CHAPTER II

REVIEW OF LITERATURE
REVIEW OF RELATED LITERATURE

The review of related literature was collected from source of the richest libraries in India as far as the literature related to this study.

The review of related literature was mainly confined to the library of Pt. Ravishankar Shukla University, Raipur, H.V.P.M., Amravati and L.N.I.P.E., Gwalior. The researcher had also collected review of related literature from other libraries.

Sports-scientist working for enhancement of soccer performance since last four decades. The work done by sports-scientist for soccer performance in the area of training, fitness, psychological aspects and antropometric role which affect the soccer performance are summarized in following pages.

Damron (1955) studied on two and three dimensional slide images used with tachistoscopic training techniques in instructing high school football player in defences. In this study, two and three dimensional slides were made of eight defensive formations as though viewed from six offensive positions in the line (except center) and the quarterback position. Two equated groups were trained tachistoscopically at 1/100 sec. with their respective slide series. The group trained with two dimensional slides had a higher percentage of correct responses (79.3%). After slide training, when tested at one second on football defensive formation with line players, both groups were able to identify the formation with equal accuracy (approximately 95%).
Manolis (1955) studied on relation of charging time to blocking performance in football. Blocking performance was rated from game pictures by three experienced judges using methods that correlated \( r = .92 \). Objectively coefficients ranged from \( r = .88 \) to .99. Charging time (measured in the laboratory) had a reliability of .92, but failed to correlate significantly with the ratings (\( r = .28 \) to .34) or with game time (\( r = -.18 \)). A variance analysis showed no relation between position played and charging time (\( F = .46 \)). Accuracy of “timing” movement is probably more important than speed of response in charging.

Thompson, Nagle, Dobias (1958) studied on football starting signals and movement times of high school and college football players. An apparatus was designed and constructed to measure movement times of football players, high school and college varsity players were tested, using certain selected football starting signals. Rhythmic digit, rhythmic word-digit, non-rhythmic word digit and non-rhythmic color starting signals were used and movement times for each starting signal were computed.

Marshall (1958) conducted study for factors affecting place kicking in football. This study is an attempt to determine by experimentation with a mechanical kicking machine, the effect of the following factors upon the place kick for distance: The point of the impact of the toe on the ball, the size of the angle between the kicking leg and the vertical at the time of the impact, the type of football used (rubber or leather), the use of the detachable rubber kicking toe, the placement of the laces and the inflation pressure of the football.
Russel and Richard (1963) studied on certain attributes of 45 high school varsity football team members by use of psychological test scores. The mental maturity, educational development, leadership ability, social insight and personality tension and needs of the subjects were determined. On the average football players were quite similar in terms of intelligence and expected achievement to the average student in school, did better than the later in social studies and in reading and did less well in English. The football players scores on the test of leadership, social insight and personality tensions are similar as shown by national norms, those of typical high school students of the nation.

Boyer (1964) determined the effect of weight training in the development of leg strength and growth velocity of ball in soccer. He divided 21 college soccer players into two groups on the basis of kicking velocity as determined from a measured and time kick. Leg strength was calculated as the sum of knee extension and hip flexion Cab's tensiometer strength score. An experimental group of 11 subjects participated in a five weeks training programmes of half squat knee bend, knee extension and hip flexion exercises were performed three times a week. At the end of the period all the subjects were retested for the kicking velocity and for leg strength. Analysis of covariance showed that the experimental groups improvement in leg strength was significantly greater than that of the control group. The gain in velocity of the kicked ball by the experimental group was significantly (0.05) superior to that by the control group.

Hess (1966) in a study, randomly divided the soccer team
members (17) into a control group, experimental group that used progressive resistance exercises to develop hip flexion and knee extension strength for 7 weeks. All subjects were proficient in kicking a stationary ball with the instep. All subjects had pre-post test for kicking distance (average of 5 longest of 20 kicks) and leg strength (sum of the hip flexion and knee extension strength). Analysis of covariance showed that the experimental group improved significantly more in kicking distance at the level of 0.01. The 't' ratio showed a significant increase in leg strength at 0.01 level for the experimental group but not for the control group.

Nicolau (1966) conducted a study through a basic fitness tests developed by Fleshman which were administered to the 1964 varsity football squad at the University of Bridgeport before and after the preseason conditioning programme as an index of football fitness. Half of the players used the traditional programme consisting of a short jog, stretching exercises, push-ups, sit-ups, leg raises, toe touching, neck bridging, grass drills and running in a circle at top speed over players who were lying down. The other half used the circuit training principle with vertical jump, push-ups, leg lifts, squat thrust, step-up, bent arm hangs, grass drills and dip at the 8 station. The circuit training group improved significantly while the traditional group did not, but differences in improvement were not significant.

Berger and Littlefield (1969) attempted to determine whether differences in personality as measured by California psychological inventory existed between 30 outstanding football athletes and 30 non-athletes and found no significant differences between them, on any of the 18 items of the inventory.
Ommen (1969) studied the effectiveness of explosive running in addition to weight training as measured by leg strength reaction and performance times of football player in off season training programme. Subject in the control and experimental groups participated in an eight weeks training programme in addition, the experimental group experienced on an explosive running programme. Pre and post tests for reaction and performance time in the 10 yard agility run, 20 yard sprint and leg strength were administered. Weight training and explosive running did not improve reaction and performance of the football player. The weight training programme significantly improved leg and foot extension.

Hansen (1970) conducted a study on the effect of three selected weight training programmes on muscular strength, endurance, girth and cardiovascular endurance. He has taken 30 fresh man and varsity football players from the 1968 South Dakota State University football teams were randomly divided into 3 groups, one group used modification of the Delorme Watkins methods of training, the second group followed the traditional strength training method while the third group followed a circuit training programme. Training covered a period of 7 weeks, 3 times a week. Test for muscular strength, endurance and girth were administered before the programme began, at the end of 3 weeks of training and at the conclusion of training programme. All groups significantly improved on all the parameters and there was no significant difference between the groups.

The purpose of Lee's (1972) study was to compare the effects of elementary courses in volleyball, soccer, tennis and conditioning on selected physical fitness tests. 77 subjects were divided into four
groups and met twice a week for a period of twelve weeks. The findings of the study indicated the following:

1. All of the four activity groups improved their score to some degree on all of the nine selected tests items (right and left) hand grip, the vertical jumps, the standing broad jump, the sit-ups, the push-ups, 50 yard dash, the 60 yard shuttle run and 880 yard run/walk.

2. The soccer group showed significant improvement of five of the test items (the vertical jump, the standing broad jump, the pull-ups, the 60 yard shuttle run and 50 yard dash) at .05 level.

3. The volleyball group showed improvement at .05 level on the test on 50 yard dash.

4. Except 60 yard shuttle run, no significant differences were observed in the physical performance among the four groups.

5. Soccer group was found better than volleyball group in the improvement of the 60 yard shuttle run.

Wickiser and Kelly (1975) studied on the body composition of a college football team. The body composition and anthropometric measurements of 65 college football players were studied. Body composition was determined by under water weighing with an accurate assessment of residual volume. The anthropometric measurements included height, weight, seven skinfolds, waist circumference and wrist diameter. A step-wise multiple regression analysis of the data indicated that body density and body fat could be predicted from
anthropometric measurements. A multiple correlation of .96 was found between body density and three independent variables (waist circumference, triceps skinfold and height). The derived regression equations standard errors of the estimate were 0.0041 body density units and 1.64 percent fat respectively. The team data were divided into five categories by position. When subjected to analysis of variance, significant differences at the .01 level of confidence suggested that at least two separate groups, backs and lineman, be used in future body composition studies of football teams. The estimated optimal playing weights of each player were determined by densitometry, and each player and the coach estimated their optimal weights through personal experience. It was found that the players and the coach estimated the players optimal mean weights to be 9 and 6 pounds heavier respectively than the densitometric analysis indicated as optimal.

Clarke and Braslow (1978) studied on football fatalities in actuarial perspective. The relative risk of death among school and college varsity football players was calculated as a replication of a statistical exercise published a decade earlier. The purpose of the original exercise had been to demonstrate the epidemiological necessities and pitfalls in using fatality data to approach the hazardousness of sport. The purpose of this replication was to examine the stability of findings of that exercise. In 1964, football was found not to constitute an additional risk of death to its participants compared to the overall mortality rate of young males adjusted for comparability by exposure to a football season. Further, compared to the automobile related mortality rate of this population, football was much safer. In 1974 (and 1975), the frequency of
football fatalities has declined, and the respective actuarial ratios consequently remained favourable to football. Fatality data, however, have limited utility in the search for preventive practices in sport. What is needed is continuous surveillance of all significant injuries and illness, using epidemiological principles.

**White et al (1980)** studied on prediction of body composition in college football players. Study was to develop anthropometric and skinfold prediction equations to estimate body density and lean body mass in college football players. Eight skinfolds, nine muscle circumferences and seven skeletal diameter were assessed on 58 college football players during the competitive season. Body density was measured by the under water weighing technique. Prediction equations were developed for backs, line men and the composite group. Multiple 'R' to predict body density. Three equations derived on none athletic population were considered acceptable for estimation of body density in college football player.

**Kansal et al (1980)** studied on intrasportive differences in maximum oxygen uptake and body composition of Indian players in hockey and football. Aerobic power and body composition of 29 national footballers and 39 hockey players (12 national and 27 state/university level) have been studied. The intrasportive differences have been examined by dividing the players into various groups according to their respective playing position in the field. VO\(_2\) max., lean body mass and body weight are found to vary from position to position possibly due to the differential requirements of these players. Forward players who are supposed to perform prolonged and brisk activity in both these games, are found to possess the highest
values of \( \text{VO}_2 \text{ max/Kg/min.} \) and the percentage lean body mass among all the four categories of players. The players of other three field position have also a clearly graded position in both these parameters viz. Halves have higher values than backs who in turn have higher values than Goalkeepers. The various intrasportive differences in the morphological and physiological parameters studied among the players of football and hockey have been thoroughly discussed.

The purpose of Bratcher (1985) dissertation was to develop a manual that would assist in teaching and coaching soccer. The manual which can be readily adapted and used as a college level activity text book, is geared toward developing the beginning soccer player. It is divided into 10 chapters according to topical information and makes use of photographs and diagrams in the explanation of the development of soccer skills, tactics and fitness. In addition, each chapter includes a list of objectives pertinent to the information and material presented in the respective chapter.

Chapter 1 - A brief history of the development of soccer as a sport is given, along with several possible reasons for the appeal of soccer to the spectator as well as the player. Chapter-2 appear, a brief interpretation of the rules of soccer and an extensive list of soccer terms and their definitions. Emphasis has been placed on the rules used for intercollegiate laws are briefly mentioned. In chapter-3, the basic skills common to all field players are analyzed and explained while chapter-4 is used to deal with the specific skills of the goalkeeper.

Basic defensive principles of soccer are discussed in chapter-5.
while offensive principles are discussed in chapter-6. In both of these chapters individual tactics and tactics for the team as a whole are mentioned. Several examples of tactical drills that reinforce both the defensive and offensive principles are explained in chapter-7. Chapter-8 is used as a basis for discussing individual positions as well as system of play. Brief explanations of the three basic variations of indoor soccer that are played throughout the world today are given in chapter-9 with emphasis placed on the value and use of indoor soccer in the development of soccer players. Physical conditioning for soccer is the major topic in chapter-10. The various physical components of soccer fitness are discussed along with the methods that should be used for improving these components.

Amusa and Sohi ((1985) studied on the effect of the soccer training on muscular performance, cardiovascular efficiency and body composition. The purpose of study was to examine the changes in the following variables - muscular strength, muscular endurance, muscular power, speed, agility, circulo-respiratory endurance and body composition in college age soccer players, following a 20-week training period. Twenty undergraduate soccer players of the University of Ibadan who were screened to represent the university at the 1980 Nigerian Universities Games Association (NUGA) at Benin, volunteered as subjects for this study. The experimental group consisting of only soccer players underwent a rigorous training which met three times a week for a period of 20 weeks. Before the daily regular training, each subject concentrated primarily on the overall development of the body through the following exercise: a 12-minute endurance run, push-ups and sit-ups for time, a 50-meter dash, vertical and broad jumps for muscular power, dodge run with soccer ball for
development of agility, and the use of power meter and hand dynamometer for strength development. The control group was only encouraged to participate in their sports programmes without exposing them to the variables included in the training programme for this study. The following variables were employed to evaluate the effectiveness of the designed training programme for both the control and experimental group. The orders of the testing was held constant for all the subjects in the following manner: body composition variables, dodge-run, 50-meter dash, vertical jump and broad jump were administered in the morning hours; sit-up, push-ups, strength test and a 12 minute run test were administered in the evening hours. All tests were given the same day for all the subjects. Result shows the control group was younger (26.4 months), taller (5.88 cm) and slightly heavier (1.03 kg.) than the soccer players. However, analysis of variance for age, height and weight pretest means were not significant (F=1.52, 3.01 and 1.23 respectively). This is further supported by similar findings on pretest means for other variables except for up (muscular endurance) and cardiorespiratory endurance whose means were significant (F=8.22 and 4.38 respectively). Therefore, it can be assumed that the two groups were reasonably similar at the onset of the experiment. The conclusions reached within the confines of this study were - (a) that the primary training affects for soccer players were an increase in muscular endurance and cardiorespiratory endurance, rather than either an increase in muscular strength or muscular power and (b) changes in body composition and structural measure accompany endurance training.
Uppal and Roy (1986) made an attempt to predict soccer playing ability of University boys with the help of motor fitness components. They administered 5 tests for motor fitness components namely speed (50 mts. dash), agility (4 x 10 mts. shuttle run), maximum leg strength (leg dynamometer), explosive leg strength (standing broad jump) and cardio respiratory endurance (Cooper's 12 min. run/walk test). They had concluded that all the motor fitness variables (speed, agility, maximum leg strength, explosive leg strength and cardio respiratory endurance) are significantly related to dependent variables (soccer playing ability) and the soccer playing ability can be predicted with the help of developed prediction equation.

Bacher and Anthony (1986) studied on a multidimensional analysis of potential critical factors relating to athletic aggression in high school soccer players. This study was designed to examine the relationship existing between certain variables considered influential in effecting aggressive behaviour in soccer players and also to demonstrate the potential influence of the athletic coach on player measures of these variables. It was hypothesized that significant relationships would exist between player measures of instrumental aggression (IA), and moral conception of sport (MC), and attitude toward play (ATT), with a high level of aggression corresponding to a lower moral view of sport as well as a more professionalized attitude toward play. No relationship was hypothesized between level of reactive aggression (RA) and the aforementioned variables. With regard to influence of the coach it was hypothesized that, with groups divided on the basis of player perception of their coaches emphasis for achieving success using any means of control (PER), a between group difference would be demonstrated for measures of
IA, MC and ATT. No group difference was expected for the measure of RA. Self report questionnaires were used to survey a sample of 321 volunteer male high school soccer players, comprising 16 teams. The Pearson product moment correlation was used to examine relationships existing between the variables under investigation, while ANOVA was employed to examine between group differences. Result suggest significant relationships existing between player measures of IA, MC and ATT. Contrary to hypothesized results, significant relationships were also demonstrated between RA and MC, and RA and ATT, with a higher level of RA relating to a lower MC and more professionalized ATT. ANOVA results demonstrated significant between group differences for measures of RA, MC and ATT with the high - per group expressing a greater level of RA, a lower MC and a more professionalized ATT than the low - per group. No between group difference was demonstrated for the measure of IA.

Bianco and Emilio (1986) studied on the modification of general practice and soccer specific behaviours on an intercollegiate soccer team. This study was undertaken partially in response to the need to increase the informational data base using this sport but also to satisfy the concern for both skill improvement and the achievement of better practice management. The experimental procedures were implemented on a male varsity intercollegiate soccer team during their preseason training and across two settings; the general practice setting and the scrimmage condition. The intent was to modify (team) behaviour in the two aforementioned environments. A multiple baseline design was employed during the general practice setting utilizing Release Time (thirty minutes of free time) as the
management system. The three dependent variables intervened upon (Talking, Tardiness and off Task behaviour) were general in nature and would conceivably be found in similar settings and with different sports. The intervention of 'Release Time' attempted to increase talking among the players within a drill context decrease off task (inappropriate) behaviours and decrease tardiness to practice. If players achieve a pre set criterion on each of the three behaviour they would be awarded an extra thirty minutes of free time which was added on to their normal mid-day lunch break. A multi-element design was employed in the Scrimmage condition, utilizing four independent variables; baseline, change in scoring, oral feedback, and constant prompting as they intervened on three soccer specific behaviours - Penetrating runs, consecutive passing and out of the middle passing. The results indicated that the independent variable of 'release time' was significantly effective in modifying all three general practice behaviours in the desired direction. The results in the Scrimmage condition were not significant. The three independent variables (the baseline was maintained as a point of reference) were not effective in modifying the three soccer specific behaviours. Skill improvement was not detected and no significant difference between the independent variables in the scrimmage condition was established.

Scriber and Clark (1986) studied on measurements of selected physical fitness components in college football players during periods of training and detraining. The purpose of this study was to evaluate a college football conditioning program by investigating selected components of physical fitness. This assessment was made by measuring changes in body composition, cardiovascular endurance and muscular strength in college football players during various periods
of training and detraining. Subjects were 43 members of 1984 Ithaca college varsity football team that were placed into 4 groups based upon playing position. Data were obtained for 8 linebackers, 8 defensive backs, 13 offensive backs and receivers and 14 linemen. Body composition (percent body fat) was determined with a Skyndex electronic skinfold caliper programmed for a formula developed by Jackson & Pollock (1978). Cardiovascular endurance (\( VO_2 \) max.) was determined from a submaximal bicycle ergometry test based upon the Fox (1973) protocol. Upper and lower body strength were determined by a single maximum lift for the bench press and the squat press. Measurements were taken at 5 intervals during an 8 month period between July 1984 and March 1985. Testing periods were taken at the beginning, middle, and end of the regular playing season and before and after a 6-week winter conditioning program. Analysis of data consisted of a 4(group) x 5(time) repeated measures factorial ANOVA design for each variable. A post-hoc Turkey test for HSD was used for all significant F-scores (p < .05) to determine specifically where significant differences occurred between groups and/or over time. Significant differences were found between groups for body composition and cardiovascular endurance and upper and lower body muscular strength. It was concluded that the pre-season, in season and off-season conditioning program met the objectives for the variables studied.

Kansal et.al. (1987) conducted a kinanthropometric study of University volleyball and football players. Anthropometric measurements were taken on twenty-three football and fifteen volleyball players who attended a inter-university coaching camp held at Punjab
University, Patiala in October 1985 with a view to studying their physique and body morphology. Also studied were one hundred control subjects. Different anthropometric variables including linear, circumferential and skinfold measurements were taken. Body physique was calculated from skinfolds using Heath & Carter method (1967), and body fat was computed from skinfolds using Durmin & Womersley (1974) equations. It is found that the footballers are of average height, however, the volleyballers are taller than their control counterparts. The footballers have larger trunks and smaller lower extremities than the volleyballers who do not differ much from the controls in this relationship. The volleyballers and footballers have linear physique and larger limbs girth but less body fat than controls indicating their relatively more musculature. The anthropometric somatotypes of volleyballer and footballers are 2-16-3, 23-3-97 and 1-87-3, 44-3-59 respectively; indicating less endomorphic component than controls. Compared to the olympic level players, the players of the present study are lighter and shorter. The present findings suggest that there is an urgent need to produce baseline anthropometric data for various body size, shape and compositional measures of different categories of players.

Dey and Dey (1987) studied selected anthropometric measurements and physical fitness components of offensive and defensive players in football and found that defensive players have significantly higher leg length, thigh girth, weight than of offensive players.

Walters, et al (1988) studied on knee stability as a predictor of knee injuries in high school football. The purpose of the study
was to determine if flexibility or anthropometric measures could be used to predict the incidence of knee injuries in high school football players in North Carolina. The study included 101 subjects from the three of the four levels of athletic classification in North Carolina. The investigation began in the summer of 1987 and data collection was completed in December, 1987. The pre-season assessment involved measuring flexibility via the Nicholas Flexibility Protocol. With measures of thigh and gastrocnemius musculature and body weight were obtained. Following the season, assessments of subjects shoe types, intended uses, manufacturers, materials of the shoe, and whether the subjects used prophylactic knee braces were made. Incidences of injuries were reported regarding the specific structures injured and the severity of injuries. Statistical analysis revealed no predictive value of a pre-season assessment on the incidence of injury. A factor analysis of preseason, post-season and post injury assessment data did reveal subjects with fewer quarters of participation experienced higher rates of injury to the structures of the knee. An injury rate of 13.8% was reported in subjects with preseason flexibility scores of 2 or less and 10.3% in the group having 3 or more positive scores. Players with a lower body weight and smaller thigh and gastrocnemius with measures experienced a higher injury rate.

Daus, et. al. (1989) work on predicting success in football, clinical interviews were held with the rated most successful starting player for each position on a college football team. Mental strategies associated with measure sensory systems were determined for each player through observation of eye movement pattern and players usage of sensory based world, mental strategies for motivation,
creativity, belief, learning, discussion making and memory were assessed through this observation. Both offensive and defensive winners have a high visual need. The auditory sensory modality is least utilized. Creativity and discussion making are dominated by the visual sense, mental strategies for motivation, belief and memory are balanced between visual and kinetic sensory modalities in future studies, clinical observation suggestive of sensory based mental strategies can be combined with empirically validated personality test data to increase prediction power in the selection and placement process with college and professional football players.

Dey and Jha (1989) compared muscular strength and body compositions of swimmers, soccer and volley players. They found that the abdominal strength performance of soccer players were highly significant than that of the swimmers. But there was no significant difference found between swimmers and volley ball players.

Douglas (1989) studied on effect of a season of competition and training on hematological status of women field hockey and soccer players. The purpose of this study was to see what effect competition and training had on the hematological status of women field hockey and soccer players. Thirty collegiate athletes participated in this 14-week study. Blood samples were drawn prior to the start, mid-point, and end of the sport season and analyzed using a J.T. Baker 700-A analyzer. Results indicated that mean values for hemoglobin, hematocrit, mean corpuscular volume, and red blood cell count increased over time for both experimental and control groups. Values for all hematological parameters were within the normal ranges for females. Since all blood parameters commonly used to assess iron hematology were within normal ranges, we can conclude that
"sports anemia" was not present.

Taimela, et al (1990) worked on motor ability and personality with reference to soccer injuries. Thirty-seven male soccer players performed a series of motor ability tests and answered the Sixteen Personality Factor Questionnaire (the 16 PF). A past injury examination and interview was performed by a physician and occurrence of injuries was followed up prospectively for one-year step-wise regression analyses revealed significant association between past injuries and long reaction time as well as personality factors; N (astute) and H (shy). We conclude that both weakness of motor abilities especially long reaction time, and a specific personality type may predispose a player to soccer injuries.

Khan & Handa (1994) studied on concordance between psychological evaluations and coaches appraisal of sports performance. The present study was mainly focussed on bringing out predictive efficacy of psychological tests in relation to sports performance. To achieve this aim, 338 subjects belonging to athletics (n=28), badminton (n=22), basketball (n=25), boxing (n=27), cycling (n=18), football (n=36), gymnastics (n=20), hockey (n=24), judo (n=20), lawn tennis (n=11), swimming (n=26), table tennis (n=8), volleyball (n=26), weightlifting (n=16) and wrestling (n=31) were assessed on Visual and Auditory Reaction Time, Visual Concentration, Depth Perception, Steadiness and Two-Arm Coordination by using Reaction Timer, Knox Cube Imitation Test, Depth Perception Box, Gardener's Steadiness Tester and Two Arm Coordination Test. Coaches ratings of sports performance of athletes were also obtained and athletes then divided into below average, average and above average
categories on the basis of test scores and coaches ratings, separately. Thereafter, percentages of athletes labelled promising by tests and coaches were calculated to arrive at the percentage concordance in all games. Results indicated fairly good live efficiency of tests in the games of gymnastics, lawn tennis, table tennis, badminton, athletics, volleyball, football, boxing and judo. However in the games of cycling, swimming, basketball, hockey, weightlifting and wrestling it came out to be low.

**Ebbeck and Becker** (1994) studied on psychological predictors of goal orientation in youth soccer. The purpose of this study was to examine the extent to which perceived social, contextual and personal factors predicted the goal orientations of youth sport participants. The sample consisted of 166 male and female adolescent soccer players, who completed self-report measures at the end of a 7-week competitive season. A canonical correlation analysis revealed that the set of predictor variables accounted for 24% of the variance in player goal orientations. Higher scores on perceived soccer competence, perceived parent task orientation and particularly perceived parent ego orientation were primarily associated with higher scores on players ego orientation. In addition, higher scores on perceived soccer competence, perceived parent task orientation and lower scores on perceived performance climate, were associated with a higher level of player task orientation. These findings are interpreted and discussed in terms of future research directions.

**Mognoni, et al** (1994) studied on isokinetic torques and kicking maximal ball velocity in young soccer players. The purpose of this study is to assess if there is any correlation between
isokinetic testing and field performance of young soccer players. The isokinetic peak torques of the knee extensor muscles in sitting position ($T_{KE}$), and those of the hip flexor muscles in standing position ($T_{HF}$) were measured in 24 junior soccer players. Four angular velocities ($w = 1.05, 3.14, 4.19, 5.23$ rad. S$^{-1}$ or $60, 180, 240, 300$ deg. S$^{-1}$) for the hip flexor. On the field the subjects were asked to kick a stationary soccer ball as fast as possible against a barrier and the mean linear velocity over a 10m path ($v$) was measured. $T_{KE}$ of the non dominant limb were higher than those of the opposite one at the three highest $w$ ($p < 0.05$). On the contrary, the $T_{HF}$ of the dominant limb were higher than those of the contralateral, at the two highest $w$. When the ball was kicked by the dominant or non dominant limbs, the mean values and standard deviations ($±SD$) of $v$ were $23.6$ ($±2.5$) and $21.4$ ($±2.6$) ms$^{-1}$. Torques and $v$ were always positively correlated to each other; however only in few cases was this relationship statistically significant. In conclusion the isokinetic torques do not seem to be good predictors of $v$, one of the several factors which determine the global performances of the soccer players.

Rajni, Negi and Singh (1994) studied on effect of break in training and re-training on physical fitness and technical skill of football players. The present study was conducted to investigate the effect of four weeks training break on the body weight, percentage of body fat, components of physical fitness and technical skills of 21 male footballers undergoing a ten-month regular diploma course at Netaji Subhash National Institute of Sports, Patiala. Results revealed that break in training had produced significant deterioration in the
explosive strength of legs, strength of the abdominal muscles, agility, endurance and the flexibility of the subjects. Technical skills of specific kicking, 10 yard dribbling and 6x50 yard dribbling also deteriorated significantly due to the break in training. Performance of the players in 40m dash, medicine ball put and throw for distance though deteriorated due to the 4-weeks of de-training yet the difference.

McMorris and Graydon (1996) determined the effect of exercise on the decision-making performance of experienced and inexperienced soccer players. The participants (N=20) in this study were experienced (n=10) and inexperienced (n=10) male soccer players. All participants signed informed consent forms and completed medical questionnaire. The experienced players had played for their school teams, and all were members of their college team. They averaged 2.6 years (SD=1.26) of playing in intercollegiate competitions and 5.56 years (SD=1.52) of playing amateur soccer since leaving college. The inexperienced players had taken part in soccer classes while at school but had not played for their school teams nor had they played soccer since leaving school. Results showed that exercise had no effect on the accuracy of the decision making, while the speed of decision making for accurate responses resulted in an improvement in performance at both intensities of exercise. Overall speed of decision making, however, demonstrated a significant improvement for the experienced players but not for the inexperienced players.

Avans and Diana Elizabeth (1998) studied strategies used by coaches to recruit NCAA Division A football and basketball male student-athletes. Men's college football and basketball are considered
key components of a university's athletic department. The objective of this study was to examine the content of the strategies used by coaches when recruiting the student-athletes. Differences in the content of the recruiting strategies according to the type of sport, conference membership, the racial background, and years of college recruiting experience of the coach was also investigated. Also examined were the numbers and racial background of the athletes recruited.

A questionnaire was given to the recruiting co-ordinators for the men’s football and basketball teams from the Big Eight and the Big Ten conferences. Descriptive statistics included a demographic composite of the participants, and statistics conducted on the numbers of each racial background of athletes successfully recruited by the coaches.

Inferential statistics included rank order correlation on the recruiting factors and chi-square analyses of the frequency distributions of the athletes recruited were used (Huck & Cormier, 1996). The alpha level of .05 was used as the criterion for acceptance or rejection for all tests.

The results indicated several factors that received high emphasis by the coaches when recruiting a student athlete. Academic factors and those related to the athletic program or the university proved to be highly emphasized by both the football and basketball coaches. The rank order correlation resulted in differences in emphasis on the factors according to the racial background of the coach and the years of college recruiting experience.

The chi-square analysis revealed significant differences in the
number of black and white athletes recruited in general and by sport. There were also differences in the black and white athletes recruited by the racial background and the years of college recruiting experience of the coach.

The result of this study revealed the factors that the coaches place the highest emphasis on when recruiting the prospective student-athlete. They also revealed the trends of the number of athletes from each racial background being recruited for each sport. The results shows a need for continued research in recruiting and a need to expand to more conferences, division and an inclusion of women's sports.

Ludwig and Marie (1998) did biomechanical analysis of soccer heading technique. The purpose of this investigation was to determine if differences existed between collegiate soccer players who head the ball frequently. 24 women's collegiate soccer players volunteered for this study. All participants had at least 9 years of soccer heading experience, were currently injury free, and reported no serious head injuries. Participants were separated into two groups, frequent headers (FH) and infrequent headers (IH). They were videotaped performing 10 standing headers and were asked to head as hard as they could. Incoming ball velocity was consistent at 8.2 m/s (+/- .2 m/s). Variables measured included: difference in velocity from pre-contact to post contact, trunk ROM from initiation of flexion to contact, trunk and neck angular velocity at contact, and average linear acceleration over contact. The frequent header group had significant larger velocity difference, trunk ROM, and neck and trunk angular velocity at contact. Differences in the average linear acceleration of
the head could not be tested statistically because of violations of assumptions. The FH group had a lower average linear acceleration of the head over the duration of contact. It was concluded that women who headed the ball frequently used a different technique that women who head the ball infrequently. This difference in technique was best manifested in a difference in ball velocity from pre-contact to post-contact. The variables responsible for this change in velocity are (a) large step into the ball, (b) increased ROM and angular velocity of the trunk, and (c) a short powerful flexion of the neck beginning just prior to contact and continuing through contact.

Kundu (2001) studied somatotype and body composition variables of the university level soccer players. Assessment of physique and body composition of the sports persons is important and primary task in today's competitive world of sports. Besides of other conditions, Soccer, an exhaustive game, requires continuous assessment in physique and body composition of the players.

183 soccer players from twelve Universities who participated in the East Zone - A Inter University Soccer Tournament held at Visva-Bharati in 1991 were the subjects of this study. Somatotype and body composition variables of the subjects were assessed extensively.

Results revealed that University level soccer players possessed ectomesomorphs in physique, moderate percentage of fat, average height and weight. Goalkeepers, mid-fielders and forwards were ectomesomorphs whereas defenders were mesoectomorphs. Body fat
of the defenders was less than of the goalkeepers, mid-fielders and forwards. To some extent goalkeepers possessed high percentage of body fat in comparison to others.

Lonning & Charles Greg (2002) studied the effect of skill level on the opportunity to respond to the ball and playing time in youth sports. Over 70% of youth sports participants will quit organized sports before they are 13 years old. The purpose of this study was to systematically observe the competitive playing environment in youth sports. Boys in the 10 and under age group were observed for OTRTB and playing time in baseball, basketball and soccer. The subjects coaches categorized them as either below average, average or above average in skill. A total of 109 observations were made, 37 from basketball, and 36 each from baseball and soccer. A MANOVA was used with the games being blocked. The results of the study found no significant effect for skill levels on playing time. However, evidence clearly found that skill levels affected OTRTB. In all three sports the OTRTB was significantly different for skill levels. The overall results suggest that the effort to provide equal playing time is working in youth sport but there are still some inequities in the opportunities, participants have for success based on their skill levels.

Hooks and Alan (2002) analyzed participation motives in youth soccer. The purpose of this study was to determine if children's participation motives in organized youth soccer and their perceived competence for playing soccer vary by age and level of play.

The participants in this study were 276 males youth soccer players, aged 11 through 16 years old, from the upstate region of
South Carolina. The sample consisted of 110 recreational level players and 166 classic level players, who were divided into the age groups of 11 to 12 years old (n=103), 13 to 14 years old (n=87), and 15 to 16 years old (n=86). They were further separated into the two levels of play, resulting in a recreational level age grouping of 11 to 12 years old (n=40), 13 to 14 years old (n=32), and 15 to 16 years old (n=38) and classic level players age grouping of 11 to 12 years old (n=63), 13 to 14 years old (n=55), and 15 to 16 years old (n=48).

The participants completed an amended version of a participation motivation questionnaire developed by Gill et al. (1983) and Harter's (1979) perceived competence scale for children. Both of these instruments were administered to the participants at one of their soccer practice sessions during the fall of 2001.

A 2x3x8 repeated measures analysis of variance revealed significant differences (p<.05) due to the effects of age (F(2,276)=10.15, p<.001) and the interaction of age and level of play (F(2,276) = 3.63, p ≤ .028). In addition, the interaction of age x motive (F(14,528) = 3.43, p ≤ .001) level x motive (F(7,264 = 7.61, p ≤ .00) and age x level x motive (F(14, 528) = 2.41, p ≤ .003) were also significant. Follow-up comparisons indicated that the groups significantly differed on a variety of factors.

The analysis of the data collected via Harter's (1979) self-perception profile for children revealed that there were no significant differences (p ≤ .05) in the group's perceived competence in soccer based upon age (F(2,276) = .549, p < .58) level of play (F(1,276)
= 1.49, \( p = .222 \) nor the interaction of age x level of play \( F(4,276)=1.64, \ p = 1.65 \).

Mayhew et al (2002) performed validation of the NFL-225 test for predicting 1-RM bench press performance in college football players. The purpose of this study was to evaluate the accuracy of repetition-to-fatigue (RTF) using an absolute load of 102.3 Kg. (225 lbs) to estimate one-repetition maximum (1-RM) bench press performance in college football players using various prediction equations.

Participants were 260 players from NCAA division \( n=43 \), IAA \( n=63 \), H \( n=129 \), and red-shirts \( n=25 \) were evaluated at the conclusion of a minimum of eight weeks of heavy-resistance training during the off-season. All subjects performed a 1-RM bench press and RTF using an absolute load of 102.3 kg.

Specific NFL-225 equations are more accurate in estimating 1-RM bench press from absolute muscles endurance in college football players than previous published RTF equations. The accuracy of prediction decreases at higher repetitions.

The survey of related literature under this chapter indicates that sports-scientist attempted on each and every aspect related to soccer performance. Studies related to soccer performance categorised in the following area.

The effect of various training methods on soccer players and their performance has been studied by some authors specially Damron (1955), Marshall (1958), Boyer (1964), Hess (1966), Nicolau (1966),


Body size, shape and different combinations of body segment play a major role in sports performance. Soccer is also one of them where we can see the effect of different anthropometric aspects influence the soccer playing ability and performance. Attempt has been made by several scholars and sports scientist to find out its relationship with soccer playing ability. They are - Wickkiser and Kelly (1975), White et al (1980), Kansal (1980), Kansal (1987), Dey and Jha (1989), Walters et al (1988), Kundu (2001).

Fitness is the key of success and sports competition. Therefore it becomes very important aspect of attention. Naturally scientist pay attention on different type of fitness and try to show its relationship with soccer performance. Studies conducted earlier related to the fitness aspects conducted by sports scientist; they are Lee (1972), Uppal & Roy (1986), Scriber (1986), Dey & Dey (1987).
Few studies which are not directly related with above-mentioned area but studies conducted from different point of view related to reaction time, movement time, fatal injuries, teaching and coaching etc. by renowned sports-scientist and coaches. No doubt these factors also got equal importance in the research area. This type of studies are conducted by Manolis (1955), Thompson, Nagle, Dobias (1958), Clarke and Braslow (1978), Amusa and Sohi (1985), Bratchers (1985), Taimela (1990), Avans (1998), Lonning Charles Greg (2002).

In this chapter studies related to soccer performance and related to soccer players are exhibited. In present study, after taking view from earlier studies it was decided that a study is needed on soccer players with all respect i.e. anthropometric factors, psychological aspects and motor fitness along with their skill ability. The aim behind that to know the effect of influencing factor independently and jointly on soccer performance.

Investigator belongs to Chhattisgarh region where 35% of the population is tribal. In earlier studies conducted on tribal sportsperson indicate that tribal persons are having potentiality to perform well compared to non-tribal sportsperson. Being a soccer player, investigator's curiosity to know the difference on soccer performance of tribal and non-tribal soccer players and factors like anthropometric aspects, personality dimension and the level of fitness and its effect on soccer skill performance, therefore present study has been taken into the consideration because no single study has been conducted earlier with this view point.