CHAPTER – II

REVIEW OF RELATED LITERATURE

The researcher visited various libraries and also browsed the internet to review the related literature from those sources and presented them in this chapter.

2.1. Anthropometric parameters of Football players according to playing positions:

Capela, C et al (2004) having compared the anthropometric parameters of different age group Portugal Club Soccer players, have reported that no significant difference in anthropometric parameters were observed.

J.D.Vescori et al (2006) studied the positional characteristics of division I college female soccer players conducted tests on height, body mass, reported that defenders and goal keepers tended to be heavier compared to forwards and mid-fielders.

Leonardo et al (2007), having studied the profile of under-15 Brazilian Soccer players by field position have reported that there were no significant difference in the field position in
Anthropometric measures such as body mass, and sum of skin folds.

Jonathan Bloomfield et al (2007) studied the anthropometric parameters of different positions in (FA) English Premier League Professional Soccer Players from three positional groups (Defenders, Mid-fielders and Strikers) representing various professional clubs in 2003-2004 season and reported that significant differences existed between players in different positions, goalkeepers were found to be significantly taller and heavier than outfield players. Goalkeepers also displayed greater leg extensor power than midfielders and defenders. Midfielders were older than strikers, defenders taller than midfielders and strikers more powerful than midfielders. Professional players do vary in weight and size especially when ethnic influences are taken into account. For example, data on International Asian teams demonstrated that their players were smaller in physical size, especially when compared to European teams. Midfielders are often the smallest whilst central defenders are often the tallest and heaviest.
outfield players on the pitch. A scientific study showed that a professional team had an average body weight of 77.7 kg compared to 73.4 kg for semi-professionals. Body shape or somato type studies indicate that professional players tend to belong to the mesomorphy category meaning a more muscular make-up. Indeed, studies on top English League Players when compared to all Olympic athletes showed they mostly resembled Olympic 400 meter hurdlers and triple jumpers but were on average heavier and smaller. Body composition is important as any superfluous fat affects the ability of the body to run and jump due to the extra weight. Professional footballers usually show values of between 9%-16% (generally an adult male in his mid-twenties averages about 16%). However, this can rise after season when the season has finished. For example, a study of a top English professional team showed a mean % of body fat as high as 19.3 % when returning to pre-season training indicating that professional players need to take care with their diet as well as undertaking some form of aerobic exercise to keep fit during the off-season.
In accordance with Davis et al., Goalkeepers in football were taller and heavier than outfield players. Defenders were significantly taller than midfield players, which can be taken as an indication that size is an advantage in this position—to be able to reach high balls in their defensive role and perhaps to increase their reach in tackling duels, as well.

Swapan K. Dey et.al. (2010) having conducted a study on one hundred fifty (150) male Indian footballers of six different national clubs of India including three from Kolkata (East Bengal, Mohan Bagan & Mohammedan Sporting) and other three from Goanese clubs (Salgaokar, Vasco & Dempo) Comparing ANTHROPOMETRIC, MOTOR ABILITY AND PHYSIOLOGICAL PROFILES OF INDIAN NATIONAL CLUB FOOTBALLERS have reported that the players were also subdivided 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 reported 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 (p<0.01). It was also reported 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. However, the %body fat of Indian footballers according to their specific field positions was found to be comparable with their international counterparts. The defender, midfielder and striker of the reported study were inferior in endurance (VO2 max) as compared to their international counterparts. It was opined by the Researchers that Genetic factors may be the cause of smaller body size of the subject of their study as compare to their international counterparts. So, it was concluded by the researchers that the differences among the footballers of their study with their international counterparts and specific playing position was probably the cause of hereditary factors and differences in activity in the game.
2.2. Physical fitness parameters of football players according to playing positions:

Capela, C et al (2004) having compared the motor performance parameters such as aerobic fitness, speed, agility and strength of different age group Portugal Club Soccer players, have reported that significant differences in all motor performance parameters were observed and they also attributed this difference to experience and training.

J.D. Vescori et al (2006) studied the positional characteristics of division I college female soccer players conducted tests on acceleration, speed, agility, lower body power, counter movement jump and aerobic capacity and reported that Positional differences did not appear in any of the physical fitness parameters. However, they have further reported that defenders showed slightly slower times for the speed and agility tests, while goal keepers tended to be slower on the agility tests compared to the forwards and mid-fielders. Aerobic capacity was similar across the four positions.
Leonardo et al (2007), having studied the fitness profile of under -15 Brazilian Soccer players by field position have reported that there were no significant difference in the field position in 30 meters sprint, Squat jump and counter movement jump.

Jonathan Bloomfield et al (2007) studied the physical demands of different positions in (FA) English Premier League Professional Soccer Players from three positional groups (Defenders, Mid-fielders and Strikers) representing various professional clubs in 2003-2004 season and reported that significant differences existed between Strikers, Mid-field and Defending players in various kinds of body movements with the soccer ball and without soccer ball and have suggested different type of specific conditioning program for different positions.

When making comparisons between players in different positions and in studies on top English League Players when compared to all Olympic athletes showed they mostly resembled Olympic 400 meter hurdlers and triple jumpers.
At competitive, organized levels, football is an endurance sports that incorporates periods of intense exercise interspersed with lower levels of activity over a 90-minute period (Reilly, 1996). Therefore, a large amount of aerobic power is essential to a footballer. According to profiles exhibited by professional players, the fitness requirements for soccer are - flexibility, speed, speed endurance and aerobic endurance. Strength in the lower limb is of obvious concern in soccer: the quadriceps, and hamstrings must generate high forces for jumping, kicking, turning and changing pace. The ability to sustain forceful contractions is also important in maintaining balance and control. Isometric strength is possibly important in maintaining a player’s balance on a slippery pitch and also in contributing to ball control. For a goalkeeper almost all the body’s muscle groups are important for executing his skills. For outfield players, the lower part of the trunk, the hip flexors and the plantar flexors and dorsi flexors are used most. Upper body strength employed in throw-ins and the strength of neck flexors could be important in forcefully heading the ball. At least a
moderate level of upper body strength should prove helpful in preventing being knocked off the ball. The players playing in different positions were found to differ in fitness profiles.

Goalkeepers appeared to have a different fitness profile from the other player positions, whereas the three groups of outfield players were similar in their performance on the tests. Strength tests have also shown top level goalkeepers to be significantly stronger compared to other playing positions. Centre backs have been found to be both heavier and faster and show greater anaerobic power than wingbacks. Aerobic power assessed through VO2 Max values varies according to playing position. For outfield players, midfielders have significantly greater aerobic power values whilst central defenders have the lowest values.

Playing position and ethnic differences must always be taken into account when measuring performance. Comparison between different playing positions showed that the goalkeepers had different characteristics from the outfield players, a reflection of the difference in requirements between these player
groups. In accordance with Davis et al. (10), they have a lower peak O2 uptake indicating that running ability is less important. They were taller and heavier (10) than outfield players, and displayed a greater leg extension power because the important tasks of a goalkeeper are to react and move quickly, to jump or dive to save or deflect shots, and to cover a large perimeter, and a difference in jumping ability with outfield players, defenders, midfielders, and strikers was also revealed. Defenders were significantly taller than midfield players, which can be taken as an indication that size is an advantage in this position—to be able to reach high balls in their defensive role and perhaps to increase their reach in tackling duels, as well. No difference in peak O2 uptake between midfield players and strikers or defenders is reported as has been suggested various experts. The small differences observed in physical fitness between players in different player positions is perhaps not surprising, because in modern soccer each outfield player assumes a larger role in the overall play of the team, so the positional differences seen in recent studies
are less than previously ones. Countries who have advanced and produced good results in international level soccer could achieve such results due to scientific research and identification of talents on scientific lines.

Specific physical and physiological characteristics of soccer players plying in different positions have been studied and the results are used by coaches not only to select the talents but also to modify training programs and to help players prepare for the game strategy. The modern soccer relies on the ability of all players to attack and defend whenever necessary. Therefore, it is important that all players achieve a high level of performance in the basic skills of kicking, passing, trapping, dribbling, tackling and heading. Analysis of the physical and physiological characteristics of the players and determination of the specific requirements for optimal performance are thus a necessity (Tiryaki et al., 1996).
2.3. **Psychological parameters, which affect the performance in Football:**

Sertan Kagan, Ziya Koruc and Nihan Arsan of Eastern Mediterranean Uni. Faculty of Educational Sciences, North Turkish Cyprus, Hacettepe Uni. Sport Sciences and Technology, Turkey (1991) conducted a study with the aim to examine the relationship between the football players' competitive state anxiety and trait-state anxiety levels in two Turkish Super League football teams, 41 professional soccer players participated in this study. Pearson Correlation has been used for analyzing relationships between CSAI-2 and STAI and differences in two teams. Inventories used were the Turkish version of State - Trait Anxiety Inventory (STAI), the Turkish version of CSAI-2. MANOVA was used to analyze CSAI-2 and STAI results. The analysis revealed that state significant relationship was found between state anxiety and self confidence ($r = .478$, $p< .01$). No significant differences were found between CSAI-2 results and STAI results. It was concluded that, there was a significant relationship between
State - Trait Anxiety Inventory (STAI) results and Competitive State Anxiety Inventory -2 (CSAI-2) results of football play of Top Form.

David Pears (2007) of University of Bedfordshire conducted a case study on a 26 year old semi-professional soccer player On Cognitive component of competitive state anxiety through semi-structured interview has reported that three distinct themes emerged from the results of this study. The participant experienced cognitions about a wide range of performance related topics, most regarding preparation. The topics were mostly time dependent in relation to the next/last match. The player focused from team preparation to individual preparation as the training week progressed towards the next match.