Chapter-II

REVIEW OF RELATED LITERATURE

According to Good “review locates comparative data useful in the interpretation of the results.” John W. Best (1968) remarks that “a familiarity with literature in any problem area helps the student to discover what is already known, what methods have been promising or disappointing and what problem remains to be solved, etc.” A literature review enables a investigator to accomplish a number of more specific aims. It is likely, for example, that in the early stages of research the investigator may have only a vague idea of the area the investigator would like to explore vastly. The investigator may have only a tentative outline of the research problem. A review of the related literature will help the investigator to focus his tentative problem by both limiting and defining more clearly the topic he is interested in researching. The investigator will be aware of possible pitfalls, or search questions that have been thus far neglected reading around the subject will help the investigator to distil the issues he wish to concentrate upon and leave him with a concise, detailed and distinct plan of action.

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Literature reviews are secondary sources, and as such, do not report any new or original experimental work. Most often associated with academic-oriented literature, such as a thesis, a literature review usually precedes a research proposal and results section. Its ultimate goal is to bring the reader up to date with current literature on a topic.
and forms the basis for another goal, such as future research that may be needed in the area. A well-structured literature review is characterized by a logical flow of ideas; current and relevant references with consistent, appropriate referencing style; proper use of terminology; and an unbiased and comprehensive view of the previous research on the topic.

Review of related literature decides, allowing the investigator to acquaint himself with current knowledge in the field or area in which he is going to conduct his research, serves the following specific purposes.

- The review of the related literature enables the investigator to define the limits of his field. It helps the investigator to delimit and define his problem. The knowledge of related literature, brings the investigator up-to-date on the work which others have done and thus to state the objectives clearly and concisely.

- By reviewing the related literature the investigator can avoid unfruitful and useless problem areas. He can select those areas in which positive findings are very likely to results and his endeavors would be likely to add to the knowledge in a meaningful way.

- Through the review of the related literature, the investigator can avoid unintentional duplication of well-established findings. It is no use to replicate a study when the stability and validity of its results have been clearly established.

- The review of related literature gives the investigator an understanding of the research methodology, which refers to the way the study, is to be conducted. It helps the investigator to know about the tools and instrument, which
proved to be useful and promising in the previous studies. The advantage of the related literature is also to provide insight into the statistical methods through which validity of results is to be established.

The final and specific important reason for reviewing the related literature is to know about the recommendation of previous researchers listed in their studies for further research.¹

The investigator made a systematic attempt to review the related literature by keeping the aforesaid points in mind. The investigator reviewed the some detailed in the following studies:

**Singh**² investigated on relationship between playing ability and selected motor fitness variables of tribal women basketball players. The objective of the study was to find out relationship between selected motor fitness variables and skill performance of tribal women handball players. The study was conducted on 30 thirty women basketball players randomly selected as subject from the players undergoing training camps at Pt. Ravi Shankar University Raipur, (C.G.). Guru Ghasidad University Bilaspur, (C.G.). Sarguja University, Ambikapur (C.G). Skill performance as independent variables were Passing, Defensive and dribbling. Motor fitness variables involved were speed, explosive power, agility, cardio-respiratory endurance and flexibility. Defensive ability, Passing ability, Speed Shot Shooting ability and Control Dribbling ability was assessed by AAHPERD Basketball test battery (1984). The test selected for

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assessing motor fitness variables were speed by 50 meter run, explosive jump by sergeant jump, agility by (6x10 meter) shuttle run Cardio-respiratory endurance by 12 minute run/walk test and flexibility by sit and reach test. To find out correlation between selected motor fitness variables to skill performance of tribal handball player Pearson Product Moment Correlation method was used. The result showed that defensive ability had positive correlation with speed and agility whereas explosive power, cardio-respiratory endurance, and flexibility had a negative correlation. The passing ability had a negative correlation with speed and agility and a positive correlation with explosive power, cardio respiratory endurance, and flexibility. The skill of dribbling had a positive correlation with speed and agility, a negative correlation with explosive power and was insignificant correlated to cardio respiratory endurance and flexibility.

Raut\textsuperscript{3} compared the relationship between skill performance and selected motor fitness variables of tribal women handball players. The present study was conducted on 30 thirty women handball players randomly selected as subject from the players undergoing training camps at Pt. Ravi Shankar University Raipur, Guru Ghasidad University Bilaspur, (C.G.). Sarguja University, Ambikapur (C.G) and S.G.B.A. University, Amravati, (MH). For East zone intervarsity handball competition, the age of the subject ranged 17 to 23 years old. Skill performance as Passing ability, Defensive ability and dribbling ability were taken as independent variables. For motor fitness variables speed, explosive power, agility, cardio-respiratory endurance flexibility were taken under consideration. Defensive ability, Passing ability and Dribbling ability was

assessed by Defense movement test, passing test and controlling dribbling test. The test selected for assessing motor fitness variables were speed by 50meter run, explosive jump by sergeant jump, agility by (6x10 meter) shuttle run Cardio-respiratory endurance by 12 minute run/walk test and flexibility by sit and reach test. To find out correlation between selected motor fitness variables to skill performance of tribal handball player Pearson Product Moment Correlation method was used at 0.05 level of significance. The result was shown that defensive ability had positive correlation with speed and agility whereas explosive power, cardio-respiratory endurance, and flexibility had a negative correlation. The passing ability had a negative correlation with speed & agility and a positive correlation with explosive power, cardio respiratory endurance, and flexibility. The skill of dribbling had a positive correlation with speed and agility, a negative correlation with explosive power and was insignificantly correlated to cardio respiratory endurance and flexibility.

Sisodiya and Purashwani⁴ compared the relationship between achievement motivation and anxiety of shuttlers. The purpose of the study was to investigate the relationship between achievement motivation and anxiety of inter-university level male and female shuttlers i.e. badminton players. For this purpose, 30 (15 males and 15 female) shuttlers were randomly selected as subjects, who participated in west zone Inter-University Badminton Tournament. Sports Achievement Motivation Test by M. L. Kamlesh and Sports Competition Anxiety Test constructed by Rainer Marten were administered to collect the data. Pearson’s Product Moment correlation was employed to find out the

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relationship between achievement motivation and anxiety. Findings showed no significant relationship between Achievement Motivation and Anxiety of male and female badminton players of Inter-University level. From the findings it is very much evident that the score of Coefficient of correlations between achievement motivation and anxiety of male and female shuttlers was observed, was not significant (Ho rejected) as the value required being significant at 0.05. This insignificant relationship may be attributed due to the fact that the inter-university level badminton players were highly trained and belong to elite group of sportsman. They were exposed to higher level of participation and they were having balanced anxiety level with high achievement motivation. They were highly focused for accomplishment of their goals so they have shown insignificant relationship with anxiety.

Patel, Gohel and Ali⁵ compared the study of relationship of physical variables, physiological variables and body compositions to the sprint-starts. The purpose of the study was to determine the relationship of physical variables i.e. standing broad jump, flexibility) physiological variables (anaerobic capacity, resting pulse rate, vital capacity) and body compositions (lean body mass, total body weight, height, biceps, triceps, sub scapula and supra iliac skin fold) to the sprint starts. Twenty male students of under graduate and post–graduate classes of L.N.I.P.E., Gwalior, were selected as subjects. For measuring these physical, physiological variables and body compositions following tests were employed: sprint starts were measured up to 50 m from starting line and the performance was recorded in seconds; explosive strength was measured by the standing broad

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jump, and the performance was recorded in centimeters; flexibility was measured with the help of seat and reach test and the performance were recorded in inches; anaerobic capacity was measured by the help of Margarita Calamine power test in the unit of kg·m/sec; resting pulse rate was measured by the help of stop watch and recorded in number of beats per minute; vital capacity was measured by the help of wet-spirometer in the unit of liters; lean body mass was calculated by subtracting the fat weight from the total body weight; total body weight was measured by the help of weighing machine in the unit of kilograms; height was measured with the help of height steadiometer in centimeters; body fat was estimated by the help of skin fold caliper (bicep, triceps, sub scapula and supra iliac) and the fat weight was measured by calculating percentage of the body fat with the help of skin fold caliper, taken namely biceps, triceps, sub scapula and supra iliac in millimeters and then weight of the fat was calculated on the basis of the total body weight of the individuals subjects. Product movement correlation was used to compute correlation between sprint starts (50m run) and each of the selected independent variables i.e. explosive strength, flexibility, anaerobic capacity, resting pulse rate, vital capacity, lean body mass, body weight, and height. For testing the hypothesis, the level of significant was set at 0.05 level. The finding of the study indicated that standing broad jump (Explosive leg strength) had significant relation to the sprint starts and co-efficient of correlation was 0.611. Further the co-efficient of correlation between sprint starts and flexibility, anaerobic capacity, resting pulse rate, vital capacity, lean body mass, body weight and height were 0.260, 0.413, 0.275, 0.229, 0.308, 0.181 and 0.260 respectively, these values indicated insignificant relationship.
Khan, Ahmad and Khan\textsuperscript{6} aimed the study of sports achievement motivation and sports competition anxiety: a relationship study. The aim of study was to find out the relationship between Anxiety and Motivation of intervarsity Badminton players. The total sample consisted of twenty players age ranged from 17 to 25 years. Sport Competition Anxiety Test (SCAT) and Sports Achievement Motivation Test was administered to collect the data. Mean, standard deviation, and Pearson’s Product Moment Correlation were computed to analyze the data at .05 level of significant. It was found that significant negative relationship between Achievement Motivation and Anxiety. From the result of the study it was concluded that there was significant negative relationship between Achievement Motivation and Trait Anxiety at .05 level of significant i.e. Study showed that increase or decrease of level of Achievement Motivation do effect on the Increase or decrease of level of Anxiety or vice-versa. Therefore we can say that players who have high level of Anxiety should also have low level of Achievement motivation or vice-versa. Result of the study endorses the findings of Bawa and Kalpana (2001) who conducted the study on male national level Gymnasts and found that higher level performance group has moderate level of anxiety than the low level performance group, Unierzyski (2003) investigated the level of achievement motivation of young tennis players and their future progress and examine the influence of achievement motivation on tennis performance. He found in his study that the players who later reached international level in tennis possessed significantly higher level of achievement motivation than the players who never reached international level.

Karkare\textsuperscript{7} compared the relationship between anthropometric measurements and body composition of hockey players with respect to their playing positions. The objective of the study was to compare anthropometric measurements and body composition of hockey players with respect to their playing position. Two hundred and ten junior national hockey players seventy each from half line, back line and forward line was selected different state of India. Anthropometric measurements including height, weight, diameter, breadth, girth, and skinfold thickness was taken from entire subjects. Body composition was measure with the help of Matiegka's method (1921). To find out significant difference statistical method one way ANOVA was performed. Results found that, hockey players playing in different position found to be differs on some anthropometric measurements and body composition.

Kalepwar\textsuperscript{8} studied of effect of general physical fitness on the sport performance of volleyball players. The objectives of the study were to measure the physical fitness level of volleyball players. To delineate the relationship between physical fitness and the sport performance of volleyball players. The study was conducted in Nanded district of Marathwada region. Ninety six (96) volleyball players who represents different volleyball tournament at college and inter college level have been selected. The components of general physical fitness finalized by the coaches incharge of Netaji Subash National Institute of Sports (NSNIS), Patiala having poor, satisfactory, good, very good and excellent grading and scoring have been selected. The performance of volleyball players


have been judged and classified. The data have been collected with the help of well-structured questionnaires by survey method. Growth and development are the manifestations of life and their rate and quality indirectly reflect the general health of an individual. Health of an individual is determined through the study of somatometric variables and body components. Many hereditary and environmental factors are responsible for influencing the health of an individual. The health, the physical endurance, the agility and tenacity are usually different.

**Ibrahim and Gwari** A Study of Achievement Motivation of Low and High Level Volleyball Players. The aim of the study was to examine the relationship of Sports Achievement Motivation of volleyball players. A group of (N=50) male subjects divided into two groups (N=25 high performers) and (N=25 low performers) were selected for this study from rural games mela held at Mendhar tehsil of Jammu and Kashmir State. Their age range of the subjects was 25 to 30. It was hypothesized that there may be significant differences with regard to achievement motivation among low and high performers. The ‘t’ test was used to analyze data. The achievement motivation scale by Kamlesh (1990) was used to assess the differences among the low and high performers. The level of p<.05 was considered significant. Results indicated that significant relations were found between high/low performers. On the basis of the result of the present empirical investigation it is concluded that significant relations were found between sports achievement motivation and low and high performance of volleyball players. These results may be corroborated with the findings of Rathee and Singh (2011) they observed that the differences between the two

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performance levels i.e. national and international have been found to be significant. These results provided evidence that high achievement motivation is an important factor that distinguishes high level performers (Butt and Cox, 1992).

Koley, Singh and Sandhu\textsuperscript{10} studied on anthropometric and physiological characteristics on Indian inter-university volleyball players. The purpose of this study was of two-folds, firstly, to evaluate the anthropometric profile of Indian inter-university volleyball players and, secondly, to search the correlation of body mass index, % body fat, hand grip strength (right dominant) and Vo2max. with other anthropometric characteristics studied. Eleven anthropometric characteristics, four body composition parameters, two physical and two physiological variables and nine arm anthropometric characteristics were measured on randomly selected 63 inter-university Indian volleyball players (38 males and 25 females) aged 18–25 years from Guru Nanak Dev University, Amritsar, Punjab, India with adequate controls (n = 102, 52 males and 50 females). The results indicated that male volleyball players were taller (6.63%) and heavier (7.31%) and female volleyball players were slightly taller (0.31%) and lighter (3.74%) than their control counterparts. One way analysis of variance showed significant (p≤0.004-0.000) between group differences in all the variables (except hip circumference) between volleyball players and controls. In volleyball players, significantly positive correlations were found with BMI and other 19 variables, with percent body fat and 6 variables, with right hand grip strength and 20 variables and with Vo2max and other 19 variables, and significantly

negative correlations were found with percent body fat and other 16 variables, with right hand grip strength and other 7 variables and with VO2max with other 8 variables.

Koley, Singh and Kaur11 conducted a study of arm anthropometric profile in Indian university basketball players. The purpose of this study was threefold: firstly, to evaluate the arm anthropometric profile of Indian inter-university basketball players; secondly, to search for the correlations among these arm anthropometric characteristics; and thirdly, to search for the association of handgrip with arm anthropometric characteristics in Indian inter-university basketball players. Three anthropometric characteristics, nine arm anthropometric characteristics, and grip strength of both right and left hand were measured on randomly selected 60 Indian inter-university basketball players (35 males and 25 females, aged 18–25 years) of six universities, who participated in the Inter-university Championship organized at Guru Nanak Dev University, Amritsar, Punjab, India. An adequate number of control subjects were also taken from the same place for comparisons. The results indicated statistically significant (p ≤ 0.05 - 0.01) differences between the male basketball players and the controls in height, right handgrip strength, upper arm, forearm and total arm length, whereas no significant differences were found between the female basketball players and the controls. Highly significant (p ≤ 0.01) sex differences were found in the basketball players in almost all the variables studied (except BMI and arm fat area). Significant positive correlations were noted among the arm anthropometric characteristics studied (except arm fat area and arm fat

index), and with right and left handgrip strength. Among these, physical abilities exert marked effects on the skills of the players themselves and the tactics of the team. In the basketball game, the upper arm and the forearm generate adequate force with the contraction of the shoulder and arm muscles. Arms act like a leverage and the integrity of the shoulder and elbow complexes completes the desired task. There is more movement possible at the shoulder joint than at any other joint in the body. Over 1600 positions in three dimensional space can be assumed by the shoulder. The price to be paid for such an extreme range of movement is an inherent lack of stability. To achieve peak performance during overhead activity, there must be optimal balance between mobility and stability.

Kanwaljeet, Mandeep and Mandeep\textsuperscript{12} investigated on Anthropometric measurements, body composition and physical parameters of Indian, Pakistani and Sri Lankan field hockey players. This comparative study was conducted to determine the anthropometric measurements and body composition of field hockey teams of India, Pakistan and Sri Lanka. A total of 53 field hockey players from three teams were studied. The participants’ height was measured using the standard anthropometric rod, while their weight was measured with a portable weighing machine. Widths and diameters of body parts were measured using digital caliper. Girths and lengths were taken with a steel tape. Grip strength was measured with a hand dynamometer. Skinfold thickness measurements were taken using the Harpenden caliper at 4 sites (biceps, triceps, subscapular and suprailliac). The percentage of fat was calculated from the sum of 4 measurements of skinfold thickness. It was found that there were no

\textsuperscript{12} Singh Kanwaljeet; Singh Kanwar Mandeep and Singh Mandeep, “Anthropometric Measurements, Body Composition and Physical Parameters of Indian, Pakistani and Sri Lankan field Hockey Players”, \textit{Sports Academy Belgrade} (2010), Vol.2: 32.
significant differences in height and weight among the three teams, with the Pakistani players recording a slightly higher weight. The Pakistan team had a significantly higher upper arm length (p<0.05) and bi-humerus diameter (p<0.05) as compared to the India and the Sri Lanka teams. The Sri Lanka team had significantly less wrist circumference (p<0.05), hand width (p<0.05) and lean body mass (p<0.05) as compared to the India and the Pakistan teams. The India team had significantly less % body fat (p<0.05) than the other two teams.

More data would be of interest to document the changes in anthropometry and body composition during the season and out of season and also to attempt an analysis of characteristics specific to field positions.

Kalidasan\textsuperscript{13} compared the sports achievement motivation level among different topography of ball badminton players. Ball Badminton is basically a south Indian game. It is a long duration game, so the players have to be fit mentally. The most successful people would be those who coupled strong achievement motivation with strong competitive motivation. In any game the need for achievement is more important for all participants. To achieve the purpose of this study thirty students per each region, totally one hundred and twenty students were selected, and their age ranged between 18 and 24. The data was collected during All India Ball Badminton tournament for women organized by Bharathidasan University, Trichy during from 09th to 13th January 2009. The subjects achievement motivation was measured through the Kamlesh sports achievement motivation questionnaire. To test the significance of the mean difference at different topography namely north, south, east and west analysis of

variance (ANOVA) was used. In case of any significance of mean difference among the regions, to find out which pair of group was better among the others, the Neuman Keuls post-hoc test was applied. The results show that there was a significant difference on sports achievement motivation level at different topography. South region players having the higher sports achievement motivation level followed by east, west and north.

**Bal, Singh** and **Singh**\(^{14}\) conducted a study of achievement motivation and locus of control of university level individual and team sport players- A prognostic study. The aim of this study is to find out the significant differences among the players of individual and team sports, on the variable achievement motivation and locus of control. A group of three hundred and fifty (N=350) male players of individual and team sports, aged between 20 to 25 years were purposively selected for this study. They were further divided into two groups: A (individual game) and B (team game). It was hypothesized that there may not be significant differences with regard to achievement motivation and locus of control among individual and team game players. The significance between group differences were assessed using the student’s t-test for dependent data. The level of \(p<.05\) was considered significant. Significance between group differences were found among the players of individual and team sports on the variable achievement motivation whereas no significance between group differences were found among the players of individual and team sports on the variable locus of control. Considering the various parameters as applied on different sets of subjects the results prove to be variant in nature and scope in

relation to achievement motivation whereas results prove to be identical in respect to locus of control.

Abraham\textsuperscript{15} analyzed the study of anthropometry, body composition and performance variables of young Indian athletes in southern region. The purpose of this study was to analyze the anthropometry and body composition associated with performance of university level male track and field athletes of South India. This study was conducted on 93 track and field athletes from South India, comprised of 22 sprinters (100 & 200 mts), mean age 19.5 years, height 172.1 cm and weight 68.2 kg, 20 middle distance runners (800 & 1500 mts), mean age 19 yrs, height 166.8 cm and weight 62.5 kg, 16 long distance runners (5000 & 10000 mts), mean age 18.7 years, height 167.2 cm and weight 62.1 kg, 20 throwers, (shot, discus & hammer throw), mean age 19 years, height 170.8 cm and weight 72.6 kg and jumpers (High, long & triple jump), mean age 18.3 years, height 169.9 cm and weight 64.1 kg. Besides height and weight, six skin folds (triceps, chest, subscapular, abdomen, suprailiac & calf), two bicondylar breadths (humerus & femur) and two girths (biceps & calf) were measured. Somatotype evaluations were made according to Carter and Heath (1990) method. BMI was calculated as body mass divided by square of height (kg/m\textsuperscript{2}). The somatotype indicated that sprinters and middle distance runners are ectomorphic mesomorphs, long distance runners are mesomorph ectomorphs while throwers are endomorphic mesomorphs. The jumpers fell into the somatotype category of balanced mesomorphs. Among all groups body fat percent is lowest in sprinters (6.23±0.83\%) and highest in throwers.

(7.38±0.85%). This was reflected in their endomorphic components which is lowest in sprinters (2.53±0.45) and highest in throwers (3.39±0.65). Ectomorphic component is highly marked in long distance runners (3.56±0.65) while mesomophy was highest in sprinters (4.31±0.91). Throwers have significantly higher values of skin folds than other groups. Compared to their overseas counterparts, the athletes of both track and field events in the present study exhibited greater endomorphic values. The present data will serve as a reference standard for the anthropometry and body composition of south Indian track and field athletes. The results of the study indicated that in comparison to other sports disciplines track and field athletes have lower body fat percentage. The analysis showed that athletes of various track and field events statistically differ in morphological measures, especially in dimensions of body volume and body fat. On the manifest level, only upper arm and lower leg circumference statistically differ, being significantly higher in sprinters and throwers, as well as the sub-scapular, supra-iliac and abdominal, chest and arm skinfolds, which is significantly higher in throwers. The lowest value of % body fat was present among sprinters which are reflected in their lower values of skinfold measurement. It was also evident that in relation to their skeletal dimensions they tend to be more heavily muscled than others and this may be advantageous for them at the start of the race and in the initial stages of acceleration as greater force is created by these muscles. In all groups, mesomorphic component is highly dominant while endomorphic component is the least marked. The present data may be considered to serve as a reference standard for the anthropometry and body composition of Indian track and field athletes.
Rami and Silawat\textsuperscript{16} conducted a study of the psychological factors, anthropometric measurement and physical fitness of selected university players in Gujarat. The players are creating and breaking new records in today’s competitive sports. Traditionally the motto of Olympic festival is faster, higher and stronger is still alive in the field of physical education and sports. The aim of games and sports is fastly suited with every field. The old records are not remaining on boards they are establishing time to time. The level of physical fitness and motor ability is increasing day to day because of development of science and technology. Today’s Athletes are trained scientifically the equipments of training are also developed scientifically the ‘dand-bethak’ and ‘akhadas’ activities become out dated and hi-tech gymnasium and health centers takes its place. Now a day in training the physiotherapist entered with traditional ‘gurus’. With the help of physiotherapist and psychologist fitness of individual players is modified increase. The modern coaching methods are prepared for the development of physical fitness, psychological ability and anthropometry. From the study of Psychological Parameters revealed that, the players of all games were seen reserved, critical, cool, emotional, mild, easily upset, conforming, accommodating, sober, prudent, serious, shy, timid, trusting, tough minded, confident serene, self-reliant, affected by feeling. 2-In parameters if psychological factors kabaddi’s players were shown more significant as compared to other games, while volleyball players were for away from these factors.3-The results from the analysis of anthropometry measurement the players of Kabaddi’s highest in Height, Weight and circumference of chest, upper am, thigh and calf, were as players of kho-kho’s has shown lower in above

sighted variables. The results revealed from analysis of physical fitness Athletics players were superior as compared to other games, where as basketball players were lowest.

Ali and Sharma\textsuperscript{17} compared the study of anthropometric variables between medalist and non-medalist football players. The present anthropological investigation was conducted on inter college and inter University male football players. The study was made an attempt has been to evaluate twenty one anthropometric measurements on inter college and inter University football players. A ratio of subjects was, 85 inter college level football players and 80 inter University level football players in this research. Results shows statistically significant differences $P< 0.05$ in body weight ($t=2.14$), lower extremity height ($t=2.54$), and highly significant difference $P<0.01$ in femur biepicondylar diameter ($t=3.71$) between medalist of inter college and inter University football players and significant differences $P<0.05$ in body weight ($t=2.62$ ), BMI ($t=2.21$), chest circumference ($t=2.76$), hip circumference ($t=2.70$), and highly significant difference $P<0.01$ in thigh circumference ($t=3.79$), femur biepicondylar diameter ($t=3.88$).

Saraswat and Sharma\textsuperscript{18} conducted a study to compare selected physical and physiological variables of Indian male basketball players at different levels of competition i.e. Inter State and Inter District respectively. The subjects for this study were selected from the Inter District and Inter State level Basketball


players, randomly. The average age of the subject was 21.5 years ranging from 18 to 28 years. The Physical fitness components were measured using following test items- Speed-50 yard Dash (Sec), Strength-Grip Dynamometers (Kg), Power-Sergeant Jump (Cm), Endurance-2.4 (K.M.), (Min), and the physiological variables were measured using following test items. Resting pulse rate-Palpation of radial artery beats per Min, Peak flow rate- Peak Flow meter (Liters), Vital Capacity- Dry Spirometre (Liters). To determine the differences in selected physical and physiological variables of Basketball players at different level of participation (viz., inter district and Inter state) an independent ‘t’ test was used. The t-value found in relation to Physical variables i.e., Speed, Endurance, Power and Grip strength were 1.68*, 6.21*, 10.10* and 0.03 respectively. Results Reveals that Inter State Level players were significantly superior in speed, endurance and powers Variables as compared to the inter district players, but it was found that is no significant difference in Grip Strength variable of Inter district and Inter State level players. The t-value found in relation to Physiological variables i.e., resting heart rate, Peak flow rate and Vital capacity were 0.51, 1.14 and 0.08 respectively. Results Reveals that there is no significant difference between the physiological parameters i.e. Resting heat rate, peak flow rate and vital capacity of Inter State and inter District Level players as the assumed ‘t’ value is lesser than the required ‘t’ value and at 0.05 level of significances. The physical & physiological parameters are contributing factors to the performance in Basket ball game. Therefore, much weight age is given to these factors in training of Basketball players. At higher stages/levels of competition the volume / intensity of training increases which might directly improves the different physical fitness component of basketball players.
Moreover, the total duration of training i.e. training age is higher for inter state level players to that of inter district players, which might be a factor for the improved physical variables among inter state level players while the grip strength doesn’t plays much role in the improvement of Basketball playing ability of a player. If we closely look into the physiological foundation of Basketball, we might say that speed explosive strength, endurance and grip strength are directly linked with performance. However, resting heat rate, peak flow rate and vital capacity will not have much weight age to cardiovascular endurance specific to Basket ball player as such these three components are not having much directly contribution to playing ability of basket ball player therefore for above stated reason significant differences in reference to physiological parameters were not found between inter state and inters district players.

Ghai and Saraswat\textsuperscript{19} presented the study was to compare the pre competition temporal patterning of self confidence, somatic and cognitive anxiety among male athletes. 90 male athletes from three games (Football, Basketball and Volleyball) participated in all India Intervarsity Championship were selected as subjects for the study. The age of the students ranged from 18 to 24 years. The questionnaire used was consist of short form of CSAI-2 by (Cox, Russel and Robb) for measuring somatic and cognitive anxiety, while the self confidence was measured with 9 items of CSAI-2 by (Maretens, Vealey and Burton) corresponding to self confidence, the questionnaire were administered to subjects at different time durations prior to competition i.e. two weeks, one week, two days, one day, two hours and thirty minutes prior to competition. The

statistical tool used for this study was one way analysis of variance (f-ratio). To find out the paired mean difference the LSD Post hoc test was used. The statistical findings pertaining to self confidence of Football, Basketball and Volleyball deteriorated gradually as the player approaches closer to the time of competition, the somatic anxiety of Basketball Players increased from a low level at two weeks prior to competition to a significantly high value just thirty minutes prior to competition. Similarly in the case of cognitive anxiety in all the three games gradually increased when the athlete approaches closer to the time of competition.

Bhagirathii investigated the study of relationship of anxiety and achievement motivation to goal keeping among secondary school level girl hockey players. The study was conducted on ten girl hockey goalkeepers from different schools of Madhya Pradesh, India. Their age ranged between 14-19 years. The Sports Achievement motivation test standardized by Kamlesh and the State and Trait Anxiety inventory of Speilberger was selected for this study. To determine the relationship of anxiety and achievement motivation to goal keeping among girl hockey players, Pearson’s product moment method of correlation was used. The level of significance was set at 0.05 level in order to check the significance of calculated correlation. On the basis of findings of the study, significant relationship of state anxiety and trait anxiety to goalkeeping performance was observed for state (0.904) and trait anxiety (0.844) while no significant association with achievement motivation was found. Trait anxiety is negatively related to goalkeeping performance. State anxiety of inter school level goalkeeper has negative co-relation with their goalkeeping performance.

Trait and state anxiety may negatively affect goal-keeping performance. The level of schoolgirl goalkeepers is of average level and therefore level of achievement motivation has no relationship with their performance.

Wisloff et al.\textsuperscript{21} conducted the study to determine whether maximal strength correlates with sprint and vertical jump height in elite male soccer players. Seventeen international male soccer players (mean (SD) age 25.8 (2.9) years, height 177.3 (4.1) cm, weight 76.5 (7.6) kg, and maximal oxygen uptake 65.7 (4.3) ml/kg/min) were tested for maximal strength in half squats and sprinting ability (0-30 m and 10 m shuttle run sprint) and vertical jumping height. Result showed that there was a strong correlation between maximal strength in half squats and sprint performance and jumping height. They concluded that maximal strength in half squats determined the sprint performance and jumping height in high level soccer players and high squat strength did not imply reduced maximal oxygen consumption and also elite soccer players should focus on maximal strength training, with emphasis on maximal mobilisation of concentric movements, if they want to improve their sprinting and jumping performance.

Gorostiaga et al.\textsuperscript{22} conducted the study to determine the effects of simultaneous explosive strength and soccer training in young men. They selected 8 experimental (S) and 11 control (C) players, aged 17.2 (0.6) years, for testing before and after an IIjweek training period with respect to the load-vertical jumping curve [loads of 0-70 kg (counter-movement jump CMJO-70)], 5- and


15-m sprint performances, submaximal running endurance and basal serum concentrations of testosterone, free testosterone and cortisol. The results showed, in the S group, the II-week training resulted in significant increases in the low-force portion of the load-vertical jumping curve (5-14% in CMJO-30, P<0.01) and in resting serum total testosterone concentrations (7.5%, P<0.05), whereas no changes were observed in sprint running performance, blood lactate during sub-maximal running, resting serum cortisol and resting serum free testosterone concentrations. In the C group, no changes were observed during the experimental period. In the S group, the changes in CMJO correlated (P<0.05-0.01) with the changes in the 5-m (r=0.86) and 15-m (r=0.92) sprints, whereas the changes in CMJ40 correlated negatively with the changes in the testosterone: cortisol ratio (r=-0.84, -0.92, respectively, P<0.05). The data indicate that young trained soccer players with low initial strength levels can increase explosive strength by adding low-frequency, low-intensity explosive-type strength training.

Arnason et al. studied on physical fitness, injuries, and team performance in soccer. To investigate the relationship between physical fitness and team success in soccer, and to test for differences in physical fitness between different player positions. Participants were 306 male soccer players from 17 teams in the two highest divisions in Iceland. Just before the start of the 1999 soccer season, the following variables were tested: height and weight, body composition, flexibility, leg extension power, jump height, and peak O\textsubscript{2} uptake. Injuries and player participation in matches and training were recorded through

the 4-month competitive season. Team average physical fitness was compared with team success (final league standing) using a linear regression model. Physical fitness was also compared between players in different playing positions. A significant relationship was found between team average jump height (countermovement jump and standing jump) and team success ($P = 0.009$ and $P = 0.012$, respectively). The same trend was also found for leg extension power ($P = 0.097$), body composition (% body fat, $P = 0.07$), and the total number of injury days per team ($P = 0.09$). Goalkeepers demonstrated different fitness characteristics from outfield players. They were taller and heavier, more flexible in hip extension and knee flexion, and had higher leg extension power and a lower peak $O_2$ uptake. However, only minor differences were observed between defenders, midfield players, and attackers. Coaches and medical support teams should pay more attention to jump and power training, as well as preventive measures and adequate rehabilitation of previous injuries to increase team success.

Unierzyski$^{24}$ studied the level of achievement motivation of young tennis players and their future progress. Psychological factors influencing tennis performance have long been recognized (Crespo, 2002). As American champion Jimmy Connors put it in 1981: “Tennis is 90% mental” (Weinberg, 1988). Psychological issues with respect to tennis have also been addressed in a large number of scientific studies which have examined many of the mental characteristics during competition. In order to test ‘achievement motivation’ a group of boys was made up of players aged between 11 and 14 years (n=185),

taking part in tournaments organized by the Polish Tennis Association. On the basis of tournament results in players were placed by the Association into national rankings for the under 12 and under 14 age groups in the years 1990-1994. This process allowed us to investigate the relation between tennis performance and ‘achievement motivation’. In order to measure achievement motivation a questionnaire constructed by Widerszal-Bazyl (1978) was used. This consisted of 20 questions concerning ‘aspiration level’, ‘conformity’, ‘ability to postpone gratification’, ‘self believe’, ‘time perspective’, ‘Zeigarnik effect’ and ‘mental endurance’. In order to examine the influence of achievement motivation on tennis performance the players were divided into two groups: - Group A (n = 11), players who eventually reached international level (in the top 800 on WTA/ATP professional rankings) at the age of 18-20, i.e. 6 to 10 years after the questionnaire was completed - Group B (n = 174), players who never reached international level. The results of a Student’s t-test showed that the players who later reached international level in tennis (Group A, 73.3±3.8) possessed significantly higher (p < .01) level of achievement motivation than the players who never reached international level (Group B, 66.1±4.6). The results indicated that players from Group A generally possessed very high level of achievement motivation. It suggests that the high level of achievement motivation supported sport development of players from Group A and was one of the reasons of their progress. Achievement motivation is an essential element of human personality. It directs a person’s activity and makes it more (or less) dynamic. Without the desire to succeed other psychological features and abilities do not provide nearly so much influence on performance. Achievement motivation influences other factors affecting performance in sport like: physical
preparation, technique, tactics and even life style (Gracz and Sankowski, 1995). This property, the "driving power of activity", should be understood as the joint function of the motive power (which is a permanent property of personality) and the consequences of what a given individual expects of his own actions (Atkinson and Feather, 1966). This action is a product of two tendencies: 1) to achieve a success and 2) to avoid a failure. People with greater achievement motivation prefer tasks and situations where they can influence the result and their actions are successful (Gracz and Sankowski, 1995). Such people continue longlasting insoluble tasks more effectively and reveal greater persistence (Atkinson and Feather, 1966). Situations similar to this are dominant in sports performance. They occur e.g. even at the matches during a Davis Cup Tie, where players feel great responsibility and emotion about the result. Thus those tennis players who attain international status may be characterised by high levels of achievement motivation. These observations were confirmed in research on tennis players conducted by Butt and Cox (1992). The results indicated a higher level of achievement motivation among top class tennis players in relation to university players in the USA. Similar relationships were described by Schönborn (1984). On the other hand, the so-called negative motivation is characteristic of people with low achievement motivation, who are not confident and want to avoid a failure. In a match situation it usually evokes excessive stimulation and lowers the quality of sports performance. In the long term this often leads to a lack of progress or even giving up practising. High achievement motivation often manifests in an optimum level of stimulation in difficult situations and in realistic levels of aspiration (Czajkowski, 1995). The analysis indicates that achievement motivation can be identified as one property which
determines the progress of young players with serious aspirations to play at
international level. The influence of psychological aspects on tennis performance
increases with age (Schönborn, 1993). It was also widely reported (Schönborn,
1993; Crespo and Miley 1998) that after the age of 15-16 years mental ability
becomes one of the most important factors influencing tennis performance.
Therefore achievement motivation should be added to the other important
components which influence tennis performance and coaches should consider
measuring the level of this achievement motivation during talent identification.
This study as shown: 1) Junior players who eventually reached international
level in tennis 8 to 10 years after the test questionnaire possessed significantly
higher levels of achievement motivation compared with those who did not reach
international level; 2) The results provided evidence that high achievement
motivation is an important factor influencing tennis performance and 3) In the
talent identification process it is important to measure achievement motivation at
the early stages of a tennis career because it would strongly determine future
performance.

Edwards, Macfadyen and Clark25 investigated whether a single soccer
specific fitness test (SSFT) could differentiate between highly trained and
recreationally active soccer players in selected test performance indicators.
Thirteen Academy Scholars (AS) from a professional soccer club and 10
Recreational Players (RP) agreed to participate in this study. Test 1 VO(2) max
was estimated from a progressive shuttle run test to exhaustion. Test 2 The SSFT
was controlled by an automated procedure and alternated between walking,

25 A.M. Edwards; A.M. Macfadyen and N. Clark. “Test Performance Indicators From a
Single Soccer Specific Fitness Test Differentiate between Highly Trained and Recreationally
sprinting, jogging and cruise running speeds. Three activity blocks (1A, 2A and 3A) were separated by 3 min rest periods in which blood lactate samples were drawn. The 3 blocks of activity (Part A) were followed by 10 min of exercise at speeds alternating between jogging and cruise running (Part B). Results showed that the estimated VO(2) max did not significantly differ between groups, although a trend for a higher aerobic capacity was evident in AS (p<0.09). And also exercising heart rates did not differ between AS and RP, however, recovery heart rates taken from the 3 min rest periods were significantly lower in AS compared with RP following blocks 1A (124.65 b x min(-1) +/-7.73 and 133.98 b x min(-1) +/-6.63), (p<0.05) and 3A (129.91 b x min(-1) +/-10.21 and 138.85 b x min (-1) +/-8.70), (p<0.01). They concluded that highly trained soccer players are able to sustain, and more quickly recover from, high intensity intermittent exercise.

Chauhan\textsuperscript{26} conducted the relationship between anthropometric variables and middle distance running performance. 56 middle distance runners which having 2 to 4 years running experience were selected as subject. There are 32 anthropometric measurements i.e., 13 linear measurements, 8 girths, 4 diameters and 7 skinfolds measurements within the age group of 18 to 30 years. An anthropometric variables such as anthropometer, vernier Caliper and Lange’s skinfold caliper and body composition variables such as body density, lean body mass (LBM), fat weight and fat percent were utilized and calculated by using equations respectively. Substantial correlations were obtained between the anthropometric variable and middle distance running performance are presented.

The multiple correlation of the selected anthropometric variables collectively (i.e., height, thigh girth, biacromial diameter and thigh skinfold) with running performance is significant but the size of the multiple correlation is not sufficient, so it cannot be used in the prediction equation of the middle distance running performance.

Bradshaw\textsuperscript{27} research has demonstrated the importance of running speed and an accurate take-off on gymnastics vaulting performance. Current training practice for gymnastics vaulting is to stereotype the 15-25 m run-ups to the board, which assumes that a fast and reliable approach is best controlled predominantly without visual feedback. Incidences where gymnasts make errors during their run-ups, often landing onto the back of the board, occur frequently, even at the international level. The standard deviation method for identifying visual regulation in long jump run-ups was employed in this first exploration of gymnastics vaulting to examine whether visual regulation processes are utilized. Secondly, the question of how a small number of gymnasts can run fast during the approach and perform more difficult vaults was addressed. Five elite female gymnasts aged 13-15 years performed five round-off entry vaults. One panning 50 Hz video camera recorded each trial from an elevated platform to evaluate the approach step, hurdle, and round-off characteristics, whilst two 250 Hz cameras recorded vaulting performance. Two qualified judges viewed each vaulting trial and provided a performance score. A precursor for a fast take-off from the board when vaulting is to utilize vision early to control the approach kinematics (p = 0.02). High take-off velocity was directly related to judge's score (p = 0.03).

\textsuperscript{3} E. Bradshaw. “Target-directed Running in Gymnastics: A Preliminary Exploration of Vaulting”. \textit{Int J. Eat Disord.} (2003), Vol.34(2) : 244-250.
Coaches need to supplement gymnasts' vault training to include exercises that improve the gymnasts' ability to visually regulate their gait pattern while running.

Young, James and Motogomery\textsuperscript{28} made a study to identify the relationships between leg muscle power and sprinting speed with changes of direction. The study was designed to describe relationships between physical qualities and a component of sports performance. Testing was conducted in an indoor sports hall and a biomechanics laboratory. 15 male participants were required to be free of injury and have recent experience competing in sports involving sprints with changes of direction. Subjects were timed in 8 m sprints in a straight line and with various changes of direction. They were also tested for bilateral and unilateral leg extensor muscle concentric power output by an isokinetic squat and reactive strength by a drop jump. The correlations between concentric power and straight sprinting speed were non-significant whereas the relationships between reactive strength and straight speed were statistically significant. Correlations between muscle power and speed while changing direction were generally low and non-significant for concentric leg power with some moderate and significant (p<0.05) coefficients found for reactive strength. The participants who turned faster to one side tended to have reactive strength dominance in the leg responsible for the push-off action. The relationships between leg muscle power and change-of-direction speed were not consistent. Reactive strength as measured by the drop jump appears to have some importance for lateral change-of-direction speed, possibly because of similar

push-off actions. It was concluded that reactive strength of the leg extensor muscles has some importance in change-of-direction performance but the other technical and perceptual factors than influence agility performance should also be considered.

Schilling\textsuperscript{29} purposed the study of achievement motivation among high school basketball and cross-country athletes: a personal investment perspective. Goal perspective research in the sport setting has primarily focused on task and ego goal orientations, while failing to address the influence of social goals (e.g., Urdan & Maehr, 1995). Maehr and Braskamp’s (1986) personal investment theory allows researchers to examine achievement motivation from a multidimensional perspective that incorporates social factors of motivation. Thus, the purpose of this study was to examine the nature of the personal incentives, sense of self, and perceived options (Maehr & Braskamp, 1986) of basketball and cross-country athletes via semi-structured interviews. Results from content analyses revealed that athletes defined positive and negative experiences through task-, ego-, and socially-oriented personal incentives as well as sense of self and perceived options components. Socially-oriented personal incentives and sense of self components were more prevalent for the basketball athletes than for the cross-country athletes. Notable sport group differences suggest the need to further examine social factors of motivation with a broader representation of individual and team sport athletes.

Reddy, Reddy and Samiullah\(^{30}\) made a study on the impact of level of participation on psychological factors such as aggressions, Anxiety, Achievement motivation and performance, 625 soccer players representing three different levels i.e., inter university, inter-district, inter-collegiate constituted the sample of the study. Sports competition Anxiety Test (SCAT) marten (1977) Aggressiveness Questionnaire (AQ) Smith (1973), Sport achievement Motivation Test (SAMT) Kamalesh (1983) was administered to Assess anxiety, Aggression, Achievement Motivation and performance only. Aggression and achievement motivation is found to have negative impact on the performance.

Shaw\(^{31}\) compare among the selected level of sports achievement namely zonal, inter zonal/state, national and non-participation on SAMT (Sports achievement motivation Test) scores of schoolboys and girls independently; to compare among the selected levels of sports achievement namely inter-collegiate/state, national/inter-university/ inter-national and non-participation on SAMT score of college boys and college girls independently and to compare among the selected levels of sports achievement on SAMT scores of schoolboys, college boys school girls and college girl’s independently. The study was conducted on 68 males and 14 males from selected school and 56 male and 51 females from selected colleges were randomly sample with age ranging from 11-20 years at school level and 17-26 years at college level sport achievement motivation Test (SAMT) developed by Dr. M.L. Kamalesh, was administered on


the selected subjects as per instructions to obtain SAMT scores. The findings and the study indicates that significant sex differences were observed on SAMT scores between: School boys and girls at national/international level; College boys and girls at inter zonal/state level at 0.05 level of significance.

Prakash, Kumar and Munireddy\textsuperscript{32} conducted a study, which aimed to identify difference, if any, between achievement motivation and selected personality traits of university volleyball and cricket players. For this purpose Mangalore university volleyball (n=15) and cricket (n=16) players, who were attending final coaching camp at university campus before the inter-university competitions well chosen. Both the teams had creditable performance record. Essence personality Inventory (EPI) and Kamlesh’s Sports Achievement Motivation Test (SAMT) were administered to the subjects. The element of sports specific personality characteristics were not observed with the university players considered for the study. Data analysis shows no significant difference between personality characteristics and achievement motivation of university players participating in different sports activities. The following conclusions were drawn from the study, University level sports-persons did not differ much in relation to personality traits and achievement motivation. Sports achievement motivation should be viewed as a separate concept instead of viewing with one’s personality.

Nageswaran\textsuperscript{33} purposed the study was to find out whether there is any relationship between the selected skill performance and the combined effect of a anxiety, aggression, achievement motivation and self concept of university basketball players. To achieve this purpose forty men basketball Players were selected as subjects from different universities who participated in the south zone inter university basketball tournament held at Gandhigram University. For this study, dribbling passing shooting was selected as criterion variables and aggression anxiety; achievement, motivation and self-concept were selected as independent variables. The multiple correlations were used to find out the relationship between the elected skill performance and the combined effect of anxiety, aggression, achievement motivation and self-concept for each criterion variable separately. The results showed the significant relationship between the selected skill performance (Dribbling, passing, shooting) and the combined effect of anxiety, aggression achievement motivation and self-concept of university basketball players.

Claessens et al.\textsuperscript{34} studied the contribution of anthropometric characteristics to performance scores in elite female gymnasts. The aims of the study was a) to identify anthropometric variables correlated with gymnastic performance, and b) to predict performance scores from a combination of anthropometric dimensions. The methods of the study were Experimental design: co-relational analysis and a stepwise multiple regressions were used.

Setting: Subjects were participants at the 24th World Championships Artistic


Gymnastics, Rotterdam, The Netherlands, in 1987. Participants: A total of 168 female gymnasts (mean age: 16.5±1.8 years) were investigated. Each gymnast participated in all events. Measures: An extensive battery of anthropometric dimensions was taken on each gymnast. The somatotype was estimated. Skeletal maturation of the hand-wrist was assessed. Competition scores for the four individual gymnastic events (balance beam, floor exercise, vault, uneven bars) and a composite score for each gymnast were the dependent variables. The study revealed that moderately high, significant correlations (p<0.01) were observed between skinfold and endomorphy, and gymnastics performance scores, r varying from -0.38 to -0.60, for biceps skinfold and the score on balance beam, and for endomorphy and the total score, respectively. The correlations suggest that gymnasts with more subcutaneous fat and higher endomorphy have lower performance scores. About 32 % to 45 % of the variance in gymnastic performance scores could be explained by anthropometric dimensions and/or derived variables, but endomorphy and chronological age are the most important predictors. There was a relatively strong relationship between several anthropometric variables and gymnastic performance in a sample of elite female gymnasts, but the associations are not sufficiently high to predict performance scores on an individual basis.

Gowda\textsuperscript{35} carried out the comparative study selected physical fitness variables among kabaddi players based on position out play 120 kabaddi players were selected as subject from the Mysore University intercollegiate tournaments. The subject was divided in three equal groups of 40 each, under offensive, defensive, and midfield positions.

defensive and all rounder categories. The physical fitness variables will be selected for this study; were strength; speed, endurance agility, power and muscular endurance. The following test administered to obtain the data: Hexed Arm, shuttle run, standing broad jump, 50 yard dash, chin ups, half squat jump, and push ups. The results, related that there were no significant differences among offensive and defensive and all round groups in any of the physical fitness variables.

Basavaraju\textsuperscript{36} selected 20 Kho-Kho players and 20 football players from Club members and Bangalore University players. The subjects were in the age group 18-25 years. The AAPHER youth fitness test was used to find their “physical fitness element, five components were measured such as, Pull-Ups, standing broad jump, 50 meters run, 800 meters run and flexibility (flexometter). The data collected were compared with the percentile norms for college men given by AAHPER to find the relative dominance of various factors in different ‘groups. He concluded the football players have scored significantly higher than in the Kho-Kho players in power, strength, speed and endurance and Kho-Kho players were significantly higher than the football players in Flexibility. Michael has found that there was a significant positive relationship between physical ‘fitness and football and Basketball skill.

Singh, Sharma and Singh\textsuperscript{37} conducted a comparative study of ability of attacker and set-upper in volleyball. The 44 male volleyball players (33 attackers, 22 set-uppers) of university and state levels were taken as subjects.


Ten motor ability tests, along with age, body weight and standing reach were taken separately for the two groups, attackers and set-uppers. The mean, standard deviation and ‘t’-test were used as statistical tool. It was found that attackers are significantly younger, heavier and taller than set-uppers. The attackers and set-upper do not differ significantly in test except basketball throw. But attackers are better in 40 mt. sprint, standing vertical jumps, 9-3, 6-3-9 meter agility and 2.4 km. run. Set-uppers are better in block jump, forward bend reach and bend knee sit-ups.

Goudas, Biddle and Fox examined the relationship between dispositional achievement goal orientations and intrinsic motivation following physical fitness testing. Students, aged 11-15 years, completed the Task and Ego Orientation in Sport Questionnaire, participated in the 20-m progressive shuttle run test, and then completed a modified Intrinsic Motivation Inventory (IMI). Using their goal orientations, students were placed into one of four groups: low in both task and ego, high ego/low task, high task/low ego, and high in both task and ego. A MANOVA indicated that for students in the "high" and "low" performance groups, differences in intrinsic motivation between goal orientation groups were found. Perceived success and goal orientations had independent effects on intrinsic motivation for the lower performance group but interacted to influence intrinsic motivation for the higher performance group. It was concluded that children have different motivational reactions to fitness testing, depending on their goal profile, performance, and perceived success.

Bradshaw and Le Rossignol\textsuperscript{39} were identified the anthropometric and physical prerequisites for high difficulty floor tumbling and vaulting. Twenty 8-14 year old female talent-selected gymnasts performed handstand push-offs, and single and multiple jumps on a portable Kistler force plate. The force curves were analyzed using Kistler and Excel software to obtain peak displacement, peak take-off force, and power. The gymnasts were also assessed for sprinting, with and without vaulting, and standing broad jump performances. Video footage from the vault take-off was analyzed using Video Expert II software to obtain the horizontal and vertical take-off velocities. Each gymnast's best vault starting score, three best floor tumbling skills, and anthropometric characteristics were recorded. Statistical analysis included one-way analysis of variance (ANOVA) to examine the effect of age (8-10 years, 11-12 years, 13-14 years) on the performance measures and linear regression analysis with performance start score for vault or best floor tumbling score as the outcome variable. The best regression model for indicating vaulting talent had, as predictor variables, resultant velocity at take-off from the board, squat jump power, and average power during the last five jumps in the continuous bent-leg jump series. The best regression model for indicating floor tumbling ability had, as predictor variables, age, vault had running velocity, and reduced ground contact time in a handstand push-off.

Bangsbo\textsuperscript{40} study deals with the physiological demands of soccer, with a particular focus on the physiological response to repeated intense exercise.

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Measurements have been performed during soccer matches and training, as well as in experiments simulating the activities of a soccer match. The information obtained has been compared to results from studies of the physical capacity of top-class soccer players and from laboratory experiments aimed at investigating metabolism and fatigue in intermittent exercise. Analysis of activities during soccer matches showed that a top-class soccer player covers an average distance of approximately 11 km during a match. The distance differs highly between players and is partly related to the position in a team. Midfield players run more at low speed than defenders and forwards, whereas no difference appears to exist between groups when comparing the distance covered at high speed. The distance covered at high speed is the same in the beginning as in the end of a match. The total distance covered by a player during a soccer match is only to a limited extent a measure of the physiological demands on the player during the match. In addition to running, a player is engaged in many other energy demanding activities, i.e. tackling, jumping, accelerating and turning. A more precise evaluation of the total energy demand during a soccer match may be achieved by performing physiological measurements in connection with soccer matches.

Bujarke, Halyal and Singh\textsuperscript{41} conducted a study on relationship of achievement motivation and attribution to performance outcome in competitive athletics. The concepts on achievement motivation and attribution are well known in the field of sports psychology. The present study makes an attempt to investigate the relationship of achievement motivation and attribution to the

performance on some athletic events. The data for the study were collected on 50 men athletics who participated in all India inter university athletic meet. Questionnaires pertaining in all India inter university athletic meet. Questionnaires pertaining to the main two psychology concepts are used for the purpose. The investigation highlights the achievement motivation is a contributory factor for the performance in events like 10 mts and 800 mts run.