



Critical Analysis on Essence of Fitness for volleyball players in higher education institutions of India

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ABSTRACT

Sports and physical education are integral co-curriculum of Secondary and Higher Secondary Education in India. Volleyball is an important constituent of the sports portfolio of a school's co-curricular activities. This study seeks to identify various health-related fitness parameters and study the importance of the same, assess the fitness levels of the students in terms of sports-specific skillsets and their utilities and examine the relation of the health-related and skill-related fitness parameters with the performance of the students. For the purpose of the study, the data on the selective secondary schools of the state of Maharashtra and encompassing students at the age group of 15-18 studying in class 9 to 12 has been compiled. Following this, their health and skill specific data as well as their performance outcome have been put together. The research classifies the fitness parameters into two groups: Health-related Fitness Parameters and Skill-related Fitness Parameters. The research has found that Cardiovascular Endurance is found to have moderate correlation with performance. Students having good muscular endurance tend to be good sportsman. However, this is not a significant influencer on the performance standards. Muscular Strength is found to have been strongly correlated with the performance of the students, with the correlation score being 0.64. Although Flexibility is a key fitness component that drives manoeuvrability and agility in sports. However, in the context of Volleyball, it is observed to have a very low / almost nil correlation with the performance of the students. Body Composition corresponds to height, weight, body structure etc. Height might be of some importance in the context of Volleyball. However, the parameter overall has a weak correlation, that means it doesn't influence the performance at all. In terms of Skill-related parameters, Students with higher agility tend to have higher level of performance given the correlation coefficient is moderately positive. The balance of students, though depicting their fitness, seem to have no correlation at all with the students' performance with a negligible r-score. Speed has been observed not to influence the performance of the volleyball players that much. Power is observed to be strongly correlated with the performance. Less reaction time is positively linked to good performance for individual as well as the team. In essence, among health-related fitness parameters, Cardiovascular endurance and muscular strength is found to have a strong linkage with the performance of the students. Keeping this in mind, fitness training and exercises of the students should be better focused to muscular strength build-up with push-ups and cardiac capability enhancement with yoga, respiratory exercises etc. Among skill-related fitness parameters, power, agility and prompt reaction have a greater influence on the students'

performance. So, the fitness trainer should give attention to enhance such skills with proper training and care. As opposed to the traditional view, body composition like height and hand length are not found to be that much impactful on performance. So, attention should be shifted from body composition to dynamic fitness and skill build-up. Though Health-related fitness is prerequisite for sustenance and performance, the ultimate focus should be on skill-related fitness to enhance results.

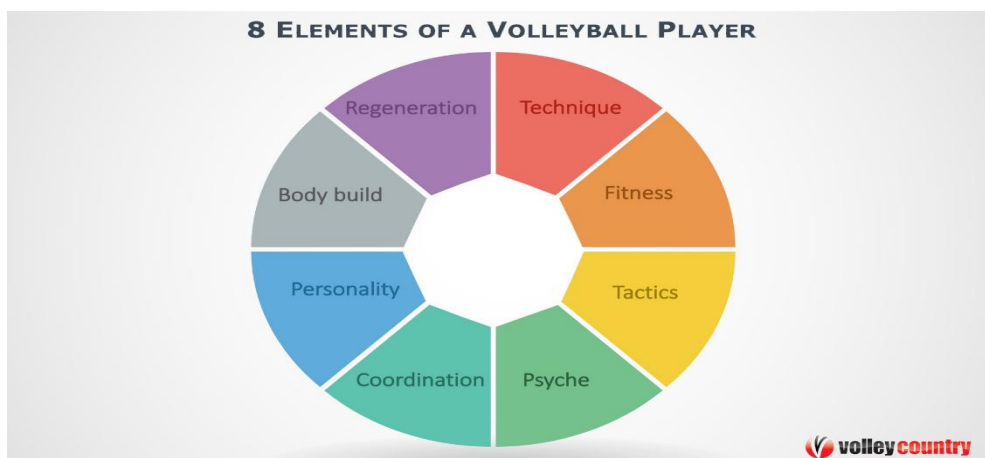
Keywords:

Volleyball, fitness, agility, performance, cardiovascular endurance, reaction time, power, body composition, correlation.

1. INTRODUCTION

Sports is a way widely recognised to be associated with health and well-being. Volleyball is an important outdoor sport which immensely benefits the physical condition as well as builds up endurance. Among the health benefits, the most remarkable ones are strengthening the muscles, good cardiac and respiratory condition, bone solidification etc. However, to accrue the health benefit, one should be in good physical condition to play such a sport. Physical strength, cardiac stability, body composition, and agility are some of the prerequisites for playing volleyball. For a player, physical fitness is of utmost importance to sustain the gruesome exercises and enormous strain on the ground.

The Indian subcontinent, having a tropical climate condition features hot and humid weather. due to this factor, players open suffer from dehydration and physical breakdown caused by workouts and sports-related strain. That's why fitness is crucial to endure such drawbacks to reap the maximum benefit of playing Sports while maintaining a sustainable health setup.





Apart from physical fitness, personality and mental fitness are also key determinants of a successful Volleyball player. For the Holistic development of a player, the right combination of attitude, motivation, and physical fitness is predominantly required. Also, the psychosocial aspects need to be taken care of in terms of team building and cooperative mindset among players. The moral and ethical aspects of a player contribute to good sportsmanship and a balanced team game in the result.

Sports and physical education are integral co-curriculum of Secondary and Higher Secondary Education in India. Students are expected to be engaged in various sports-related activities besides their traditional education. Volleyball is an important constituent of the sports portfolio of a school's co-curricular activities. Students are hereby required to maintain fitness to be able to play volleyball without any hindrance.

2. REVIEW OF LITERATURE

Lorenz and colleagues highlighted that Sports like volleyball or rugby are more inclined towards individual performances rather than a proper team game. An elite player who is properly trained excels over others in the field. Such a performance is attributed to the agility and speed of the player. Such a disparity can impede team spirit and Jeopardise the outcome to a very extent.

Caspersen CJ, Powell KE, and Christenson GM viewed that the anthropological characteristics like height, body weight, and shoulder size may not be that much related to the performance of a volleyball player. It is the skill and training of a player that determines the outcome. Physic may be helpful in this regard but is neither necessary nor sufficient for the outcome of a volleyball player.

Corbin CB, Pangrazi RP, Franks DB Propounded that a player should always be active. the performance of a player is dependent on his speed agility and reaction time. Proper care should be given to the health of a volleyball player to manifest his strength and power to be able to take on the challenges of the game.

Wormhoudt R, Savelsbergh GJP, Teunissen JW, Davids Kin in their study supported the view that the player should be optimized with proper training and exercise on a regular basis. There should be a physical health profile with a preset checklist that needs to be reviewed with each player periodically. Also, the effort should be put in place to keep the players high in spirit and infuse consistent motivation in them in an ongoing basis.

Webb P, Pearson P, Forrest G. that the teachers in primary and secondary schools should be empowered to guide and supervise the students in the context of their health and fitness. This should have an awareness of different kinds of sports and related fitness standards. Also,



the nutrition standards should be taken care of among the students as a complementary measure to realise the sports Endeavour.

3. RESEARCH GAP

The studies analyzed so far have highlighted the importance of fitness in the field of sports including volleyball. However, there is a need of bringing up a proper lineage between the different fitness parameters and the sports performances. It is also needed to distinguish the health-related fitness criteria and the skill-related fitness criteria and their relative importance on the outcome of a Volleyball player. The quantifiable impact of fitness on the outcome of sports that is crucial for understanding the true essence of health benefits is lacking so far.

4. RELEVANCE OF THE STUDY

Given the importance of fitness and sports among school students in India, it is relevant to assess the essence of fitness on sports at the higher secondary school level. School students at this age group are spirited and energetic. So, proper channelization of their energy towards sports needs serious attention. Additionally, in the context of Govt. sponsored “Fit India”, “Khelo India” campaign, it is imperative to focus on sports and health related aspects of students in India.

5. OBJECTIVES OF THE STUDY

1. To identify various health-related fitness parameters and study the importance of the same.
2. To assess the fitness levels of the students in terms of sports-specific skillsets and their utilities.
3. To examine the relation of the health-related and skill-related fitness parameters with the performance of the students.



6. RESEARCH METHODOLOGY

6.1 Data Frame

The research is of secondary in nature based on the data compiled from some journals, sports report and research papers on the sports outcome driven by physical fitness. Out of all the sports, particularly data related to volleyball has been picked up for analysis.

The dataset corresponds to the selective secondary schools of the state of Maharashtra and encompassing students at the age group of 15-18 studying in class 9 to 12. Their health and skill specific data as well as their performance outcome have been put together to analyse for the purpose of this study.

6.2 Research Approach

The research predominantly classifies the fitness parameters into two groups:

1. Health-related Fitness Parameters
 - ✓ Cardiovascular Endurance
 - ✓ Muscular Endurance
 - ✓ Muscular Strength
 - ✓ Flexibility
 - ✓ Body Composition
2. Skill-related Fitness Parameters
 - ✓ Agility
 - ✓ Balance
 - ✓ Speed
 - ✓ Power
 - ✓ Reaction Time

In this research a statistical technique called Correlation analysis is used to determine the degree of association of these parameters with individual performances of the students.

The Pearson's Correlation Coefficient value reveals the level of association as per the following ranges:

- 0 to 0.4 – Weak Correlation / No Correlation
- 0.4 to 0.6- Moderate Correlation
- 0.6 to 0.9- Strong Correlation

Negative r-value depicts opposite correlation. It means that when one variable increases, other goes in opposite direction, i.e decreases.



7. DATA ANALYSIS

7.1 Analysis of Health-related Fitness Parameters

	Performance	Remark
Cardiovascular Endurance	$r = 0.53$	Moderate Correlation

Cardiovascular Endurance is found to have moderate correlation with performance. So, it is interpreted that students having good cardiac and respiratory stamina tend to sustain more and deliver somewhat good performance.

	Performance	Remark
Muscular Endurance	$r = 0.3$	Moderate Correlation

Students having good muscular endurance tend to be good sportsman. However, this is not a significant influencer on the performance standards.

	Performance	Remark
Muscular Strength	$r = 0.64$	Strong Correlation

Muscular Strength is found to have been strongly correlated with the performance of the students, with the correlation score being 0.64. This can be interpreted as higher the muscular strength, more impact the servicing and pressure have on the opponent. Muscular Strength is counted as deciding factor in volleyball.

	Performance	Remark
Flexibility	$r = 0.15$	No Correlation

Although Flexibility is a key fitness component that drives maneuverability and agility in sports. However, in the context of Volleyball, it is observed to have a very low / almost nil correlation with the performance of the students.

	Performance	Remark
Body Composition	$r = 0.24$	Weak Correlation

Body Composition corresponds to height, weight, body structure etc. Height might be of some importance in the context of Volleyball. However, the parameter overall has a weak correlation, that means it doesn't influence the performance at all.



7.1 Analysis of Skill-related Fitness Parameters

	Performance	Remark
Agility	$r = 0.48$	Moderate Correlation

Students with higher agility tend to have higher level of performance given the correlation coefficient is moderately positive. Agility of the players is also a ground factor in volleyball to obtain better outcome.

	Performance	Remark
Balance	$r = 0.07$	No Correlation

However, the balance of students, though depicting their fitness, seem to have no correlation at all with the students' performance with a negligible r-score.

	Performance	Remark
Speed	$r = 0.23$	Weak Correlation

Another fitness criteria, speed, has been observed not to influence the performance of the volleyball players that much as per the data depicting a weak correlation.

	Performance	Remark
Power	$r = 0.72$	Strong Correlation

Power is observed to be strongly correlated with the performance. It can be rendered from the result that higher the power of players, higher the impact he creates over the net.

	Performance	Remark
Reaction Time	$r = -0.57$	Moderate Correlation

Reaction time is seen to be moderately correlated with the performance of the students. Reaction time is crucial factor in volleyball given the ever-engaging nature of the game. Less reaction time is positively linked to good performance for individual as well as the team.



8. CONCLUSION & SUGGESTIONS

From the study, some important conclusions can be drawn along with some prescriptions to improve sports performance linked with fitness.

- Among health-related fitness parameters, Cardiovascular endurance and muscular strength is found to have a strong linkage with the performance of the students. Keeping this in mind, fitness training and exercises of the students should be better focused to muscular strength build-up with push-ups and cardiac capability enhancement with yoga, respiratory exercises etc.
- Among skill-related fitness parameters, power, agility and prompt reaction have a greater influence on the students' performance. So, the fitness trainer should give attention to enhance such skills with proper training and care.
- As opposed to the traditional view, body composition like height and hand length are not found to be that much impactful on performance. So, attention should be shifted from body composition to dynamic fitness and skill build-up.
- Though Health-related fitness is prerequisite for sustenance and performance, the ultimate focus should be on skill-related fitness to enhance results.

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