Relationship between Physical Fitness Components and Measurements of Football Players

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Abstract – The present study was carried out on male Indian footballers of six different national clubs of India. The players were also sub-divided according to their specific field positions. Physical and physiological profiles including height, weight, percentage body fat (%BF), flexibility, agility, explosive power, and VO2 max were measured by standard procedures. It was noted that the mean values of age, height, weight and %BF were significantly different among footballers of different national clubs. Among the motor ability and physiological qualities only flexibility, agility and VO2 max were significantly different among the footballers of different national clubs It was also observed that the mean values of height, weight, vertical jump and VO2 max of Indian national club players were found to be inferior to those of European, American and Australian footballers. So, it can be concluded that the differences among the footballers of present study with their international counterparts and specific playing position is probably the cause of hereditary factors and differences in activity in the game. Football is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian footballers. Team games are sports where size, shape, body composition and fitness all play an important part in providing distinct advantages for specific playing positions. Hence an attempt has been made to study the various anthropometric parameters, of the different Indian national club footballers and also to compare the above parameters with their international counterparts.

Keywords: Anthropometric Measurements, Physical, Fitness, Components, Football Players, etc.

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INTRODUCTION

Football is probably the most popular game worldwide but there is still limited scientific information available concerning the physique and performance qualities of elite Indian footballers. Not many sports physiologist have been attracted to examine the footballer in details because of the lack of adequate experimental models to study the games in the laboratory (Reilly et al, 1990).

The game comprises activities like sprint and jumps in attack and defense. It also requires aerobic capacity as the game lasts one and half hour, sometimes even longer than the official time. These short and long lasting activities are performed over the entire game, so, both aerobic and anaerobic capacities are very important to exhibit better performance (Akpınar et al., 2012).

Football is a team game. Team games are sports where body size, shape, body composition and level of fitness, all play an important part in providing distinct advantages for specific playing positions particularly at the highest levels of performance where there is a high degree of player specialization. Specific positional roles within each code may demand unique physiological attributes (Bjelica et al., 2012).

These are reflected in the physical and physiological fitness of the Football Players (Carvajal et al., 2012). The database of physique and performance qualities of the players of the renowned clubs throughout the country is very important to make a National Team. It is a fact that in India there is still limited information of club footballers regarding physique, physiological profiles and performance except a study on Indian Footballers (Gaurav et al., 2010) in this regard. Hence an attempt has been made to study the physique and physiological qualities of the Indian national club footballers. The aims of the present study are i) to evaluate the various anthropometric and physiological profiles of Indian national club footballers and also to evaluate the above parameters according to their playing positions and, ii) to compare these parameters with Indian national players and also their international counterparts.

REVIEW OF LITERATURE:

For all athletes involved in high professional competitive sports the body is required to perform at optimum capacity in terms of biomechanics and physiology (Zaccagni, 2011). Hence, it is more than logical to expect from top-level athletes to have a physique, optimal strength and endurance suited to the functional requirements of the sport in question. However, selection of gifted athletes into representative teams is often based on the subjective opinion of so-called expert selection coaches (Matthys et al., 2011). Nevertheless, it is widely known that there is a growing interest in improving the human performance of athletes as relates to the characteristics associated with consciousness, awareness and cognitive effort as well as identifying talents, strengths and weaknesses, assigning player positions and helping in the design of optimal training programmes (cited in Hadzic et al., 2012) all over the world, including Western Balkan countries. However, in many places much more time is spent on increasing the physical fitness of athletes without taking into consideration the assessment of their body composition and their nutritional status (Triki et al., 2012). Contemporary sport science is designed to improve the performance of elite players and to discover talents as precisely as possible. Although many studies have shown that specific anthropometric characteristics are significantly associated with success in sports (Malina et al., 2004), this process is very demanding, as various athletic events require differing body types to achieve maximum performance. Therefore, understanding the body composition of top-level athletes, and then assigning corresponding competitive weights for the athletes, has been done for decades and is considered an essential part of the total management process. On the other hand, although children and adolescent sportsmen grow in a manner similar to non-sportsmen (Rexhepi & Brestovci, 2010a), it is widely addressed in the scientific literature that adequate profiles are primarily important in various sports, mostly due to the reason that absolute size contributes a significant percentage of total variance associated with athletic success (Carvajal et al., 2012). Therefore, scientists all over the world are looking for a standard formula that can improve the performance of elite players and discover talents as efficiently as possible (Popovic et al., 2013a).

The anthropometrical characteristics and body compositions of athletes has been the subject of many investigations as many researchers have hypothesized that practicing athletes might be expected to exhibit structural and functional characteristics that are specifically favorable for their specific sport (Singh et al., 2010). Since each sport has its own specific demands, every athlete should have specific anthropometrical characteristics and body composition figures for his or her own sports discipline. Some sports, such as wrestling, require much more knowledge regarding this topic than others, because of its weight limits as well as favoring the selection of athletes with a limited vertical skeletal development. On the other hand, some sports, such as arm-wrestling; require the selection of athletes with the longer bones of the forearm. However, this fact does not decrease the need to investigate the anthropometrical characteristics and body composition numbers of Football Players, as adequate body composition and body mass figures, among other factors, contribute to optimal exercise routines and performance. According to these two authors, body mass can influence an athlete's speed, endurance, and power, whereas body composition can affect strength and agility. In other words, successful participation in Football games, next to the high level of technical and tactical skills, also requires from each athlete suitable anthropometrical characteristics and body composition. Most of the descriptive data concerning characteristics of Football Players come from America and Western Europe, although there is a lack of data from Eastern Europe, especially Western Balkan. Hence, this study aims to check if this is true for Western Balkan countries to follow many previous studies that have evaluated ideal anthropometric profiles of successful Football Players as well as volleyball player that provide insight into the requirements for competing at the zenith of their particular sports.

Indeed, Football is a team sport that is played in an outdoor field and requires a high standard of preparation through the development of physical performance skills, as well as tactical and technical expertise, in order to complete 90 minutes of competitive play. According to Triki et al., Football training is mainly based on movement implementing the endurance qualities consisting of moderate activity alternating with periods of intermittent high intensity, leading to a significant production of metabolic heat, mostly due to the fact that the average work intensity during a Football match is usually about 75–90% of maximum heart rate, respectively 70–85% of VO2 max. On the other hand, volleyball is generally played in an indoor field that is much smaller than that of a Football field, in which two teams of six players are separated by a net. It requires a high standard of preparation in order to complete for three sets of competitive play and to achieve success. In this game, movement patterns significantly differ from Football, as it requires their attack and defense to be much more effective as well as the dominance over the net becomes the most decisive factor for victory. The top-level volleyball players do not possess VO_2 max values on the high level as typical endurance trained elite players in other sports, but they possess an optimum level of aerobic capacity that is required for playing this game since it may sometimes continue for longer time. This game also includes large number of spiking, jumping,

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power hitting, blocking, and setting that is mainly based on a high level of strength and power.

PHYSIOLOGICAL NATURE OF FOOTBALL BY POSITION:

Certain skills and physiological attributes are common for all football players. However, because of the different positions In the game It la important to look at each of these positions Individually and to analyze their requirements. In one study, Wolfe (1971) asked the coaching staffs at Penn State University and Sir George Williams University to rate 12 physiological and 5 psychological attributes as to their Importance to each position In football. The 12 physiological variables were: height, weight, speed (short), speed (long), quickness, and strength, good hands, passing ability, sight, explosiveness (power), agility and endurance. Other authorities Included balance and backward and lateral running. Knowledge of these physiological requirements would be beneficial for the coach when positioning a new player In training camp or for establishing training programs In the off-season.

SPORT MOTIVATION, AGGRESSION AND ANXIETY:

The setting of high principles is a vital piece of tip top sports, and regularly valuable for the athlete's performance. In any case, people who are characterized by continuous discernments about the fulfillment of perfect, perfectionistic gauges, have been appeared to be prone to encounter heightened levels of anxiety, because of inconsistencies in the middle of perfect and current self/circumstance. This could obviously be detrimental to their sport performance. The point of the study was to explore the relationship between various patterns of perfectionistic measurements and sport-related focused anxiety and self-certainty, for world class athletes with various self-esteem techniques. The results uncovered that the connection between self-esteem and compulsiveness contrasts relying upon which measurements of self-esteem and hairsplitting that are being considered. Athletes with a high self-esteem in light of an admiration and affection for themselves had more positive patterns of hairsplitting, though athletes who have a self-esteem that is reliant on ability perspectives demonstrated a more negative compulsiveness. Further, negative patterns of compulsiveness were in the present study identified with higher levels of cognitive anxiety and lower levels of self-certainty. Consequently, it appears that sport related anxiety is decidedly related to specific patterns of compulsiveness, patterns that are more basic in people with particular self-esteem strategies. "Psychological Profiles of National Women Football Players". The primary destinations of the study were (1) To look at the status of senior national, junior national and international ladies football players on the

chose psychological variables; (2) sketch group profiles of international, senior national and junior national ladies football players, and (3) to draw psychological prof i les of individual ladies football international players. Technique: The sample of the present study contained 325 female national football players of India. Keeping in perspective the motivation behind the study they were separated into three groups senior national (N=160), junior national (N=150) and international (N=15) female football players. Four psychological variables connected with performance were Sport Competition Anxiety, Self-certainty, Achievement Motivation and Mental Toughness (comprising of four distinct classifications specifically: Handling pressure, Concentration, Mental bounce back and Winning attitude).The data gathered through the administration of four questionnaires, i.e. the Sports Competition Anxiety Test Questionnaire, Self-certainty Inventory, Sport Achievement Motivation Test and Mental Toughness Questionnaire. The data gathered from those senior national and junior national players who came to in the quarter last alliance of eleventh Women National Football Tournament held at Chennai from 8thto 24th June 2003 and third Girls U-19 Football Tournament held at Haldwani from 26th September to eighth October 2003.The statistical techniques like One-path investigation of difference and F-test, utilized for statistical examination. Discoveries: (1) Senior national ladies football players had medium anxiety, medium self-certainty, moderate achievement motivation and average level of mental toughness. (2) Junior national ladies football players had medium anxiety, medium self-certainty, moderate achievement motivation and low level of mental toughness. (3) The level of anxiety of international ladies football players was essentially low when contrasted with the lesser national ladies football players. (4) International ladies football players were essentially higher in self-certainty than the lesser national ladies football players. (5) There was no noteworthy contrast in achievement motivation of international, senior national and junior national ladies football players. (6) International ladies football players had fundamentally high level of mental toughness when contrasted with senior and junior national ladies football players.

The principle destinations of the study were (1) To survey particular psychological skills of Indian badminton players (both male and female) of various levels of achievement, i.e. International, Senior, Junior and Sub-junior National; (2) to explore the relationship between particular psychological skill scores and positioning purposes of Indian badminton players. Strategy: The sample of the present study involved 173 male and 152 female Indian badminton players. Keeping in perspective the destinations, the players were arranged into four fundamental groups. In men/young men area: International (N=26), Senior

national (N=33), Junior national (N=56) and Sub-junior national (N=58) and in ladies/young ladies segment as needs be International (N=16), Senior national (N=42), Junior national (N=44) and Sub-junior national (N=50). The data were gathered from International and Senior national Men and Women badminton players who participated in Senior National Badminton Championship held at Jamshedpur, Jharkhand from 31st January to sixth February 2005. The data from Junior and Subjunior National young men and young ladies players was gathered amid Junior National Badminton Championship held at Panjim, Goa from 31st October to eighth November 2004, and Sub-junior National Badminton Championship held at Chandigarh from tenth to sixteenth October 2004 respectively.Athletic Coping Skills Inventory – 28 (ACSI-28) as proposed by Smith et. al. was controlled to the players. One-route examination of fluctuation, Scheffe's Test Product Moment Correlation was connected for statistical investigation. Discoveries: (1) International badminton players had higher mean qualities than senior, junior and sub-junior national men/young men and ladies/young ladies in particular psychological skills and its sub-elements aside from in goal setting/mental planning in men/young men badminton players. (2) Senior national men/ladies badminton players had higher mean qualities than junior and sub-junior young men and young ladies in particular psychological skills and its sub-variables. (3) Junior young men/young ladies national badminton players had higher mean qualities than sub-junior young men and young ladies in particular psychological skills and its sub factors. (4) Significant contrasts were found among international and junior national, international and sub-junior national in opportunity from stress, international and sub-junior national in coach ability, and international and sub-junior national, senior and sub-junior national in particular psychological Skills in men/young men badminton players. (5) Significant contrasts were found among international and senior national, international and junior national, international and sub-junior national and senior and sub-junior national in certainty and Achievement Motivation, international and junior national, international and sub-junior national and senior and sub junior national in particular psychological skills in ladies/young ladies badminton players. (6) Significant relationship was seen on Peaking under pressure, fixation, coach ability and particular psychological skills in senior national men and opportunity from stress and particular psychological skills in senior national ladies badminton players with positioning point. Significant relationship was seen on certainty and achievement motivation and particular psychological skills in junior young men and focus and particular psychological skills in junior young ladies with positioning focuses. Significant relationship was seen on certainty and achievement motivation, coach ability and particular psychological skills in sub-junior young men and opportunity from stress and particular psychological skills in sub-junior young ladies with positioning points.

Mark W. Aoyagi, Kevin L. Burke, Barry Joyner, Charles J. Strong, and Michelle S. Hamstra considered on "The Associations of Competitive Trait Anxiety and Personal Control with Burnout in Sport ". The rate of athlete burnout among focused athletes from youth, high school, and university age groups and additionally the relationship between aggressive trait anxiety and individual control with athlete burnout were explored.

Siva Sankar Reddy Mudimela concentrated on "Effect of level of participation on aggression, anxiety, achievement motivation and performance among soccer players". An endeavor has been had to contemplate the effect of level of participation on psychological components, for example, aggression, anxiety, achievement motivation and performance. Six hundred and a quarter century players speaking to three unique levels that is, between college, between area, between university, constituted the sample of the study. Sports Competition Anxiety Test, Aggressiveness Questionnaire, Sports Achievement Motivation Test were managed to evaluate anxiety, aggression and achievement motivation, individually. The performance of soccer players was surveyed by utilizing rating scale (rating scale for assessment of playing capacity by specialists for soccer players. One-path investigation of difference and stepwise different relapse examination were utilized to break down the data. Critical contrasts were found among three levels of participation as to aggression achievement motivation and performance as it were. Aggression and achievement motivation contributed essentially to performance while anxiety is found to have negative effect on the performance.

CONCLUSION:

It is clear from the above study not only the anthropometric measures but also the various motor abilities and physiological parameters were less in case of Indian national club footballers and as well as Indian national players. Genetic factors determine body size and also to some extent physiological qualities. Body size does bestow and advantage to the goalkeeper, center back and the forward. Usually strength, stamina, power and skills are important factors for success in football. However, the motor abilities and aerobic power are found to be poor in Indian footballers as compare their International counterparts. Although in this study the specific football skills are not performed but on the basis of specific motor qualities and maximum aerobic power it can be said that Indian footballers are lagging behind as compare to European, American and Australian footballers not only in success in winning the medal but also physical fitness. So, it may be concluded that the less physical and physiological qualities of Indian soccer players as compare to their International counterparts may be due to genetic influence and also the difference among the players of various playing positions may be due to their

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activity in the game and difference in training regimen.

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