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Comparative Analysis of Volleyball Player Attack Speed and Competitive Anxiety: A Study on Altitude Variation in Ladakh Region

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Abstract: This study aimed to investigate the attacking speed of volleyball players in Ladakh across very high and low altitude regions, focusing on state-level players. A total of 60 male volleyball players (30 in each altitude group) aged between 18 to 21 were selected from both districts of Ladakh. The Sports Competitive Anxiety Test (SCAT) questionnaire was administered to participants 30 minutes before competition. Statistical analysis, including mean, standard deviation, and 't' test, was conducted to compare the performance between the high and low altitude groups at a significance level of 0.05. Results indicated a significant difference in attacking speed between the two altitude regions. Proper instructions regarding the study's objectives and test procedures were provided to all participants. Keywords: attacking speed, SCAT, high altitude, low altitude.

Keyword: Aattacking speed, Volleyball, Altitude variation, Competitive anxiety, Performance analysis, Sports psychology.

1. Introduction

Situated at an elevation of approximately 14,000 feet above sea level, Ladakh has become a focal point of discussion regarding the effects of very high altitude on volleyball players [1-3]. Playing volleyball at such altitudes presents numerous challenges, impacting both contest outcomes and physiological performance. Professional volleyball players in Ladakh face significant hurdles due to decreased air pressure, leading to difficulties in oxygen intake, known as hypoxia [4,5]. This, coupled with dehydration, can result in symptoms such as breathlessness, headaches, nausea, dizziness, and fatigue, and may even lead to altitude-related illnesses like acute mountain sickness, high altitude pulmonary edema, and cerebral edema, all of which hinder players' abilities to perform at their peak [6,7].

Volleyball is a dynamic team sport requiring a blend of power, strategy, and quick thinking, played at a fast pace demanding high levels of skill and technical prowess [8]. Consequently, there is a need to develop tailored training programs to enhance the performance of volleyball players in Ladakh. The objective of the game is to prevent the opposition from returning the ball, necessitating the development of both physical and physiological components in players [9,10].

Volleyball, a team sport involving two teams of six players separated by a net, has been an integral part of the official Olympic Games program since 1964. In India, the first national championship took place in Chennai in 1952. The intense nature of sports like volleyball places immense demands on the physical fitness, stamina, endurance, and mental strength of players, requiring athletes to be in top condition to perform optimally [11-13].

The physiological challenges faced by Zanskar's volleyball players, particularly when competing at high altitudes, are exacerbated by the decrease in air pressure, making it difficult for the body to obtain adequate oxygen, leading to hypoxia and dehydration [14]. This can result in various symptoms, including breathlessness, headaches, nausea, dizziness, and fatigue, as well as altitude-related illnesses like acute mountain sickness, high altitude pulmonary edema, and cerebral edema, all of which impede players' ability to perform at their best [15].

The reduction in partial pressure of oxygen at higher altitudes affects oxygen availability at the cellular level, impacting ATP production through oxidative phosphorylation [16]. The diminished capacity to utilize oxygen due to prolonged exposure to high altitudes hampers players' physiological performance and is closely linked to their overall sports performance [17].

2. Sports Competitive Anxiety

Anxiety manifests in various forms among athletes and non-athletes alike. Some scholars view anxiety as a personality trait associated with overall stress tolerance, while others focus on situational or context-specific anxiety, particularly in sports settings [18-20].

Anxiety levels can peak before a competition, moderate during the event, and rise again afterward as athletes replay the contest in their minds [21]. Often, individuals, including athletes, are more concerned about failing to meet societal expectations (failure anxiety) than the physical risks involved in their endeavors [22].

Coaches play a crucial role in helping athletes manage pre-competition jitters by minimizing the significance of upcoming events or diverting their focus through engaging in alternative activities or extensive warm-ups before competition [23].

Anxiety tends to peak during the peak productive years of an athlete, typically from their twenties to thirties, and can be influenced by various factors such as political climate, societal norms, and the athlete's sense of security within their cultural context [24]. Economic status and social repercussions of failure are also significant contributors to anxiety levels. Anxiety is a prevalent explanatory concept across contemporary personality theories, underscoring its fundamental role in human behavior [25].

A variety of anxiety types have been categorized, including trait anxiety, state anxiety, manifest anxiety, chronic anxiety, and specific anxiety [26]. The differentiation between state and trait

anxiety was initially proposed by a prominent theorist, later supported by others in the field. State anxiety, often referred to as A-State, is a temporary condition marked by subjective feelings of apprehension and tension, accompanied by physiological arousal. Trait anxiety, or A-Trait, is viewed as a stable personality trait predisposing individuals to anxiety reactions even in non-threatening situations [27].

Competitive anxiety, specific to sports competitions, represents a unique form of anxiety experienced within competitive environments. A conceptual framework has been developed to delineate sports-specific competitive anxiety, which distinguishes between trait and state anxiety. Competitive Trait Anxiety (C.T.A.) refers to a predisposition to perceive competitive situations as threatening and to respond with feelings of apprehension or tension. Competitive State Anxiety (C.S.A.), conversely, denotes the anxiety reaction triggered by particular competitive situations, separate from general state anxiety as it pertains specifically to sports contexts [28].

Anxiety is a common experience for all individuals, serving as a vital component of our psychological makeup. In fact, the absence of fear altogether could signal an underlying disorder. Many of us have encountered situations where fear has caused hesitation or even paralysis, particularly in the high-pressure context of competitive athletics [29]. This phenomenon, known as "choking," can significantly impede athletic performance. The study of fear and its manifestations has intrigued behavioral scientists and those interested in understanding both normal and abnormal personality traits [30].

Sigmund Freud, for instance, proposed that typical levels of anxiety overwhelm the ego when individuals face prolonged stress and threats to their well-being [31]. Some psychoanalysts differentiate between anxiety, which denotes an abnormal level of apprehension, and fear, which refers to a rational response to a genuine threat. Anxiety, broadly defined, is a state of unease in response to past or anticipated events, encompassing concerns about their occurrence and consequences. It can manifest as either somatic or cognitive symptoms, including emotional disturbances and intellectual worries [32].

Anxiety is often considered a personality trait characterized by a heightened sensitivity to stressful events, essential for maintaining internal equilibrium. In its broadest sense, anxiety serves as a general state of alertness, akin to the body's alarm system, promoting vigilance against potential threats in the environment. For example, feeling anxious when crossing a busy street is a natural response that we pass on to our children to ensure their safety in urban settings [33].

However, performance issues arise when anxiety levels become excessively high. Researchers have introduced terms like state anxiety, referring to temporary conditions triggered by specific circumstances or emotions, and trait anxiety, indicating enduring personality characteristics [34]. Anxiety is a complex emotion that is challenging to define and detect reliably, yet its significance as a key influence in contemporary life is increasingly acknowledged. The various manifestations of anxiety are evident across literature, arts, and scientific disciplines.

Anxiety is closely linked to emotional resilience, mental toughness, and self-confidence. Individuals with higher levels of these traits are better equipped to manage anxiety and channel it into productive outcomes [35]. The impact of anxiety on performance largely depends on the nature of the task at hand. While moderate levels of arousal can enhance performance in simpler

tasks, excessive anxiety can disrupt both psychological and physiological processes, leading to decreased efficiency in more complex tasks [36].

There exists a direct relationship between anxiety levels and performance, with anxiety typically peaking just before a challenging situation is encountered during performance.

3. Dimensions and Evaluation of Anxiety

Anxiety is an inherent spiritual response that significantly influences human behaviour. The anxiety often evokes a sense of emptiness, leading to feelings of vulnerability, which form the basis of distress, as well as a certain level of excitement. Anxiety encompasses a broad spectrum of dimensions, evident in various definitions provided. Like other emotions, anxiety involves psycho-physiological reactions, influencing the body's arousal and activation levels, while also being characterized by a cognitive state known as "feeling tone," which has profound effects on the human psyche. From a cognitive perspective, anxiety may manifest across different time frames relative to the presence of a specific stressful event [12, 19].

4. Sample Selection

Participants for this study were recruited from various colleges willing to take part in the state-level volleyball tournament held in the Ladakh region during the 2021-2022 session. All participants had previously represented their respective districts in the state-level volleyball tournament in Kargil, Ladakh.

5. Research Design

- Simple Random Group Design:
- 30 male volleyball players from very high-altitude areas were selected for the study.
- 30 male volleyball players from low altitude areas were selected for the study.

6. Criterion Measure

Data on sports competition anxiety was collected using the Sports Competition Anxiety Test (SCAT) developed by Robbin.

7. Items Included in Sports Competitive Anxiety Test

Item included in sport competitive anxiety test of volleyball is given in table 1.

Table 1: Items used in the SCAT test

Item Number	Item Description
1	Spurious (Not Scored)
2	How often do you worry about your performance in sports competitions?
3	How often do you feel nervous before competing in sports?
4	Spurious (Not Scored)
5	How often do you experience physical tension or discomfort before competing in sports?
6	How often do you feel confident in your abilities during sports competitions?
7	Spurious (Not Scored)
8	How often do you feel pressure to perform well in sports competitions?
9	How often do you worry about the outcome of sports competitions?
10	Spurious (Not Scored)
11	How often do you feel calm and relaxed during sports competitions?

12	How often do you feel distracted or unfocused during sports competitions?
13	Spurious (Not Scored)
14	How often do you experience racing thoughts before competing in sports?
15	How often do you feel confident in your ability to handle pressure during sports competitions?

*Items labelled as "spurious" were not scored.

8. Test Administration

All participants received thorough instructions regarding the objectives of the study. Prior to the state competition, participants completed the Sports Competition Anxiety Questionnaire, specifically the Sports Competitive Anxiety Test (SCAT), designed to measure athletes' competitive anxiety. To ensure consistency in testing conditions, all subjects were familiarized with the questionnaire. The SCAT consists of 15 items, with response options for each item ranging from:

- Hardly Ever
- Sometimes
- Often

Items 1, 4, 7, 10, and 13 were considered spurious and were not scored. Items 2, 3, 5, 8, 9, 12, 14, and 15 were scored as follows:

- Hardly Ever: 1
- Sometimes: 2
- Often: 3

Additionally, items 6 and 11 were scored as:

- Often: 1
- Sometimes: 2
- Hardly Ever: 3

9. Sports Competitive Anxiety Test

The aim of this study is to assess the competitive anxiety levels among volleyball players in Ladakh, specifically focusing on the variation between high and low altitude regions, while also comparing it to their attacking speed.

The Sports Competitive Anxiety Test (SCAT) was utilized as the primary instrument to measure competitive anxiety levels among the volleyball players. This test was administered a few hours before the scheduled competition. Detailed instructions were provided to all participants regarding the completion of the questionnaire. Specifically, participants were instructed to answer all questions honestly and to the best of their ability. The questionnaire was then distributed to the volleyball players for completion.

10. Results and Discussion

The collected data underwent statistical analysis using SPSS version 20 software. The mean, standard deviation, and t-test were employed to examine the difference between the sample means of two groups: high altitude region and low altitude region male volleyball players, with a significance level set at 0.05.

Table 2: Descriptive statistics of SCAT among high altitude and low altitude Region volleyball players

	Region	N	Mean	Std. Devaition
State Anxiety	Ladakh high altitude area	30	21.50	1.96
	Low altitude area	30	19.07	1.70

Table 2 presents the descriptive statistics of Sports Competitive Anxiety Test (SCAT) scores among volleyball players from high and low altitude regions in Ladakh. The table includes the mean and standard deviation of SCAT scores for each group. In the high-altitude region, the mean SCAT score was 21.50 with a standard deviation of 1.96, while in the low altitude region, the mean SCAT score was 19.07 with a standard deviation of 1.70.

The observed means and standard deviations of SCAT scores indicate that volleyball players from the high-altitude region had a higher mean anxiety score (21.50 ± 1.96) compared to players from the low altitude region (19.07 ± 1.70).

Table 3: t-Statistics of SCAT Scores among high altitude and low altitude region volleyball players of Ladakh

	t- Ratio	df	P-Value (2-tailed)	Mean Difference	Std. Error Difference
State Anxiety	5.135	58	.000	2.43	.47

Table 3 displays the t-statistics of SCAT scores between high altitude and low altitude region volleyball players in Ladakh. The table presents the t-ratio, degrees of freedom (df), p-value (2-tailed), mean difference, and standard error difference.

The t-test results reveal a significant difference in SCAT scores between volleyball players from very high altitude and low altitude regions. The calculated t-value of 5.135 is statistically significant, as indicated by the p-value of 000, which is less than the significance level of 0.05. This suggests that there is a substantial difference in anxiety levels between players from these two altitude regions.

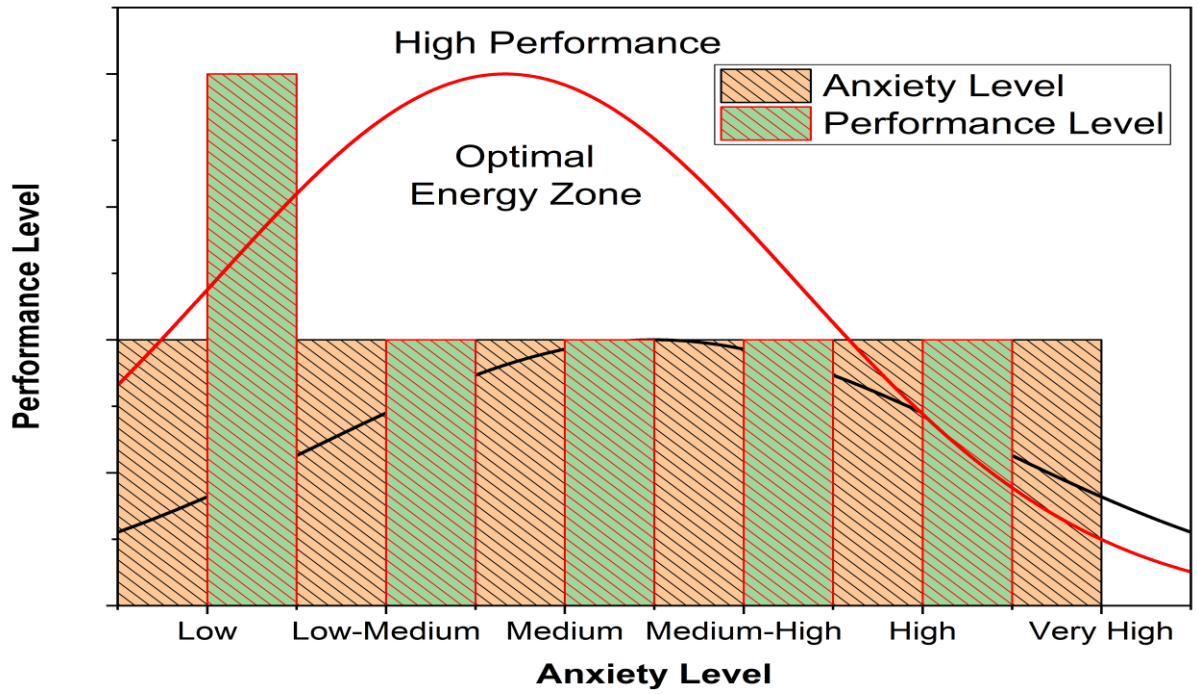

Figure 1: Inverted U curve Showing Performance level of Positive and Negative Psychic Energy

An inverted U-shaped graph (figure 1), also known as the Yerkes-Dodson Law, illustrates the relationship between performance level (on the y-axis) and the level of anxiety (on the x-axis). In this graph, the optimal energy zone represents the peak performance level, while higher levels of anxiety beyond this point can lead to a decline in performance. Here's how you might describe it:

The graph depicts an inverted U-shaped relationship between the level of anxiety and performance level. As anxiety increases from low to moderate levels, performance also increases steadily, reaching an optimal energy zone where performance is at its peak. Within this zone, individuals experience an ideal balance of arousal and anxiety, resulting in optimal performance output.

However, as anxiety continues to rise beyond the optimal energy zone, performance begins to decline. Higher levels of anxiety can lead to over-arousal, which impairs cognitive function and motor skills, ultimately hindering performance. Therefore, while some level of anxiety is beneficial for enhancing motivation and focus, excessive anxiety can have detrimental effects on performance outcomes.

11. Conclusion

The study aimed to distinguish between sports competition anxiety levels among volleyball players from high and low altitude areas of the Ladakh region. The findings revealed a significant difference in anxiety levels between players from high and low altitude regions. Various factors may contribute to this distinction in handling competitive anxiety. Increased somatic indicators of state anxiety, such as elevated heart rate, muscle tension, and jitteriness, are often associated with enhanced athletic performance up to an optimal level of insecurity, followed by a decline in performance. This reflects the classic inverted U relationship between arousal and performance. Anxiety is a common psychological trait experienced by players during competition, but its impact depends on how effectively it is managed. Managing anxiety requires specific skills that can be developed through training. However, there is a shortage of specialized physical education professionals or coaches in high altitude areas, as many are reluctant to work in such environments. The uncertainty of competition outcomes also influences anxiety levels and their impact on performance. Players from low altitude regions frequently participate in competitions, which allows them to become accustomed to competitive stress through repeated exposure. This increased exposure enriches their competitive experience and better equips them to handle stress during competitions.

References

1. Arjuna Awardees from Kerala ‘’. Chennai, India:http://www.Kerala 2015.com.2014-10-01.Retrived 2014-10-01.external link in publisher=(help)
2. M.E. Ewing, Achievement orientation and sports behavior in Males and Females, New York: Academic press, In G.C Roberts (Ed)Human kinetics, P NO 60.
3. M. L. Kamlesh, Psychology in Physical Education and Sports, New Delhi: Metropolitan book Co. Pvt. Ltd. IllIrd Revised Edition Published, pp. No. 245-255.
4. Bryant J. Cratty, Psychology in Contemporary Sports, New Jersey: Prentice Hall, Inc.,
5. Englewood Chiffs, 1983, P. No. 114.
6. Bell K. F., Championship Thinking- The Athletes Guide to Winning Performance in All
7. Sports, London: Prentice Hall Inc. 1983, P. No. 152.
8. Alderman, R. B., Psychological Behavior in Sports, Philadelphia: W. B. Saunders, 1974, P. No. 56.

9. Bean, josh (August 30,2002).''volleyball gets new glance with 'libero"'.Times Daily.(Florence,Alabana).p.6 C.
10. Bosak, chris (April 4,2003). rule changes everyone will recognize ''.The Hour.(Norwalk,Connection).p.E1.
11. Chandler, Rob (May 14,2003).H.S.volleyball makes big changes .'' Arlington Times. (Washington).p.B2.
12. Craft, L. L., T.M. Magyar, B.J.Becker and D.L.Feltz.(2003).The Relationship Between The competitive State Anxiety Inventory 2 and Sport Performance : A Meta- Analysis .journal of Sport and Exercise Psychological .25(1):44-65.
13. Fletcher,D. and S. Hanton .The relationship between Psychological Skills Usage and Competitive Anxiety Responses .psychology of sports and Exercise .2(2):89-101
14. Abraham Amit, Fundamentals Of Psychology ,Agra :Y.K.Publishers
15. Agleganoneer, Scientifiq Journal Vol.23, No.40.
16. Alderman R.B., Psychological Behaviour in Sports, Phliadelphia :w.B saunders ,1947.
17. Basu sukanta ,Benergy Alok, '' Conduct the study on sports Achievement Motivation of the Children of North-Eastern Region Of india '',Sai Scientifiq journal ,vol.. 21,N0 3,July ,!998.
18. Abrahamsen et.all (2008). Achievement intention and gender effects on multidimensional anxiety in national elite sport. Psychology of Sport and Exercise, 9(4), 449-464.
19. Agaoglu, Y. S. (2016). Feedback to the Competitive State Anxiety Inventory-2 by the Athletes Participated in the (IJF) Judo Grand Prix Competition, Samsun 2015 in Turkey, International Journal of Environmental and Science Education, 11(10), 3259-3275.
20. Anderson, B. M. & Williams, M. J. (1987). Common role and sport competition anxiety: A re-examination. Research Quarterly for Exercise & Sports, 58 (1), 52-56. Anshel, M. H. & Reeves,
21. L. H. (1992). Aerobics for health (3rd ed.). Minneapolis, MN: Burgess. Apitzsch, E. (1983). Anxiety in Sport. Magglingen, Switzerland: Guido Schilling, ETS Babbie, E. R. (1990). Survey Research Methods (2nd ed.).
22. Belmont, CA: Wadsworth. Babbie, E. R. (2001). The Practice of Social Research (9th ed.). Belmont, CA: Wadsworth. Balasubramanian, S. S., Patil, S. & Malipatil, P. (2011).A study of anxiety behaviour encompassed by the sportswomen and non sportswomen. Asian Journal of Physical Education and Computer Science in Sports, 4 (1), 35-37.
23. Barrow, H. M. & McGee, R. (1979).A constructive Approach to Measurement in Physical Education, Lee and Fibiger, Philadelphia, USA, 112.
24. Baumeister, R.F. (1984). Choking under pressure: self-consciousness and paradoxical effects of encouragement on skilful performance. Journal of personality and social psychology, 46 (3), 610-620.
25. Bawa, & Debnath, (1991). Sports Competitive Anxiety in Connection the Level of Competitive. 140 Berger, B.G. & Mclnman, A. (1993).Exercise and the quality of life.
26. R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), Handbook of research on sport psychology, New York: Macmillan, 729-760.
27. Bouras, N. & Holt, G. (2007). Psychiatric and Behavioural irregulatory in mental and Developmental Disabilities (2nd ed.). Cambridge University Press.
28. Bruce, H. G. & Charles, R. W. (2012).social Issues in Sports Medicine. Journal of Sports Health, 4(6), 475-479.
29. Burmaoglu, G. E. (2018). Relationship of Target-Based direction and Competitive Anxiety with Female Basketball Players' Performance. Journal of Education and Training Studies, 6 (9), 63-69
30. Burton, D. (1988). Do anxious swimmers swim slower? Re-survey the elusive anxiety-performance relationship. Journal of Sport and Exercise Psychology, 10 (2), 45-61.

31. Camille, R. C., Metzler. & Jonathan, N. (2016). growth of the Sport Injury Anxiety Scale. The journal of Measurement in Physical Education and Exercise Science, 20 (3), 146-158.
32. Carlton, R. M. (1962). analysis in Physical Education, New York: Ronald.
33. Carolina, L. & Peter, H. (2005). Competitive State Anxiety Inventory-2 (CSAI-2): assess the Swedish version by confirmatory factor analyses. Journal of Sports Sciences, 23 (7), 727-36.
34. Carron, A. V. (1984). Motivation: inference for coaching and teaching. London, Ontario: Sports Dynamics.
35. Castro, S. M., Zurita, O. F., Chacon, C. R., Lopez, C.J.&Zafra, S. E. (2018). Emotional Intelligence, Motivational Climate and Levels of Anxiety in Athletes from non-identical Categories of Sports: Analysis through Structural Equations. International journal of environmental research and public health, 15(5), 142-149.
36. Castro, S. M., Zurita, O. F., Ubago, J. L., Gonzalez, V. G. & Chacon, C. R. (2019). Relationships between Anxiety, nervous Intelligence, and Motivational Climate surrounded Adolescent Football Players.sports (Basel, Switzerland)