al., Comparative Study Of The Effectiveness Of Body Mass Index And The Body-Fat Percentage As

Methods For The Diagnosis Of Overweight And Obesity In Children", NutrHosp, Vol.27, No.1, 2012.

Barrow M. Harold, Man and Movement: Principle of Physical Education, Benefice E, et.al., "Comparison Of Fat And Muscle Mass In Different Groups Of Pre-Pubertal And Pubertal Rural Children", Ann Hum Bio, Vol.38, No.4, 2011.

Draper, N., Dickson, T., Blackwell, G., Priestly, S., Fryer, S., Marshall, H., Shearman, J., Hamlin, M., Winter, D & Ellis, G. (2010). Sport specific power assessment for rock climbing. *Journal of Sports Medicine and Physical Fitness*, 51(3), 417-25.

M.L. Kamlesh, Education Sports Physiology, (New Delhi: Friends Publication, 2009), pp. 25-26. Comparison of lactate sampling sites for rock climbing. *International Journal of Sports Medicine*, 32, 428-432.

Polat, G. (2009). 9-12 Yaş Grubu Çocuklarda 12 Haftalık Temel Badminton Eğitimi Antrenmanlarının Motorik Fonksiyonları Ve Reaksiyon Zamanları Üzerine Etkileri.. (Unpublished master's thesis). T.R. Çukurova University Institute of Health Sciences Department of Physical Education and Sports.

Reilly, T., Bangsbo, J., & Franks, A. (2000). Anthropometric and Physiological Predispositions for Elite Soccer Players. *Journal of Sports Sciences*, 18(9), 669-683. Ünveren, A. (2015). Investigating Women Futsal and Soccer Players Acceleration, Speed and Agility . 21(1-2), 361-365.

Sanjun, Y., Weike, Z., & Xiaoke, C. (2015). Differences in Anthropometric and Physical Fitness between Futsal League

- Elite Male Players and Chinese Football Association Super League Elite Male Players. *Journal of Wuhan Institute of Physical Education*, 49(5), 96-100.
- Werner, I., & Gebert, W. (2000). Blood lactate responses to competitive climbing. In M. NWest, W., Hicks, A., Clements, L., & Dowling, J. (1995). The relationship between voluntary electromyogram, endurance time and intensity of effort in isometric handgrip exercise. *European Journal of Applied Physiology and Occupational Physiology*, 71(4), 301-305.
- Wines, J.A, Kuipers, H, Kool, M.J, Hoeks, A.P, Van Baak, M.A, Struyker Boudier, H.A, . Van Bortel, L.M. (1991). Vessel wall properties of large arteries in trained and sedentary subjects. *Basic Research in Cardiology*, 86,25.
- Wilkins, B. W., Watts, P., & Wilcox, A. (1996). Metabolic responses during rock climbing in expert sport rock climbers. *Medicine & Science in Sports & Exercise*, 28(5), 159.