Review The Role Of Anthropometrics On Attacking And Its Relationship With Physical Performance Defending Skill Of Volleyball Players Telangana

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ABSTRACT

Basketball is a globally popular sport that has evolved significantly during the last several decades. As a result, an increasing number of young individuals are taking up basketball. Because so many children participate in the sport, the best ones must be chosen. Young basketball players must complete talent tests in which their physical abilities and technical skills are carefully evaluated. The anthropometric profile, particularly body composition, is a critical factor in how effectively volleyball players move. Volleyball players for Telangana are likely to have diverse anthropometric and physical performance profiles since each role has various physical needs. The goal of this study was to compare the body sizes and physical positions of the best volleyball players by performance to see if there were any differences.

INTRODUCTION

Volleyball is a high-energy sport that requires sprints, hops (for blocking and spiking), and quick court movements. Many anthropometric and physical performance variables influence how well these performance frameworks work.

Previous research has examined the variations in physical ability and anthropometric variables between volleyball players and participants in other team sports, regardless of performance. In competitive team sports, however, each player is taught for a specific purpose. As a result, research on anthropometric and physical performance variables in team sports must account for position disparities. Several sports have already conducted research

on this topic. Different positions necessitate that players learn new abilities and manage various tactical tasks during the game.

Because the selection process for certain volleyball positions typically begins between the ages of 13 and 15 (both the European and World rankings for women begin at the under-18 level), it is important to consider what distinguishes female players of this age in terms of their physical abilities and appearance. Even though a person's height and weight might alter as they develop, and physical aspects can be taken into account with proper training, beginning with position-tuned levels can make a difference in competitions for young athletes. When positional distinctions are considered, a team's subject sample can be divided into subsamples of 3 to 5 players. As a result, it is important to conduct these kind of studies on large groups of people, which is not usually the case. This is referred to as statistical power. In this scenario, it's also important to determine what physical characteristics successful players at each position possess that less successful players do not. In competitive sports, a player's total quality is sometimes measured by looking at how different teams rank, and other times by analyzing how good each individual player on a team is. It is easier and more accurate to judge a player's total talent in a sport when all of these sports are considered. This type of assessment has already been utilized successfully in studies of young volleyball players.

It is also critical to consider how positions are picked and how good the players are at each position. Height, mass index, and phenotypic are frequently employed to meet these requirements. Physical performance can also be measured using lower-body strength, speed, agility, and upper-body strength. For example, in a prior study, the standing long jump, 20-m sprint, side steps, and medicine ball supine throw were the greatest predictors of physical performance measures associated with volleyball team effectiveness.

“The goal of this study was to look at the differences in anthropometric (height, body mass, body mass index, and somatotype) and physical performance (lower body power, speed, agility, and upper body power) factors between and within positions in a large sample of young female volleyball players”.

Purpose of the Study

There are significant disparities in anthropometrics across team members, causing them to move in inefficient ways. As a result, a player's anthropometric functions have a significant

impact on how well they do their skills and how well they perform overall in sports. Volleyball was chosen as a testing game for this study. Volleyball is a team sport in which the game is to hit the ball over an eight-foot net. The most crucial skills in this game are passing, serving, blocking, and spiking. Arm strength, arm explosive power, and leg explosive power all have an impact on serving, blocking, and spiking. However, the most essential criteria in developing these skills are a player's leg length and arm length.

LITERATURE REVIEW

Mielgo-Ayuso, J., Calleja-González et al,(2015) Volleyball is a team sport that demands high-intensity bursts followed by intervals of low-intensity activity (i.e. walking or standing). During a volleyball performance, players do a variety of maneuvers that demand power, strength, agility, and speed. Defensive and offensive jumps, blocks, knockouts, and sprints are examples. Because of these requirements, the finest physical performance possible is required. Furthermore, research has revealed that body composition (BC) is an important influence in how well a volleyball performance performs. Furthermore, it has been proposed that having too much fat mass (FM) reduces athletic performance and increases energy requirements because it functions as a dead weight when the body mass (BM) is raised repeatedly against gravity, such as while walking or leaping. However, increases in musculoskeletal mass (MM) are seen as a positive indicator of athletic performance since they aid in the production of more power during exercise and the strength of bigger and stronger muscles when subjected to high dynamic and static loads. Finally, we discovered that a player's anthropometric profile influences her physical performance and dictates her playing position. Middle blockers appear to perform better when they are taller, whereas setters and liberos appear to perform better when they have a lower body mass, particularly a lower fat mass. Finally, opposite and outside batters should have a lot of muscular mass and the proper quantity of fat mass.

Nasuka, N. (2020) Volleyball is a sport that requires a high level of technical and strategic skill to win. As the game evolved, so did the basic and advanced skills. A jump serve, for example, differs from a floating serve. Players at different skill levels have varying physiologic and anthropometric profiles, which may influence how effectively they play volleyball. Because of the way volleyball is played, anthropometric considerations influenced how well players performed and how well they were perceived. You needed to be big, powerful, nimble, flexible, and swift to attack and defend in the game. In volleyball, motoric

skill is a basic movement skill that allows a player to apply technical and strategic skills in the game. The center blocker, for example, must have the best height, weight, reach, spike reach, and block reach. This could be due to their having the lowest BMI readings.

Milić, M., Grgantov, Z. (2017) "The aim of our study was to determine the differences in some anthropometric and physical performance variables of young Croatian female volleyball players (aged 13 to 15) in relation to playing position (i.e., independent variable) and performance level within each position (i.e., independent variable). Players were categorized according to playing position (i.e., role) as middle blockers (n=28), opposite hitters (n=41), passer-hitters (n=54), setters (n=30), and liberos (n=28). Within each position, players were divided into a more successful group and a less successful group according to team ranking in the latest regional championship and player quality within the team". Middle blockers were often taller, more ectomorphic, and less mesomorphic and endomorphic than players at other positions. On the other hand, liberos were shorter, less ectomorphic, and more mesomorphic and endomorphic. All around, the most successful players had a lower BMI, were less mesomorphic and endomorphic, and were more ectomorphic. Players who did well also had more lower body power, speed, agility, and upper body power. This study's results could help coaches figure out how to use somatotype selection and physical performance evaluation to find and develop talent.

Singh, V., & Mann, A (2018) How effectively you perform in any sport is determined by a variety of factors, including your body's structure and composition, as well as your physical and mental health. The most essential of them are body shape and composition. Similarly, numerous research on volleyball have revealed that it is dependent on players' bodies, general physical fitness, specific physical fitness, game skills, tactical abilities, competitive skills, and so on. Based on these findings, we may conclude that physique, body composition, and physical fitness are all key components of being a good Netball player at various levels. It makes no sense to invest a lot of money and time on conditioning and training programs for Volleyball players who don't belong in this game because a person's height, form, and body composition make them good for a given game or sport. Knowing the Anthropometric dimensions of successful volleyball players will help you choose and develop players more effectively. The purpose of this study was to provide guidelines regarding the association between key anthropometric characteristics and volleyball performance so that physical education teachers and coaches may inform their pupils about the specific attributes that every volleyball player should possess.

Fattahi, A., Ameli, M,(2012) You must be able to spike and block in volleyball, as well as having a high vertical jump. Vertical jumps are strongly related to weight, shank length, maximum calf circumference, foot length for spikers and setters, and tight circumference and weight for liberos, according to the study. However, anthropometric parameters can be used to determine how high volleyball players can jump in various situations. Because of the position of the game, it appears that volleyball players must consider both their parameters and how they practice. The amount of vertical jump is affected by physiological and biomechanical parameters. During the launch phase, vertical velocity and gravity totally influence the vertical jump. To jump, you require an outside force called the ground reaction force, which is caused by torques being transmitted to the ground. Muscle contractions cause torque in the joints when a structure moves. The differential in contraction forces between the agonist and antagonist muscles is what gives a joint its final torque. Furthermore, the amount of force is determined by the characteristics of the muscles. The weight must be greater than the ground reaction force. It will then be delivered to the body and utilized to calculate the velocity of the center of mass (COM).

S.VELKUMAR AND S.T.N.RAJESWARAN (2014) A player's of Telangana or athlete's performance in sports is tied to their physical, physiological, psychological, social, and anthropometrical characteristics. Given that these requirements are required in sports, each sport has its own entity due to the differences in nature. Even if the requirements for these traits have been established for a certain sport, there may be discrepancies in spots due to the varied physical and anthropometric terms of the players in that sport. Anthropometry is the measurement of the body to determine its exact size and how its parts fit together. A person's height and weight, in general, reveal how their body is put together. In sports, however, players of the same height and weight may differ in how well they move and how long they can keep going. This is due to the fact that different body terms have varying lengths, widths, and circumferences.

Palao, J. M., Manzanares, P.et al,(2014) The purpose of this paper was to examine the height, weight, age, spike reach, and block reach ranges of volleyball players in relation to their positions and the level of their teams when they were at their best. There were 1454 players and 1452 women in the sample who competed in volleyball at the Olympics and World Championships between 2000 and 2012. We employed a descriptive, correlation-based, and long-term design. The position of the player, height, weight, BMI, spike reach, block reach, age, and team level were all considered. The data reveal that there are variances in how tall

the players are, how far they can spike or block, and how old they are depending on position. The reasons for these disparities are related to what the various positions require to execute their duties. Middle blockers, outside hitters, and opposites are all good at blocking and spiking. Setters and liberos, on the other hand, appear to be gifted at setting, receiving, and digging. The discrepancies between the factors analyzed and the playing position are related to what the players require to do what they do. At this level of competition, male first teams were split by level age, while female first teams were separated by body height, weight, spike reach, and block reach..

Melchiorri, G., Viero, V.et al,(2017) The performance variables are better than anthropometric ones for studying the differences between volleyball players and those not active in the sport. Among the performance variables the SRT, the CMJ, the PUSH UP and the SIT UP showed statistically significant differences between the two groups and the ROC curves were used to study the effectiveness of the variables in distinguishing between the groups. SRT showed greatest sensitivity and specificity. In talent detection, a medium effect size in the differences registered in performance variables is useful in distinguishing between young people who practice and those who do not practice the sport, then the above reported values could be useful for coaches and physical trainers in assessing young volleyball players. In our sample, the association levels measured with the Plum analysis showed that some anthropometric variables (circumference of hips, circumference of chest, lower limb length) and some performance variables (THJ and SIT UP), in addition to age, can be considered more useful than others for their indirect predictive value on maturation level. Among these variables, age and height, THJ and hip circumference have greater associative power and could be used altogether in drawing up new methods to indirectly assess the level of maturation.

Apostolidis, N., & Emmanouil, Z. (2015) In a basketball game, young players should be judged by certain physical traits and technical skills. The goal of this study was to confirm the link between anthropometric traits, handgrip strength, and certain technical skills, and to create a simple model for predicting these skills based on the most important anthropometric data. 106 13- to 14-year-old basketball players with at least two years of training were measured in six longitudinal dimensions. The results of the regression analysis and the canonical correlation analysis showed that handgrip strength, the length of the arms when they are stretched, the height of the body, and the height of the arms when they are raised have a significant effect on speed and obstacle dribbling. This means that these

anthropometric parameters affect how well a person can handle a basketball. In the end, the measured anthropometric traits of young basketball players are thought to be important for how well they play basketball. So, coaches who are in charge of training plans for certain ages should look at these numbers to find the best players and put them into groups based on their playing positions.

METHOD

"A cross sectional study performed to 45 male players of UNNESs volleyball club. They consist of 14 main players 2015 team, 16 main players 2016 team and 15 main players 2017 team. All participants were exam by medical doctor before measurement were done included the general condition, blood pressure, heart rate and cardio pulmonary function".

"Anthropometric measurement involved body height and Body Mass Index. The body height measurement used microtoise, that valid until 0,1 cm. An electronic weight scale was employed for body mass measurement (in the nearest 0.1 kg). BMI was calculated as the quotient of body mass (kg) to height squared (m2), known Quetelet Index".

"The motoric skills measurement involved vertical jump, block jump reach, spike jump reach, medicine ball throw and 20 yards sprint. Each player performed three times exercise and the highest value was taking the result".

RESULTS

The anthropometric and motoric skills of male UNNES volleyball club players presented on Table 1 and Table 2.

Table 1 "THE AVERAGE OF BODY HEIGHT AND BODY MASS INDEX OF UNNES VOLLEYBALL CLUBS PLAYERS"

Anthropometric	Main player of		
	2015 (n=14)	*2016 (n=16)*	*2017 (n=16)*
Body height (cm) Without Libero With Libero	 182,3±3,11 182,1±3,10	 182,5±5,15 182,3±5,10	 182,1±2,77 182,0±2,72
Body mass index	21,14±1,76	22,11±1,89	20,78±1,18

Table 2 "THE AVERAGE OF MOTORIC SKILL UNNES VOLLEYBALL CLUB'S PLAYERS"

Table Head	Table Column Head		
	2015 (n=14)	*2016 (n=16)*	*2017 (n=16)*
Vertical jump(cm)	70,5±5,89	70,06±5,97	70,2±2,45
Spike reach jump(cm)	319,9±5,05	321,4±9,24	322,6±5,78
Block reach jump(cm)	308,3±4,59	311,5±7,92	313,0±5,22
Medicine ball test(M)	4,68±0,41	4,42±0,31	4,41±0,33
Speed 20 feet(sec)	3,04±0,12	3,14±1,15	3,11±0,14

An athlete's anthropometric and somatotype characteristics differ depending on the sport. Anthropometric characteristics influenced volleyball players' performance. Volleyball players had to be physically fit, social, competitive, and intellectual, as well as follow the regulations. Serving, passing, spiking, and blocking were all technical facets of the game that demanded a high level of performance and skill. Cognitive skills are required to prepare the strategy and understand how to keep everything under control during the game. This required the ability to see and focus.

Two setters, two or three swing hitters, two middle hitters (who could be replaced by a libero), and two back row specialists may be retained by an eight- or nine-player volleyball team. Each player specializes in passing and serving, two of the most essential volleyball skills. A setter must know how to pass the ball to a spiker in a specific method in order to build an attack. Height, quickness, and the ability to utilize both hands were all physical characteristics of the setter.

The left-front position is occupied by the right-side batter. When a player was in this position, it was simpler to launch attacks. Strong-side hitters must possess the following abilities: 1) self-assurance, 2) ability, 3) the ability to execute a variety of shots, and 4) physical fitness. The strong-side batter occupies the opposite hitter's side of the court. The opposing team's batter is responsible for hitting from this position and preventing the strong site hitter from scoring. To be a good opposite hitter, you must be able to focus, be prepared, and self-emerge. The Middle Hitter or Middle Blocker is responsible for attacking the ball in the centre of the court and is sometimes used as a decoy during points. Players who excel at this position have excellent lateral movement, are always accessible, and have a keen sense of timing. A defensive specialist or back-row specialist focuses on achieving strong defensive results. As long as there are still substitutions available, a defensive specialist can always enter the court at the same position. The premier defensive specialist was always ready and unfazed by pressure.

During a volleyball game, players frequently jump, dive, and move side to side. Modern volleyball is distinguished by a high reach above the net and a high ball speed when players jump serve or spike. Volleyball players' performance was influenced by their height, body, and body mass index.

Body height is an important factor in having high technical skills and performing well. Tall players have an edge since they can serve, spike, and block more effectively. Spiking and blocking are crucial aspects of volleyball, and the player's height influences how they do them. According to the most recent poll, the average body height of an expert player is higher than that of a beginner who competes in a lesser level. The vertical jump height (spike and block) most likely influences how well beach volleyball players perform. The length of the arms and legs also had an effect on reach in a spike jump and a block jump. Table 3 shows the average height of males who played volleyball at the Olympics.

TABLE 3 . "THE AVERAGE OF BODY HEIGHT MEN VOLLEYBALL PLAYER IN OLYMPIC GAMES 2016"

Rank	Nation	n	Average of body height (cm)		
			Without libero	*With libero*	*Libero's height*
1	Brazil	12	199.55	198.25	184.00
2	Italy	12	200.00	197.08	185.00
3	USA	12	199.45	198.17	164.00
4	Russia	12	201.18	199.67	183.00
5	Argentina	12	196.64	195.58	184.00
6	Canada	12	199.90	198.00	184.00
7	Iran	12	198.00	195.83	172.00
8	Poland	12	198.80	198.17	184.00
9	Egypt	12	197.73	196.92	188.00
10	France	12	197.30	196.67	188.00
11	Cuba	12	195.40	193.92	183.00
12	Mexico	12	194.18	193.83	190.00

"Source: www.rio2016.fivb.com"

The subject's height was lower than that of international competition players. Height was linked to the BMI and the ability of the heart and lungs to operate together. The body mass index also had a performance on how well a player performed in polo, volleyball, or any

other sport. When a person's BMI was high, both men and women had difficulty breathing and pumping blood through their bodies.

It had something to do with how fat was distributed in the body and the type of individual. BMI is associated with less physical fitness, according to studies primarily conducted on young adults. Physical fitness has a negative connection with BMI. Numerous research have uncovered the anthropometric profile, namely the somatotype, of players from a variety of sports. People believe that anthropometric traits affect the performance of volleyball players. There have also been studies conducted to investigate which variables correlate most closely with the performance of volleyball players at various places on the field. The rationale is founded on the type of volleyball played: Opportunities exist for ectomorphs because they can move, leap, and respond quickly.

A volleyball team must be able to spike and block successfully in order to win. Spiking is a technique used in volleyball to jump high and hit the ball strongly. Speed, agility, coordination, and the time it takes for a muscle to react enabled this approach. When a player begins to jump, their highest hand reach is their spike jump reach. Elite players can reach almost 70 cm over the net (Table 4). It was simple to spike, block, and serve thanks to these motor skills.

You must learn to view the court and make quick decisions at the net when learning how to block in volleyball. A blocker must be solid and balanced in order to produce a consistent block jump. Volleyball players with functionally unstable ankles reported reduced peroneus longus activation before contact with the ground. Because the peroneus longus is the main muscle that twists the ankle outward and a critical stabilizer against rapid and excessive turning out, this may render patients more prone to sprains and explain their "giving way" sensation. This instability makes it more difficult to block due to alterations in neuromuscular control. The study clearly demonstrated that in order to perform well in volleyball leaps, elite volleyball players must be able to perform well in the stretch-shortening cycle and withstand large stretch loads, such as in the depth jump. Table 4 displays the spike jump reach and block jump reach profiles of elite volleyball players competing in the 2016 Rio Olympics.

TABLE 4. “SPIKE JUMP REACH AND BLOCK JUMP REACH MEN VOLLEYBALL PLAYER IN OLYMPIC GAMES 2016”

Rank	Nation	n	Spike jump (cm)	Block jump (cm)
1	Brazil	12	338,08	317,58
2	Italy	12	343,42	322,83
3	USA	12	348,42	328,92
4	Russia	12	343,67	327,83
5	Argentina	12	343,08	324,50
6	Canada	12	347,83	321,67
7	Iran	12	341,92	323,08
8	Poland	12	344,25	319,83
9	Egypt	12	337,92	326,17
10	France	12	347,33	326,58
11	Cuba	12	344,58	332,17
12	Mexico	12	338,67	327,17

"Source: www.rio2016.fivb.com"

CONCLUSION

Performance variables outperform anthropometric variables in the 11-13 age group studied for evaluating differences between volleyball players and those who do not play the sport. The only performance variables that showed statistically significant differences between the two groups were the SRT, CMJ, PUSH UP, and SIT UP. The ROC curves were used to determine how effectively the variables distinguished between the two groups. SRT showed the highest sensitivity and specificity. If a medium effect size in the differences between performance variables is utilized to distinguish between young individuals who participate in the sport and those who do not, then the numbers above might assist coaches and trainers in determining how excellent young volleyball players are.

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