Chapter II

REVIEW OF RELATED LITERATURE

A review of literature relating to the studies on the differences as well as relationship of anthropometric and psychological (personality and self-concept) characteristics to various sports proficiencies as the scholar could glean from the published reports available in the library of the Lakshmibai National College of Physical Education, Gwalior and Burdwan University, Burdwan, are abstracted in this chapter to provide the background material for this study. The review of literature are divided into three sections. Studies pertaining to the anthropometric characteristics, are included in Section I. Section II covers those studies pertaining to the personality traits and the studies of the dimensions of self-concept are included in Section III.

Section I - Anthropometric Characteristics

Studies pertaining to the anthropometric characteristics of soccer players have been found reported in the professional literature.
After an intensive study on 60 soccer players, who were divided according to their field position i.e. Defenders (20), Link defenders (19) and Sweepers (21) Sharma and Shukla\(^1\) concluded that defenders were relatively taller and heavier. They possess broad shoulder, longer extremities and longer trunk. They were more endomorph and less ectomorph, followed by link-defenders and sweepers.

Carter\(^2\) rated members of the 1964 San Diego state football team and 20 university of Iowa football players according to the Heath criteria. It appears from his results that preponderance of endomorphs is a pre-requisite of success in football.

Sheldon and associates\(^3\) have made many interesting observations regarding the somatotype


of college football players in America. They have brought out the probable nature of somatotypes which are successful in the case of players playing at various field positions.

In a study of Junior High School athletes Shelly found that those athletes who were outstanding in football were largely mesomorphic or mid types, and that they were taller and heavier than the others.

Sidhu and Wadhan worked on footballers who were found to be average height with large trunks and smaller lower extremities than the controls. They also had more of lean tissue in the extremities than the latter.

---


Wiley\textsuperscript{6} compared 12 years old non-athletes and football players and found no difference between the somatotype means, but football players were taller and heavier than the non-athletes.

In their study on athletes of different sports, Singh and associates\textsuperscript{7} concluded that gymnasts were found to be the lightest, tallest and leanest than that of the swimmers and footballers. It was also concluded that sitting height and all the girth measurements except upper arm girth of gymnasts, were lower.

Three studies have adopted the design of comparing the anthropometric characteristics of good and poor performers in a given sport.


Dutler concluded that the measures and indices which were significantly larger at the .05 level for good vaulters, were tibial height, chest girth, shoulder girth, shoulder width right grip strength, leg power and speed, iliospinal height/thigh length and shoulder width plus shoulder girth and sitting height.

In his study on good and poor college women Bowlers Sabel concluded that said groups were significantly different in all anthropometric variables undertaken in this study i.e. height, weight and arm length at one and five per cent level.

In a comparative study of anthropometric measurements of upper and lower one third of a group of gymnasts, determining them as good and

---


poor gymnasts respectively, Read\textsuperscript{10} concluded that good gymnasts were significantly more ponderous than poor gymnasts and were found to possess a proportionately greater chest breadth than chest depth.

Anthropometric profiles of olympic athletes have been attempted.

In their study on 166 olympic track and field competitors and eight swimmers at the 1960 Rome Olympic, Correnti and Zauli\textsuperscript{11} observed significant differences in age, height, and weight among various events. It was also observed that within certain events body shapes or form was similar but size varied. They also observed relationships between body proportions, dimensions and performance.

In a comparative study of physical struc-


of Olympic athletes, Carter and associates\textsuperscript{12} concluded that rowers were heavier and taller, and had greater sitting height, leg length, shoulder and hip width and thigh girth than most other sportsmen. Gymnasts were lighter and shorter and had shorter arms and legs, smaller hip breadth and thigh and calf girth than other athletes. Swimmers, hockey players, fencers and cyclists were intermediate on most variables, with a few differences among themselves.

In a comparative study of physiques of Olympic athletes Tanner\textsuperscript{13} concluded that there are very striking differences in body size, shape and structure between competitors in different events. It was observed that sprinters were relatively short and very muscular men compared with middle distance runners. The 110 M. hurdlers were large, long legged


\textsuperscript{13}Tanner, The Physique of the Olympic Athlete, pp. 103-104.
sprinters. High jumpers were tall men. The throwers of discus, shot, javelin and hammer differed greatly in physique from the other athletes. The weight lifters had a physique that was some ways similar to the throwers.

A number of studies comparing anthropometric characteristics of the athletes in a particular discipline as well as in different disciplines are as follows.

In order to determine the relationship of physique and body composition to the performance in basketball Sidhu and Grewal studied 78 female basketball players, where twenty five players were of the state level, twenty of the inter-university and 33 players of district level. They concluded that state level players were tallest, heaviest with biggest trunks, longest upper extremities, broadest shoulders, followed by inter-university and district level players.

In a differential study of body build and body composition of non-dancers and high ability female dancers, Dolgener, Spasoff and John\textsuperscript{15} concluded that dancers were significantly heavier and had larger chest, ankle and elbow diameter than did the non-dancers.

Sinning and Lindberg\textsuperscript{16} after an intensive study on 14 members of college women gymnasts, concluded that women gymnasts in comparison to other college women tends to be shorter in stature, lighter in weight. Other body dimensions tend to be smaller with the exception of circumference over upper trunk and arm as well as skeletal diameters of the arm.

In the study of two males and six females members of the Canadian National Rowers Team, Fu


and Morrison found that rowers were taller and heavier than athletes of other sports.

Puhl and associates studied, players of eight men football teams of national level and players of 14 women university world games volleyball teams. They concluded that men volleyball players were taller and heavier.

In a comparative study Bharadwaj and associates concluded that presence of longer lower extremities in basketballers appears to be the effect of selection. Shorter but muscular legs in footballers are better suited to provide powerful kick to the football. Longer legs would perhaps cause earlier fatigue of the thigh muscles. Longer arms are advantageous for basketballers, wrestlers


were found lowest leg proportions.

In a comparative study of somatotype in female gymnasts and distance runners from a college population Berans concluded that gymnasts were significantly heavier and they had larger humerus and femur diameter than that of distance runners. Gymnasts were also found to be mesomorphic-ectomorph while distance runners were balanced ectomorph. Further it was concluded that top gymnasts had a balanced mesomorph somatotype while less accomplished gymnasts showed equal mesomorphy and ectomorphy.

In a comparative study Gangadharan studied selected anthropometric measurements i.e. height, chest girth, upper arm girth, thigh girth, calf girth and weight of 60 athletes of different sports


and concluded that volleyball players were significantly taller than basketball and hockey players. The groups did not differ significantly in any other anthropometric measurement undertaken in the study.

A number of studies correlating anthropometric characteristics with fitness and sports proficiency in various games and sports have been found reported in the professional literature.

Wear and Miller\textsuperscript{22} studied the relationship of physique and developmental levels, as determined by the Watzel grid, to performance in Fitness Test of junior high school boys. They found subjects who were medium in physique and normal in development to be the best performers and the subjects of heavy physique to be the poorest performers.

Jones after an intensive study of motor performance in adolescent boys concluded that height correlated very well with muscular strength and physical ability when closely associated with the variables of weight and mesomorphy.

In his investigation of factors affecting cardio-vascular efficiency using college women as subjects, Abdo came to the conclusion that excess weight had adverse effect on cardio-vascular efficiency while leg length had positive effect. Ponderal Index correlated significantly with cardio-vascular efficiency.

Garrity in a study involving college women found a general tendency for the subjects classified

---


as mesomorphic ectomorphs to perform in a more efficient manner on Physical Fitness Test. The ecto-endomorph group was consistently low in all test items.

Thorsen\textsuperscript{26} studied the motor performance of women and found height alone is related to strength measure especially if there is a fair amount of mesomorphy in structure.

In his study, comparing American Negro and Caucasian females Terrel\textsuperscript{27} came to the conclusion that the Negro females have significantly longer legs, longer arms and hands, longer feet, wider shoulder girdle and narrow pelvic girdle than Caucasians and therefore they proved better in 50-yard dash and soft ball throw for distance.


\textsuperscript{27}Ruth E. Terrel, "Relationship of Pre and Post Puberty Anthropometric Measurements and Physical Fitness Test Scores of American Negro and Caucasian Females as Measured by the AAHPER Physical Fitness Battery," Completed Research in Health, Physical Education and Recreation 10 (1968): 73.
In relationship study between soccer playing ability and selected measures of structure and physical, physiological performance in college men. Amusa concluded that height was considered a good predictor of soccer playing ability.

In a relationship study of anthropometric measurements and body composition to the performance in selected sports on twenty subject each, from the discipline of inter-collegiate football, basketball and volleyball, Manilal concluded that calf girth should significant relationship to the playing ability in football. Whereas weight, sitting height, upper arm girth and chest girth did not show significant relationship to playing ability in football.

---


Joseph conducted a study on the relationship of power, agility, flexibility and measurements of selected body segments to volleyball playing ability of college male players as subjects. He concluded that power, arm length and leg length are significantly related to playing ability.

Selder conducted a study on anthropometric cardio-vascular and motor performance characteristics of university ice hockey players. Characteristics of physique, motor and cardio-vascular fitness were reported for 14 university hockey players. Most of the players were dominant mesomorphs with low adipose measurement.

Mathew conducted a relationship study of selected anthropometric measurements to per-

---


formance on Brady Volleyball Test on university level volleyball players and found that height, weight and arm length showed significantly higher relationship to performance on Brady Volleyball Test and low relationships of leg length and upper body length with the performance on Brady Volleyball Test at .05 level of confidence.

Cureton\textsuperscript{33} reported that those who had small, short trunks and long legs and arms were relatively weak in heavy, sustained work. Some of these, however, were capable of considerable speed and endurance at light athletic work. He found typical trackmen to have a slight skeletal frame work with a relatively longer upper leg ratio and a longer leg to trunk relationship.

In their study on national level archers, Sundarajan, Pande and Salaudder\textsuperscript{34} concluded that


physical measurements i.e., height, weight, biacromial diameter and arm length were correlated with the performance of the individual archer at the varying distances. Further, it was concluded that the physical measurements correlated also with the total performance score.

Baacke\textsuperscript{35} utilized data from 87 male students of high school, to determine the relationship of selected anthropometric and physical performance measures to performance in the running hop, step and jump. He concluded that all the variables as measured in the study showed significant relationship with criterion beyond the .05 level of confidence.

In an attempt to develop scientific criteria for the selection of budding athletes based on the morphological status, Kansal\textsuperscript{36} studied 246


male students ranging the age from 11 to 17 years. He concluded that body measurements showed significant degree of relationship with individual performance tests.

In the study of predicting ability in basic modern dance skills through anthropometric and physical fitness measurements, Voll 37 studied height, weight, sitting height, tibial height and upper leg length of 24 female dancers and concluded that ability in basic motor dance skills could be predicted from selected anthropometric measurements.

In a study of 79 college male students undergone eight weeks course in gymnastics, Williams 38 found that body measurement ratios correlated significantly with gymnastic ability beyond .05 level of confidence.

---


In a relationship study, Tahamont \(^{39}\) studied, effects of somatotype on anaerobic power of 160 women ranging from 18 to 35 years of age and concluded that the somatotype components and their interactions, showed significant correlation at five percent level, but the degree of relationship were too small to be of practical value.

In a study relating to physical measurements to swimming speed in male age group swimmers, Sprague \(^{40}\) concluded that most consistent physical measures were foot length and biceps size. In each case longer feet were associated with slower times and longer biceps were associated with faster.

In a study on 64 college age males, Pease \(^{41}\) concluded that speed of hand was only significant


\(^{41}\) G. Dale Pease, "Relationship of Selected Hand and Wrist Measurements to Ability to Shoot in Basketball," Perceptual and Motor Skills 52 (December 1981): 793.
predictor of the ability to shoot in basketball.

In an intensive study of 17 female volleyball
players of Indian volleyball team, Grewal and Sidhu observed that by taking age, height, weight and ponderal index along with the Hirata's Method of "Absolute Evaluating Method of Physique" the women volleyball players in national level can be selected.

Hosler, Morrow, Jr. and Jackson studied 180 collegiate women volleyball players and concluded that women collegiate volleyball players tend to be slightly taller, heavier, broader shoulder and narrower hips.

Khayamleashi made a relationship study on 53 male subjects between hip width, leg length

---


and weight to the total movement response time. He found that obtained correlations were low and not significant except for leg length.

A few studies of anthropometric characteristics have been found reported no correlation with proficiency in sports.

In a study of 30 college men Golding\textsuperscript{45} did not find significant correlation between Anthropometric measurements and cardio-vascular step test. However, body shape and body composition inversely correlated with Harvard Step Test scores.

In a relationship study on 20 male soccer players Chakrabortty\textsuperscript{46} concluded that strength, strength, speed, endurance were significantly correlated with performance in soccer. The physique characteristics i.e., height, weight, foreleg length, 


\textsuperscript{46}Debananda Chakrabortty, "Relationship of Selected Motor Components and Physique Characteristics to Performance in Soccer," (Unpublished Master's Thesis, Jiwaji University, 1986).
thigh length, shoulder width, trunk length, ponderal index and crural index were not found significantly related to the performance in soccer.

Campbell\textsuperscript{47} conducted research on the relationship of selected measures of physical performance and structure to quality of performance in college football. He tested 40 male members of the 1978 Springfield College Football squad. They were tested for height, weight, 10, 20, 30 and 40-yard dash, vertical jump, agility, upper body strength and lateral movement. In addition, each player had a game performance score, assessed by the grading of game film selected at random. No relationship were found between height, weight and performance.

In his study on male collegiate track and field athletes, Godden\textsuperscript{48} concluded that there


were no significant relationships between the anthropometric measurements and speed in the 50-yard dash.

In a relationship study of the leg strength/body weight ratio and length of the lower limb segment to the vertical jump on 49 male college students, Wells\(^49\) concluded that none of the relationships, studied, provided to be statistically significant.

In his study of 89 high school level swimmers Albrecht\(^50\) did not find significant relationship between physique measures and swimming success.

In his investigation of human body dimensions and applied hydrodynamics and selection criteria for top swimmers, using 63 students from Academy of Physical Education of Amsterdam and nine Dutch


\(^{50}\)Robert C. Albrecht, "The Relationship Between Certain Physique and Flexibility Measures and High School Swimming Success," *Completed Research in Health, Physical Education and Recreation* 1 (1959): 56.
competitive olympic level swimmers as subjects, Clarys and associates\textsuperscript{51} came to the conclusion that shape, composition and dimensions of the body exert little or no influence on the hydrodynamic resistance in independent crawl locomotion).

\textbf{Section - II : Personality Traits}

A number of studies of Personality Traits showing significant differences between high and low fitness groups have been found reported in the professional literature.

In his study McClanney\textsuperscript{52} concluded that personality factors questionnaire revealed that the high physically fit group was more group dependent while low fitness group was more self sufficient.


Further it was concluded that low fit youngers appeared to be more suspicious and self-opinionated while the high fit youngers were more trusted and free of jealousy.

Young and Ismail\textsuperscript{53} investigated personality differences among high fit young and old, and low fit young and old groups before and after a physical fitness programme using the 16 Personality Factors Questionnaire. Results revealed that regardless of age, the high fit group was more intellectually inclined, emotionally stable, composed self-confident, outgoing, relaxed, less ambitious and unconventional than the low fit group.

Datta\textsuperscript{54} compared the psychological characteristics and socio-economic strata in high and low fitness groups of high school boys of grade IX and X. He found high fitness group was significantly more warm-hearted, out-going and easy-going, asser-

\textsuperscript{53}Young and Ismail, \textit{Research Quarterly} 47 (October 1976): 513-519.

\textsuperscript{54}Ashwani Kumar Datta, "Comparison of Psychological Characteristics and Socio-economic Strata in High and Low Fitness Groups," (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).
tive, aggressive, competitive, stub-born and self-assured, placid, secured, serene than that of the low fitness group. The low fitness group was significantly more reserved, detached, critical, aloof and stiff, affected by feelings, emotionally less stable, easily upset and changeable, obedient, mild, easily led, docile and accommodating, shy, timid and threat-sensitive and tense-driven and overwrought than the high fitness group.

In a comparative study of psychological profiles of professional physical education male students belonging to high and low fitness group, Bhattacharjee\textsuperscript{55} concluded that there were significant differences between the high and low fitness subjects in personality factors. The high fitness group was lean towards Factors A (out-going), C (Emotionally stable), E (Assertive), H (Ventre-some), L (Suspicious), N (Shrewd), O (Apprehensive), Q\textsubscript{1} (Experimenting), Q\textsubscript{2} (Self-sufficient), where

low fitness group was lean towards the Factors B (Less intelligent), F (Sober), G (Expedient), I (Tough-minded), Q₃ (Undisciplined Self-conflict), Q₄ (Relaxed) in Personality Profiles. The high fitness group had better physical self-concept than that of low fitness group. The high and low fitness groups did not differ significantly in other self-concept dimensions that are social, temperamental, educational, moral and intellectual although the total self-concept of high fitness group was significantly higher than that of low fitness group.

Harris⁵⁶ compared high and low fitness college women in psychological traits and found that there is a tendency for the fit individual to appear more stable in certain psychological traits and to appear less anxious in others.

Elsayed⁵⁷ studied the effect of long term

---


Physical Fitness Programme on personality variables in adult men by using Cattell's 16 Personality Factor Questionnaire and concluded that there were personality differences between high and low fitness groups.

Richardson\(^58\) conducted the study of the relationship in college women of high and low motor ability to personality, aptitude and scholastic achievement. He concluded that highly skilled student surpassed the low skilled in status, sociability, tolerance and aptitude scores. They participated more in sports and associated with people who were more sports minded.

Studies of personality traits showing significant differences between high and low skilled sportsmen have been found reported in the professional literature.

\(^{58}\) Reggy A. Richardson, "The Relationship in College Women of High and Low Motor Ability to Personality, Aptitude and Scholastic Achievement," Completed Research in Health, Physical Education and Recreation 8 (1966) : 74.
In a comparative study of personality profiles of highly and poorly skilled male and female badminton players Gill concluded that highly skilled male badminton players were more suspicious, neither tough nor tender minded, as compared to the poorly skilled badminton players, who were less intelligent, tough minded and neither trusting nor suspicious.

Singh conducted a comparative study of psychological characteristics and socio-economic status of badminton players of high and low levels of proficiency. He found high level badminton players were emotionally stable, more conservative, whereas low level players were unstable and suffers from neurotic break down under stress and pressure.


Studies of personality traits showing significant differences between fit and unfit, and athletes and non-athletes, have been found reported in the literature.

In a comparative study of physically fit and unfit junior high schools girls, Dorothy concluded that physically fit students had better personality than physically unfit students.

O'connor and Webb compared the personality traits of four groups of their collegiate female athletic competitors and one group of non-competitive students by administering the Cattell's Personality Factors Questionnaire and found significant differences on four personality factors of intelligence, radicalism, self-sufficiency and control.

---


Personality. Profiles of national athletes showing significant differences, have been found reported in the literature.

Bhusan et al.\(^{63}\) found differences in personality traits of high and low achieving badminton players. He administered 16 Personality Factors Questionnaire to 10 high achieving players who represented India at the International level and low achieving players who never achieved any distinction in their respective game. The high achievers scored significantly higher than the low achievers on dominance and surgency.

Studies of personality traits showing no significant differences, have been found reported in the professional literature.

Parsons\(^{64}\) concluded that there appeared to be

---


\(^{64}\)David Roy Parsons, "Personality Traits of National Representative Swimmers - Canada 1962," *Completed Research in Health, Physical Education and Recreation* 6 (1964):
no difference in personality between champion swimmers selected to represent Canada in 1962 and champion swimmers who missed selection.

Hasrani\textsuperscript{65} studied fifty-four female basketball players of university level and 51 female basketball players of national level and found none of the psychological variables showed significant difference in basketball performance.

McDonald\textsuperscript{66} studied personality characteristic of different categories of high school female tennis players using Cattell's Personality Factors Questionnaire. He found that successful players did not differ significantly from less successful players in any personality trait.

Gooch\textsuperscript{67} conducted a study to investigate


\textsuperscript{66}Kayla McDonald, "A Comparison of the Personality Traits of Participants and Non-participants in High School Inter-scholastic Tennis Programme for Girls," Dissertation Abstracts International 31 (February 1971): 3935-A.

\textsuperscript{67}Foster Euie Gooch, "Personality Traits of Highly Skilled Annkethall and Softball Women Athletes," Completed Research in Health, Physical Education and Recreation 15 (1973): 64.
the personality traits of highly skilled basketball and softball women athletes. He concluded that no set of personality factors differentiated between basketball and softball sport environment groups.

A number of studies correlating personality traits with sports and fitness proficiency.

In a relationship study of personality traits and physical fitness of high and low skilled soccer players, Sahu⁶⁸ concluded that high skilled soccer players showed significant relationship with traits B (less intelligent) and L (trusting), whereas low skilled soccer players were reserved.

Meiers⁶⁹ administered the Cattle 16 P.F. to 110 varsity athletes of different sports. He concluded that reserve athletes were more outgoing and warm-hearted than string athletes.

---

⁶⁸ Suprakash Sahu, "Relationship of Personality Traits and Physical Fitness in High and Low Skilled Soccer Players," (Unpublished Master's Thesis, Jiwaji University, 1984).

Tillman administered A-5 Reaction study of Allport, and Cattell's 16 Personality Factors Questionnaire and found that the upper physical fitness group had a significantly higher ascendance rating on the A-5 Reaction Study Test than did the lower group. The upper physical fitness group appeared more surgent (F), social dependence (Q2) and less tense (Q4) than the lower physical fitness group in Cattell's 16 Personality Factors Questionnaire.

Merriman concluded that motor ability is related to personality traits. The upper motor ability group scored significantly higher than the lower motor ability group on the measures of intellectual and interest modes.

Gottesman established significant correlation

70 Tillman, Research Quarterly 36 (December 1965): 488.


between Physical Tests and Factor I (Premia), M (Autia), N (Shrewdness) and Q₁ (Radicalism).

The Physical Tests showed the most and best correlation with personality factors, were 160-yard run, shuttle run, PFI, pull-ups, jump and reach, roger arm strength and push-ups on the parallel bars.

Garvin tested personality by using Cattell's Personality Factors Questionnaire and Physical Fitness using Fleishman's Basic Fitness Test and concluded that there was a strong relationship between personality and physical fitness.

Johnson studied the relationship that existed between physical skill as measured and the general intelligence of the college students. His results indicated that there was no significant relationship between physical skill and mental


power or general intelligence.

Studies of personality traits are found, reported no correlation with the proficiency in sports.

In a relationship study of motor ability and athletic participation with certain personality measures, Keogh\textsuperscript{75} concluded that no significant relationship was found between either motor ability or athletic participation and 18 separate scales of the CPI.

In a study of 246 male who were require to take physical education at the State University of Iowa at the beginning of the school year, Weber\textsuperscript{76} concluded that there was no significant relationship in between the physical fitness scores and the nine measures of personality in the Minnesota Multiphasic personality inventory. He concluded that


physically fit subjects had no stable traits of personality than do physically unfit. He also found that there was no significant relationship between physical fitness scores and personality scores. The co-efficient of correlation was negative -.04.

Section - III : Self-concept Dimensions

Studies of self-concept dimensions showing significant differences have been found reported in the professional literature.

In an experimental study, Keffer\(^{77}\) administered Tennesse self-concept scale to measure self-concept, and Cooper's test to measure cardio-vascular fitness of adolescent boys. Results showed improvement in the self-concept and cardio-vascular fitness after participation in running programmes. The high fitness group showed more positive self-concept initially than the low fitness group.

\(^{77}\)Keffer, *Completed Research in Health, Physical Education and Recreation*, p. 181.
Johnson carried out the study to gain an understanding of the inter-relationship between a student's level of physical fitness. A greater relationship between physical fitness and self-concept was found among white than that of the negro high school students.

Vincent compared the self-concept of college women athletes and physical education majors. The Tennessee self-concept scale was administered to college women (N = 460) athletes and non-athletes, physical education majors and general college students and participants and non-participants in high school competitive athletic programmes to determine whether differences existed among these groups in self-concept scores. Women physical education majors and participants in high school competitive athletic programme were found to have significant higher self-concept scores than all other.


groups, non-physical education major, athletes, non-athletes, and non high school participants.

Bash in his study of the effect of varsity college basketball participation on the self-concept of players on selected items, concluded that members of winning teams showed a more positive change in the self-concept than that of losing teams.

In her study on Assessment of Self-concept of high and low fitness groups of physical education students, Choubey concluded that high fitness group had significantly higher self-concept regarding the physique, temperament qualities, social attitudes, educational status and intellectual abilities.

In a study on high school basketball players, Koenig found that personality difference existed

---

80 Bash, Completed Research in Health, Physical Education and Recreation, p.45.


between athletes and non-athletes with respect to sociability, group orientation and emotional control. Both varsity team members and intramural players had higher self concept than non-participants.

On the basis of performance of three tests, the medicine ball put, the standing broad jump, and zig-zag run, Black\(^3\) categorised athlete and non-participants as high and low in physical skill. He found significant difference between those of high and low physical skill on physical self-concept, moral, ethical self-concept and family concept. In each of these cases individuals of high physical skill had the higher self-concept as measured by Tennessee Self-concept Scale.

Studies of self-concept dimensions, not showing significant differences have been found reported in the literature.

\(^3\)Black, Completed Research in Health, Physical Education and Recreation, p.220.
Jette\textsuperscript{84} studied the effect of modern dance and music on body image and self-concept in college women. 100 female volunteers from the university of Muin were randomly divided into classes in one of the 6 treatment groups. Groups 1 and 4 participated in modern dances with musical accompaniment. Groups 2 and 5 participated in the music with rhythmical activities. Groups 3 and 6 were the control. The 4 experimental groups met 1 hour/day, 3 days/week, for seven weeks. After the treatment period, no significant difference in the body image or self-concept was found between classes or groups.

Hilmi and Marrison\textsuperscript{85} has studied on athletes (N= 100), representing men and women from both high school and college, were compared to 100 non-athletes in their self-concept and self-actualizing traits. Female high school athletes and male college athletes did not differ significantly from their


counterparts.

A number of studies correlating self-concept dimensions with fitness and sports proficiency, have been found reported in the professional literature.

Clower, 86 administered AAHPER Youth Physical Fitness Test Battery, Doudlah's Q-Sort for movement concept and Tennessee Self-concept Scale on College women to investigate the inter-relationship and the effects of an eight week activities curriculum on self-concept movement and physical fitness. The results of the study indicated that there was a moderate positive correlation for movement concept and self-esteem for low fitness subjects, movement concept related to several self-concept sub-scores for the low fitness subjects, but high fitness subjects exhibited a correlation only with the physical self-item.

On the basis of performance of Lincoln Oseretsky Motor Development Scale and Eight selected gross motor tasks, Torbert\textsuperscript{87} ranked the boys within the top and bottom 27 per cent to investigate the relationship between motor proficiency and self-concept. He found that the self-concept measured by the 'Ppere's Harris Children's Self-concept Scale,' the way I feel about myself, was more related to gross motor proficiency than to fine manipulatory motor abilities and that self-concept appears to be related to power, speed, strength and endurance.

Young\textsuperscript{88} administered the AAHPER Youth Fitness Test, Tennessee Self-concept Scale and Questionnaire concerning academic achievement, estimation and perception to grade seventh and ninth boys and girls in his study on relationship amongst achievement, physical fitness and self-concept: Significant

\textsuperscript{87}Marianne Rothnas Torbert, "Relationship Between Motor Proficiency and Self-concept of Sixth Grade Boys," Dissertation Abstracts International \textbf{32} (June 1972) : 6802-A.

correlation was reported between various sub-scale scores of Tennessee Self-concept Scale and dependent variables. A significant relationship between self-concept and physical fitness was indicated for seventh grade boys (r = .41).

Breedlove\textsuperscript{89} has determined predicted performance of women collegiate gymnasts based on selected personality traits and professed self-concept using the Jackson's Personality Research Form and the Tennessee Self-concept Scale. Results indicated significant correlation between gymnastic ability and self-concept measures of physical self, moral, and ethical self. (Total variability and column total variability.

To investigate relationship between motor performance in selected motor tasks and self-concept, Sorensen\textsuperscript{90} used Martinek Zaictikousky Self-concept


\textsuperscript{90}Carol A. Sorensen, "The Relationship Between Motor Performance in Selected Motor Tasks and Self-concept of First and Sixth Grade Children," Completed Research in Health, Physical Education and Recreation 21 (1979) : 30.
Scale and the jump and reach test, the wall pass test and zig-zag run test for motor performance and found significant correlation between self-concept and performance on all three motor tasks for the sixth grade girls.

White concluded that there might be a significant relationship between various selected physical measures classified as strength, flexibility and cardio-vascular endurance and certain self-concept sub-scales.

Studies of self-concept dimension showing no correlation between self-concept and sports proficiency have been found reported in the professional literature.

Martinek, Cheffers and Zaickhousyky studied the effect of organised physical activity on the development of specific motor skill and self-concept.

---


They concluded non-significant correlation between motor skill and self-concept.

Mason\textsuperscript{93} indicated that there was no significant relationship between the self-concept and fitness performances of white women college students.

Parker\textsuperscript{94} conducted a study in which the non-physical education major students were categorized according to low, middle and high motor ability groups, and the major group was classified as a separate high motor ability group. The 71 college women showed no relationship between motor ability and self-concept as measured by "who Am I" twenty statements test.

Richard, Donald and Ray\textsuperscript{95} reported that there

\textsuperscript{93}Willa Faye Mason, "An Investigation of the Relationship Between the Self-concept and Physical Fitness of White American, Indian and Black Women College Students," Dissertation Abstracts International 40 (September 1979): 1346-A.

\textsuperscript{94}Nancy Kay Parker, "The Relationship Between Motor Ability and Self-concept of Women Non-physical Education Major Students and Physical Education Major Students," Completed Research in Health, Physical Education and Recreation 4 (1962): 84.

was no significant relationship between physical ability and self-concept of junior high school boys.

Floyd\(^{96}\) reported absence of significant (.05 level) linear relationship between physical performance and self-concept. The results of this study also indicated that there was no significant relationship between physical performance and self-description, physical performance and self-acceptance, physical performance and ideal concept, physical performance and discrepancy score.

Thus we see very few anthropometric and psychological studies of soccer players reported in the literature, bringing about the traits that have potential to reach higher level of fitness and skills proficiency in soccer.