Chapter IV

ANALYSIS OF DATA AND RESULTS OF THE STUDY

The analysis of data of anthropometric characteristics i.e. standing height, leg length, foot length, foreleg length, thigh length, calf girth, thigh girth, hip width and shoulder width and psychological characteristics i.e. personality trait factors, and dimensions of self-concept were examined by applying Mean Difference Method ('t' ratio) to find out the significant differences, if any between high and low fit soccer players. The raw data are given in the Appendices B, C, D, E, F, and G.

Findings

To ensure that the subjects belonging to two groups, were distinctly different in their physical fitness, 't' ratio was computed for the top sixty and the bottom sixty soccer players, selected for this study. The 't' ratio obtained was 30.183 which was found to be highly significant at .05 level of confidence. Which indicate that the subjects belonging to two groups differed significantly
in their fitness level and hence was treated as subjects belonging to high and low fitness groups. Thus it was established that valid analysis of significance of group mean in the anthropometric and psychological (personality and self-concept) characteristics of two groups namely high fit and low fit soccer players might be made. The data pertaining to the significance of difference of means of physical fitness scores of high and low fit soccer players have been represented in Table 5.

<table>
<thead>
<tr>
<th>Mean ± S.D.</th>
<th>Mean</th>
<th>SE</th>
<th>'t' ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diff.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Fit Soccer Players</td>
<td>Low fit Soccer Players</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 435.807±46.09   | 167.721±51.082 | 268.086 | 8.882 | 30.183* |

*Significant at .05 level of confidence. 't' value required to be significant at .05 level of confidence with 118-degree of freedom was 1.98.
Anthropometric Characteristics

The statistical analysis of data on anthropometric characteristics of high and low fit soccer players was done using 't' test. The data pertaining to this have been represented in Table 6. The same is also graphically represented in Figure 1.

**TABLE 6**

**SIGNIFICANCE OF DIFFERENCES OF MEANS OF ANTHROPOMETRIC CHARACTERISTICS OF HIGH AND LOW FIT SOCCER PLAYERS**

<table>
<thead>
<tr>
<th>Anthropometric Characteristics</th>
<th>Mean±S.D.</th>
<th>Mean Diff.</th>
<th>SE</th>
<th>'t' ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High fit</td>
<td>Low fit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standing Height</td>
<td>168.066±4.011</td>
<td>164.916±4.488</td>
<td>3.150</td>
<td>.7771</td>
</tr>
<tr>
<td>Leg Length</td>
<td>89.500±3.442</td>
<td>86.716±3.245</td>
<td>2.784</td>
<td>.6107</td>
</tr>
<tr>
<td>Foot Length</td>
<td>24.800±1.262</td>
<td>24.000±1.224</td>
<td>0.800</td>
<td>.2269</td>
</tr>
<tr>
<td>Foreleg Length</td>
<td>50.700±3.216</td>
<td>47.930±3.410</td>
<td>2.770</td>
<td>.6052</td>
</tr>
<tr>
<td>Thigh Length</td>
<td>38.950±4.957</td>
<td>38.780±4.243</td>
<td>0.170</td>
<td>.8424</td>
</tr>
<tr>
<td>Calf Girth</td>
<td>37.666±2.392</td>
<td>34.916±3.179</td>
<td>2.750</td>
<td>.5136</td>
</tr>
<tr>
<td>Thigh Girth</td>
<td>50.400±2.829</td>
<td>47.830±2.544</td>
<td>2.570</td>
<td>.4912</td>
</tr>
<tr>
<td>Hip Width</td>
<td>25.030±2.073</td>
<td>24.283±1.342</td>
<td>0.747</td>
<td>.3188</td>
</tr>
<tr>
<td>Shoulder Width</td>
<td>34.966±2.183</td>
<td>33.283±2.001</td>
<td>1.683</td>
<td>.3823</td>
</tr>
</tbody>
</table>

*Significant at .05 level of Confidence. 't' value required to be significant at .05 level of confidence with 118-degree of freedom was 1.98.
Fig. 1. Anthropometric Characteristics Differentiating the High and Low Fit Soccer Players.
From Table 6 it is clear that except thigh length, all other anthropometric characteristics undertaken for this study i.e., standing height, (t = 4.053), leg length (t=4.558), foot length (t = 3.525) foreleg length (t = 4.576), calf girth (t = 5.354), thigh girth (t = 5.232), hip width (t = 2.343), and shoulder width (t = 4.402) showed significant difference between high and low fit soccer players, whereas in the case of thigh length (t = 0.201) significant difference was not observed between these two groups as the 't' value required to be significant at .05 level of confidence with 118-degree of freedom was 1.98.

Discussion of Findings

Table 6 revealed that the mean scores of high and low fit soccer players in calf and thigh girth were higher than that of low fit soccer players.

High proficiency in soccer demands sound muscular energy for attaining top functional ability in respect to speed, strength and endurance and explosive power, to be transmitted mechanically
to perform various types of kicks and movements in soccer effectively.\footnote{Csanadi, *Soccer* 3rd ed., p. 508.}


Further, it is known that greater the mass, greater will be the momentum and thus more pronounced the effect that it produces in it's path.
on the other bodies. 

Greater muscle mass of calf and thigh girth contribute to the total body mass which enhance the momentum of the body segment and thus the additional force is transmitted to the moving object.

It may be assumed that the high fit soccer players have gone through the prolonged and vigorous training and have improved their thigh and calf girth and thus they have scored higher in calf girth and thigh girth than that of the low fit soccer players.

This study is in consonance with the findings of Piechaczek and Laska-Mierzejewska and Manilal.

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Foreleg length and leg length come next in importance to calf and thigh girth which also have distinguished high and low fit soccer players significantly. The importance of foreleg length becomes apparent when the players make use of double leverage at the hip, as well as, at the knee for effective kicking, and a longer foreleg will mean a longer pendulum action. In such case of biomechanical advantage the longer foreleg lever rotates about a fulcrum at the knee joint as a result of the force exerted by the muscles that extend the knee and against the resistance of the force exerted by the ball on the foot. Thus the mechanical advantage of lever is effectively utilized to increase the speed at which the muscular force is capable of moving a body.10,11.


Further, the importance of greater leg length of high fit soccer players may lie in providing larger space length in running, as well as providing a longer pendulum in kicking action with better conversion of angular motion of the leg to the linear motion imparted to the ball.\textsuperscript{12}

The findings of this study are in consonance with the findings of Sharma and Shukla\textsuperscript{13}, Dutler\textsuperscript{14} and Votto.\textsuperscript{15}

Next in importance are shoulder width, standing height, foot length and hip width.

Larger the base, greater will be the range in which centre of gravity can be moved.\textsuperscript{16, 17}


\textsuperscript{13} Sharma and Shukla, Abstracts: International Congress of Sports Sciences, p. 33.

\textsuperscript{14} Dutler, Completed Research in Health, Physical Education and Recreation, p. 50.

\textsuperscript{15} Votto, Completed Research in Health, Physical Education and Recreation, p. 291.

\textsuperscript{16} Bunn, Scientific Principles of Coaching, p. 16.

\textsuperscript{17} Cooper and Glassow, Kinesiology 3rd ed., p. 180.
Thus it may be attributed to the fact that the larger hip width provides greater stability and latitude for movement of the kicking through a broad range of target area, and with better accuracy. Whereas the greater shoulder width may provide a broader range of angular direction in horizontal plane to which the ball can be kicked with better accuracy as needed in the game situations, as the swing of the hand is also of considerable assistance in running and kicking.

These findings are in consonance with the findings of Dutler\textsuperscript{18} and Sidhu and Grewal.\textsuperscript{19}

The importance of standing height may lie in providing larger space length in playing the ball with forehead and with the chest in the air.

This finding is in consonance with the findings of

\textsuperscript{18}Dutler, \textit{Completed Research in Health, Physical Education and Recreation}, p. 291.

\textsuperscript{19}Sidhu and Grewal, \textit{Abstracts: International Congress of Sports Sciences}, p. 34.
Piechaczek and Laska-Mierzejewska, Amusa and Tattersfield.

It is rational to imagine that larger foot length will provide greater surface area for controlling the ball as well as increase the radius of circular motion generated by thigh muscles and thus imparting higher linear velocity to the ball kicked.

Moreover, the toes, especially the large and powerful big toes are largely responsible for propulsion. They provide the push-off at the end of the step. Their use in locomotion is directly proportional to the vigor and speed of the run and other movements.

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21 Amusa, Completed Research in Health, Physical Education and Recreation, p. 201.

22 Tattersfield, Completed Research in Health, Physical Education and Recreation, p. 81.


This finding is in consonance with the finding of Piechaczek and Laska-Mierzejewska.25

It is the absolute anthropometric parameters of standing height, leg length, foreleg length, hip width and shoulder width that add to the potential of creating momentum, facilitating longer radius of rotation in circular motion, thus creating higher linear velocity at the ends of the radius, and also facilitating wider horizontal manoeuvrability in movement and shooting the ball at the target as required in the game situation.26,27

Only the thigh length out of nine anthropometric characteristics undertaken for this study did not show significant difference between high and low fit soccer players. This may be due to the reason

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that thigh length is not a contributory factor for developing proficiency in soccer.

This study is in consonance with the findings of Wells and Chakrabortty.

As the differences of mean scores of high and low fit soccer players were found to be statistically significant at .05 level of confidence with 118 degree of freedom in all anthropometric characteristics undertaken for this study except in thigh length, therefore, the hypotheses stated earlier in relation to the anthropometric characteristics namely standing height, leg length, foot-length, foreleg length, calf girth, thigh girth, hip width and shoulder width is rejected, whereas the hypothesis stated earlier in case of thigh length is accepted.

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28 Wells, Completed Research in Health, Physical Education and Recreation, p. 78.

Psychological Characteristics

**Personality Factors:**

The statistical analysis of personality factors of high and low fit soccer players were made using 't' test. The data pertaining to these have been presented in Table 7. Personality Profiles of high and low fit soccer players are presented in Figure 2.

**TABLE 7:**

**SIGNIFICANCE OF DIFFERENCES OF MEANS OF PERSONALITY FACTORS OF HIGH AND LOW FIT SOCCER PLAYERS**

<table>
<thead>
<tr>
<th>Personality Factors</th>
<th>Mean ± S.D. Players</th>
<th>Mean ± S.D. Low Fit Soccer Players</th>
<th>Mean Diff.</th>
<th>S.E.</th>
<th>'t' ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5.850±1.570</td>
<td>4.616±1.379</td>
<td>1.234</td>
<td>.2698</td>
<td>4.573*</td>
</tr>
<tr>
<td>B</td>
<td>5.530±2.124</td>
<td>3.730±1.922</td>
<td>1.800</td>
<td>.3690</td>
<td>4.867*</td>
</tr>
<tr>
<td>C</td>
<td>4.766±1.174</td>
<td>3.883±1.330</td>
<td>0.883</td>
<td>.2290</td>
<td>3.855*</td>
</tr>
<tr>
<td>D</td>
<td>5.200±1.842</td>
<td>4.500±1.258</td>
<td>0.700</td>
<td>.2880</td>
<td>2.430*</td>
</tr>
<tr>
<td>E</td>
<td>3.680±1.176</td>
<td>3.716±1.379</td>
<td>0.036</td>
<td>.2340</td>
<td>0.153</td>
</tr>
<tr>
<td>F</td>
<td>6.150±1.288</td>
<td>5.830±0.859</td>
<td>0.320</td>
<td>.1998</td>
<td>1.601</td>
</tr>
<tr>
<td>G</td>
<td>5.230±1.116</td>
<td>5.050±1.086</td>
<td>0.180</td>
<td>.2010</td>
<td>0.895</td>
</tr>
<tr>
<td>H</td>
<td>4.500±1.360</td>
<td>6.000±2.000</td>
<td>1.500</td>
<td>.3122</td>
<td>4.804*</td>
</tr>
<tr>
<td>I</td>
<td>5.816±1.617</td>
<td>6.166±2.009</td>
<td>0.350</td>
<td>.3329</td>
<td>1.051</td>
</tr>
<tr>
<td>J</td>
<td>4.266±1.671</td>
<td>5.083±1.625</td>
<td>0.817</td>
<td>.3009</td>
<td>2.715*</td>
</tr>
<tr>
<td>K</td>
<td>6.716±1.898</td>
<td>6.066±1.195</td>
<td>0.650</td>
<td>.2895</td>
<td>2.245*</td>
</tr>
<tr>
<td>L</td>
<td>6.030±1.471</td>
<td>6.900±1.690</td>
<td>0.870</td>
<td>.2892</td>
<td>3.008*</td>
</tr>
<tr>
<td>M</td>
<td>5.730±1.651</td>
<td>5.366±1.722</td>
<td>0.364</td>
<td>.3080</td>
<td>1.181</td>
</tr>
<tr>
<td>N</td>
<td>5.183±1.230</td>
<td>4.766±1.686</td>
<td>0.417</td>
<td>.2694</td>
<td>1.547</td>
</tr>
<tr>
<td>O</td>
<td>5.916±1.908</td>
<td>4.630±1.277</td>
<td>1.286</td>
<td>.2964</td>
<td>4.338*</td>
</tr>
<tr>
<td>P</td>
<td>4.666±1.192</td>
<td>5.050±1.575</td>
<td>0.384</td>
<td>.2550</td>
<td>1.505</td>
</tr>
</tbody>
</table>

*Significant at .05 level of confidence. 't' value required to be significant at .05 level of confidence with 118 degrees of freedom was 1.98.
From Table 7 it is clear that 9 out of 16 Personality Trait Factors namely, A (Reserved V/S Out-going, t = 4.573); B (Less Intelligent V/S More Intelligent, t = 4.867); C (Affected by feeling V/S Emotionally Stable, t = 3.855); E (Humble V/S Assertive, t = 2.430); I (Tough Minded V/S Tender-minded, t = 4.804); M (Practical V/S Imaginative, t = 2.715); N (Forthright V/S Shrewd, t = 2.245); O (Placid V/S Apprehensive, t = 3.008); and $Q_3$ (Undisciplined Self-conflicted V/S High self-concept control, t = 4.338) showed significant differences between the high and low fit soccer players as required t value was 1.98 to be significant at .05 level of confidence with 118-degree of freedom. Whereas in the case of remaining 7 other Personality Trait Factors i.e. F (Desurgency V/S Surgency, t = 0.153); G (Weaker Superego strength V/S Stronger Superego Strength t = 1.601); H (Shy V/S Venturesome, t = 0.895); L (Trusting V/S Suspicious, t = 1.051); $Q_4$ (Conservative V/S Experimenting, t = 1.181); $Q_2$ (Group dependent V/S Self-sufficient, t = 1.547); and $Q_4$ (Low ergic tension V/S High ergic tension, t = 1.505) significant differences between high and low fit soccer players
were not observed, as the t value required to be significant at .05 level of confidence with 118 degree of freedom was 1.98.

Discussion of Findings:

Significant differences between the high and low fit soccer players was noticed in 9 out of 16 personality trait factors namely, A, B, C, E, I, M, N, O and O₃ at .05 level of confidence.

Factor - A (Reserved V/S Out-going): The continuum of this trait is extended from reserved, detached, critical and cool at the lower end to out-going warm-hearted, easy-going and participating at the higher end. The mean ten scores of high and low fit soccer players were 5.85 and 4.616 respectively, indicating that high fit soccer players fell at average level whereas, low fit soccer players fell towards the lower end on the profile of this factor. Hence, the low fit soccer players tend to be reserved, detached, critical and cool as compared to the high fit soccer players who tend to be neither reserved, detached, critical and cool, nor out-going, warm-hearted, easy going.
and participating.

The mean difference (t = 4.573) between high and low fit soccer players was found to be significant at .05 level of confidence.

Games and sports are such attracting arena which motivate an individual with high intensity to come out from the home to the play field with teammates and unfold his ownness. Being the most popular game in the world, soccer attracts almost entire population into its arena. 30

Because of high degree of active and prolonged participation in sports, sports proficiency gradually enhance and thus the high proficient athletes are well recognised as success-oriented athletes, who are highly admired and heartily accepted by others. Thus, an individual gradually comes out from the zone of reserved mindedness and chara-

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characterized as outgoing. While the low proficient athlete being the failure-oriented sportsmen hide themselves, thus, lack in fitness and skill proficiency and gradually become reserve minded.

Probably because of such reasons significant difference was noticed between high and low fit soccer players in this personality trait factor.

The high fit soccer players fell at the average level of the profile, which may be attributed to the fact, 'that as they belonged to one or other educational institution, so the study factors might have played a prominent role in restricting their very frequent and most regular involvement with the game. Thus their outgoingness was also somewhat restricted and fell at the average level of the profile.


This study is in consonance with the findings of Bhattacharjee,34 Datta35 and Young and Ismail.36

**Factor B**: (Less Intelligent V/S More Intelligent): The continuum of this factor is extended from less intelligent, concrete thinking and lower scholastic mental capacity at lower end, to, more intelligent, abstract-thinking, bright and higher scholastic mental capacity at the higher end. The mean sten scores of high and low fit soccer players were 5.53 and 3.73 respectively, indicating that high fit soccer players fell at the average level whereas the low fit soccer players fell at the lower end on the profile of this factor. Hence low fit soccer players tend to be less intelligent, concrete thinkers and lower in scholastic mental capacity as compared to the high fit soccer players.

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35 Datta, (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).

who tend to be neither less nor more intelligent. The mean difference (t = 4.867) was found to be statistically significant between the high and low fit soccer players at .05 level of confidence.

The person's physical condition affects the use he makes of his intelligence. Furthermore, a particular level of I.Q. is necessary to achieve superiority in sports endeavor. People with low intelligence experience difficulty in acquiring skills. The sense of perception, reasoning and problem solving ability, creativeness and the ability to understand the situation sharply, consider as the contributory factors of intelligence. All these factors are very essential to play soccer effectively. Furthermore, the game of soccer involves accurate judgment of time, space of the ball, opponents, team mates and self. Timely

37 Hurlock, Personality Development, p. 179.

38 Cratty, Learning About Human Behaviour Through Active Games, p. 1.

39 Hurlock, Personality Development, pp. 176-186.
anticipation, high degree of concentration and quick reaction to the situation are also considered as the contributory factors for successful performance in soccer. 40,41

Because of frequent and prolonged involvement in such complex activities probably high fit soccer players developed higher intelligence and showed significant difference than that of low fit soccer players in this trait factor.

High fit soccer players fell at the average level of the profile which may be attributed to the fact that they were belonging to average intelligence level.

This study is in consonance with the findings of Merriman,42 Gill,43 Young and Ismail.44

41Uday Shankar, Development of Personality (Delhi: Atma Ram and Sons, 1953), p. 74.
42Merriman, Research Quarterly, pp. 163-173.
43Gill (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).
44Young and Ismail, Research Quarterly, pp. 513-519.
**Factor C**: (Lower Ego Strength V/S Higher Ego Strength): The continuum of this factor is extended, from affected by feelings, emotionally less stable, easily upset and lower ego strength at the lower end to emotionally stable, faces reality, calm and higher ego strength at the higher end. The mean ten scores of high and low fit soccer players were 4.766 and 3.883 respectively, indicating that low fit soccer players fell towards the lower end on the profile of this factor. Hence low fit soccer players tend to be affected by feelings, emotionally less stable, easily upset and lower ego strength as compared to the high fit soccer players who tend to be neither affected by feelings, nor more emotionally stable. The mean difference (t = 3.855) was found to be statistically significant at .05 level of confidence.

Emotional stability, ability to face reality, calmness and maturity are considered as the contributory factors to higher ego strength. 45

45 Alderman, *Psychological Behaviour*, pp. 144-145
A fit sportsman is expected to be more equipped with these qualities, as these are essentials in the sports performance. The laws and orders are strictly followed in the sports arena, which warn the upsetted individual to keep up their emotional control. Thus, the success-oriented athletes are found to have high emotional control, soccer is no exception to it. Being a body contacting team game, it demand, higher level of emotional stability. In it's coaching process, usually special care is taken on this concept, so that the players are not easily affected by their feelings and may keep up their calmness and emotional balance throughout the game. The lacuna in emotional stability sometimes pull down, even the outstanding players from the ladder of success.

Probably because of the prolonged involvement with the game the high fit soccer players have developed their ability to adjust with stressful

46 Hurlock, Personality Development, p. 203.
and emotional situations than that of the low fit soccer players and thus the significant difference was found in this factor between these two groups.

Further, the study factor might have allowed the high fit soccer players to involve with the game moderately and thus they assumed moderate level of emotional stability and fell at the average level on the profile.

This study is in consonance with the findings of Singh, Young and Ismail, and Harris.

**Factor E (Submissiveness VS Dominance):** The continuum of this trait is extended from humble, mild, accommodating, conforming and submissiveness at the lower end to assertive, independent, aggressive, stubborn and dominance at the higher end. The mean sten scores of high and low fit soccer

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48 Young and Ismail, Research Quarterly, pp. 513-519.

49 Harris, Completed Research in Health, Physical Education and Recreation, p. 21.
players were 5.2 and 4.5 respectively. It was evident that high fit soccer players fell at the average level, whereas, low fit soccer players fell towards the lower end on the profile of this factor. Hence, the low fit soccer players tend to be humble, mild, accommodating and conforming as compared to the high fit soccer players who tend to be neither humble, mild, accommodating, conforming, nor assertive, independent, aggressive and stubborn. The difference between the mean stern scores (t = 2.430) was found to be statistically significant at .05 level of confidence.

Sports are characterized as domination of some, over others - team-mates and friends. \(^{50}\) Domination is strongly linked in people to a need for power which is characterized by the desire to influence or control other people and one's environment. \(^{51}\) Superior persons usually dominate

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\(^{51}\) Alderman, *Psychological Behaviour*, p. 140.
the inferiors. 52

Fit people usually like to test their ability i.e. strength, speed etc., with their peers. They seldom wait for others to challenge them. On the other hand, they launch attack to prove their worth. It is no exception for high fit soccer players. They would rather attack, than defending their goal. More over, the soccer players, attaining high fitness proficiency, enjoy the mastery over others in technical and tactical aspects, through beating them easily in open bout. Thus, the aggressiveness and sense of dominance gradually enhance, because of prolonged involvement with the game.

Probably the high fit soccer players were more intensely involved with the game for prolonged period of time than that of low fit soccer players and scored significantly higher in dominance and aggressive factor.

52 Hurlock, Personality Development, p. 186.
Further, because of study factor and moderate involvement with the game the high fit soccer players were moderately dominant and aggressive and thus they fell at the average level on the profile.

This study is in consonance with the findings of Merriman, and Bhusan et al.  

**Factor I**: (Tough minded V/S Tender minded). The continuum of this trait is extended from tough minded, self-reliant and realistic at the lower end to tender minded, dependent, over protected and sensitive at the higher end. The mean stern scores of high and low fit soccer players were 4.5 and 6.0 respectively. The mean scores, revealed that latter group fell at the average level whereas former group fell at lower end on the profile of this factor. Therefore, the high fit soccer players tend to be more tough minded, self-reliant and

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realistic as compared to low fit soccer players who tend to be neither tough nor tender minded. The difference between the sten scores ($t = 4.804$) was found to be statistically significant at .05 level of confidence.

High proficient athletes supposedly are thought of as being not only physically tough but mentally tough also. The reason for this originates out of the realization that top level sport is a ruthless, cold and hard business, where, there is no place to the tender spirited persons.$^{55}$

The game of soccer is very tough by its nature. Thus, as the result of prolonged practice, the physical and mental toughness gradually develop along with the fitness and sports proficiency. Probably due to this factor the high fit soccer players were found to be more tough than that of the low fit soccer players, and significant difference was noticed in this trait between these two groups.

$^{55}$Alderman, *Psychological Behaviour*, p. 146.
Further, it was noticed that low fit soccer players fell at the average level of the profile. Probably such things happened due to their average level of proficiency.

This study is in consonance with the findings of Bhattacharjee, 56 and Elsayed. 57

**Factor M**: (Practical V/S Imaginative). The continuum of this factor extended from practical, careful, conventional, regulated by external realities and Praxemia at the lower end to imaginative, wrapped up in inner urgencies, careless of practical matters and bohemian at the higher end. The mean teten scores of the high and low fit soccer players were 4.266 and 5.083 respectively, indicating that high fit soccer players fell towards the lower end whereas latter group fell on the average level on the profile of this factor. Therefore, high fit soccer players tend to be practical, careful,

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57 Elsayed, Dissertation Abstracts International, p. 6343-A.
conventional, regulated by external realities and proper than that of the low fit soccer players who tend to be neither practical nor imaginative. The mean sten scores difference (t= 2.715) was found to be statistically significant at .05 level of confidence.

Alertness, consciousness, sense of responsibility and concentration ability make the man more practical.

People who score high in this trait have high feelings of responsibility for practical matters which are reflected as seriousness, which further enhance the consciousness and will power of the individual.

The positional play in soccer makes the player more serious and conscious in regards to their responsibility. Thus, the player's seriousness, concentration ability, carefulness, will power and conventionality

\[58^*\text{Alderman, Psychological Behaviour, p.143.}\]

\[59^*\text{Uday Sankar, Development of Personality, p. 74.}\]
gradually improve and the player becomes more practical.

Probably due to long term training and regular participation in the game high fit soccer players have enhanced their sense of responsibility, seriousness and practicality, conventionality than that of the low fit soccer players who tend to be neither practical nor imaginative. Thus, the significant difference was observed between high and low fit soccer players.

Low fit soccer players fell at the average level of the profile and thus tend to be neither practical nor imaginative which may be attributed to the fact that their performance was moderately linked with this factor.

This study is in consonance with the finding of Gottesman.60

**Factor N**: (Forthright V/S Shrewd). The continuum of this trait is extended from forthright,

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61 Gottesman, *Completed Research in Health, Physical Education and Recreation*, p. 81.
natural, artless and sentimental at the lower end to shrewd, calculating, wordly and penetrating at the higher end. The mean sten scores of high and low fit soccer players were 6.716 and 6.066 respectively. It was obvious that high fit soccer players fell at the higher end on the profile, whereas, low fit soccer players fell at the average level. Interpretation was that, the subjects belonging to the high fit group tend to be shrewd, calculating, wordly and penetrating, than that of low fit soccer players who tend to be neither natural, artless and sentimental nor shrewd, wordly and penetrating. The mean sten scores (t = 2.245) was found to be statistically significant at .05 level of confidence.

High fit soccer players were found to be more shrewd, calculating, wordly and penetrating than that of low fit soccer players.

In a game like soccer, where new, critical and touchy situations arises every now and then, where, there is lot of freedom of movement and ample opportunity to exhibit techniques and tactics. The player has to try to outwit the opponent.
To be successful in his attempt a player has to be intelligent, very shrewd, calculating, wordly and penetrating in his action.  

May be because of prolonged involvement with the game, the high fit soccer players were superior in these factors and scored higher than that of the low fit soccer players in this trait.

The low fit soccer players fell at the average level of the profile which may be attributed to the fact that the performance of low fit soccer players was moderately linked with this factor.

This study is in consonance with the findings of Elsayed, 62 and Gottesman. 63

Factor 0: (Untroubled Adequacy V/S Guilt Proneness). The continuum of this trait is extended from placid, self-assured, confident, serene and


63Gottesman, Completed Research in Health, Physical Education and Recreation, p. 81.
untroubled adequacy at the lower end to apprehensive, worrying, depressive and guilt proneness at the higher end. The mean t tests scores of high and low fit soccer players were 6.03 and 6.9 respectively. It was obvious that high fit soccer players fell at the average level on the profile of this factor whereas low fit soccer players fell at the higher end on the profile, indicating that high fit soccer players were neither placid nor apprehensive and low fit soccer players tend to be worrying, depressive and troubled. The mean t tests scores difference (t = 3.008) was found to be statistically significant at .05 level of confidence.

Champion athletes invariably say a key to success is believing in themselves and they back it up by exuding self-confidence in their play.  

High sport proficiency is highly related with self-confidence and high self assurance, on the other hand low proficient athletes are worried and depressive and doubtful in their actions.  

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65 Ibid., 153.
Self-confidence gradually progresses along-with the prolonged involvement with a particular task, thus positional play in soccer for a longer period of time, enhances self-confidence of high fit soccer players.

Probably due to this reason significant difference was observed between high and low fit soccer players in this trait factor.

This study is in consonance with the findings of Young and Ismail and McClanney.

**Factor Q₃**: (Low Integration V/S High Self-concept Control). The continuum of this trait is extended from undisciplined self-conflict, follows own urges and low integration at the lower end to controlled, socially precise and high self-concept control at the higher end. The mean self scores of high and low fit soccer players were 5.916 and 4.63 respectively. It was evident that high fit soccer players fell at the average level, whereas

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low fit soccer players fell at the lower end of the profile. Thus subjects belonging to the high fit soccer group tend to be neither controlled, socially precise nor undisciplined self-conflict, follows own urges and careless of protocol, where as low fit soccer players tend to be undisciplined self-conflict, follows own urges, careless of protocol.

The mean differences (t = 4.338) was found to be statistically significant at .05 level of confidence.

In this factor the low fit soccer players were found to fall at the category of undisciplined self-conflict, follows own urges and careless of protocol than that of the high fit soccer players who had comparatively higher self-concept control.

Development of self-concept is based on physical competence. 68

In the game of soccer, a player has to follow the rules and regulations of the game strictly. For

68 Llewellyn and Blucker, Psychology of Coaching: Theories and Application, pp. 18-19.
breach of rule, a player/team may be heavily punished. Soccer also demands a vigorous and regimental training for achieving high level of performance. Regular participation in matches and prolonged training make the soccer player, to have high self-concept control, develop their carefullness, and self-image. Probably because of such reasons high fit soccer players scored significantly higher than that of the low fit players in this trait factor.

The high fit soccer players were found to fall at the average level of the profile which may be attributed to the fact that their performance was moderately linked with this factor.

This study is in consonance with the findings of Koenig 69 and Bash 70.

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70Bash, Completed Research in Health, Physical Education and Recreation, p. 45.
There were no significant differences between high and low fit soccer players in 7 out of 16 Personality Trait Factors namely, \( F, G, H, L, Q_1, Q_2, \) and \( Q_4 \) at .05 level of confidence.

**Factor F**: (Desurgency V/S Surgency). The continuum of this trait is extended from sober, prudent, serious, taciturn and desurgency at the lower end to happy-go-lucky, impulsively, lively, gay, enthusiastic and surgency at the higher end.

The mean sten scores of the high and low fit soccer players were 3.68 and 3.716 respectively. Thus, both the groups fell at the lower end of the profile. It could be interpreted that high and low fit soccer players tend to be equally sober, prudent, serious, taciturn and desurgetic, which may be attributed to the nature of game.

The mean difference \((t = 0.153)\) was found to be statistically insignificant.

This study is in consonance with the findings of Keogh\(^71\) and Gill.\(^72\)


\(^72\) Gill, (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).
Factor G: (Weaker Super-ego Strength V/S Stronger Super-ego Strength). The continuum of this factor is extended from expedient, evades rules, feels few obligations and weaker super-ego strength at the lower end to conscientious, persevering and stronger super-ego strength at the higher end. The mean tten scores of the high and low fit soccer players were 6.15 and 5.83 respectively, indicating that the high and low fit soccer players fell at the average level on the profile of this factor. Thus, it could be interpreted that both the groups were neither weaker nor stronger in super-ego strength, which may be attributed to the nature of the game. The difference of mean tten scores (t = 1.601) was found to be statistically insignificant.

The study is in consonance with the findings of McDonald\textsuperscript{73} and Datta.\textsuperscript{74}

\textsuperscript{73}McDonald, Dissertation Abstracts International, p. 3935-A.

\textsuperscript{74}Datta, (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).
Factor H: (Shy V/S Venturesome). The continuum of this trait is extended from shy, restrained, diffident, timid and threctia at the lower end to venturesome, socially bold, uninhibited and parmia at the higher end. The mean test scores of the high and low fit soccer players were 5.23 and 5.05 respectively. It was evident that both the groups fell at the average level on the profile of this factor, therefore, the high and low fit soccer players were not much different from each other and were neither shy not venturesome, which may be attributed to the nature of the game. The difference \((t = 0.895)\) was not found to be statistically significant at .05 level of confidence.

This study is in consonance with the findings of Keogh\(^75\) and Gill.\(^76\)

Factor I: (Trusting V/S Suspicious). The continuum of this factor is extended from trusting,

\(^75\)Keogh, Research Quarterly, pp. 438-444.

\(^76\)Gill, (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).
adaptable and alaxia at the lower end to suspicious, self opinionated and premsia at the higher end. The stem scores of high and low fit soccer players were 5.816 and 6.166 respectively. It was evident that both the groups fell at the average level on the profile of this factor, therefore, the subjects belonging to these two groups were not much different from each other and were neither trusting nor suspicious, which may be attributed to the nature of the game. The mean difference ( t = 1.051 ) was found to be statistically insignificant at .05 level of confidence.

This study is in consonance with the findings of Gooch and Parsons.

**Factor Q₁**: (Conservative V/S Experimenting). The continuum of this trait is extended from conservative, respecting, established ideas and tolerant of traditional difficulties at the lower end to experimenting, critical, liberal, analytical and

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77 Gooch, *Completed Research in Health, Physical Education and Recreation*, p. 64.

78 Parsons, *Completed Research in Health, Physical Education and Recreation*, p. 44.
radicalism at the higher end. The mean sten scores of high and low fit soccer players were 5.73 and 5.366 respectively. It showed that both the groups fell at the average level on the profile of this factor, hence high and low fit soccer players were neither conservative, nor experimenting, which may be attributed to the nature of the game. The difference between mean sten scores ($t = 1.181$) was not found to be statistically significant at .05 level of confidence.

This study is in consonance with the finding of Weber. 79

Factor Q2: (Group Adherence V/S Self-Sufficiency). The continuum of this trait is extended from group dependent, "Joiner" and sound follower at the lower end to self-sufficient, prefers own decisions, and resourceful at the higher end. The mean sten scores of the high and low fit soccer players were 5.183 and 4.766 respectively. It showed that both the groups fell at the average level

on the profile of this factor, hence, high and low fit soccer players were neither group dependent nor self-sufficient which may be attributed to the nature of the game. The difference (t = 1.547) between the mean ten scores of high and low fit soccer players was not found to be statistically significant at .05 level of confidence.

This study is in consonance with the findings of Sahu'\(^80\) and Gill.'\(^81\)

\textbf{Factor Q4}: (Low Ergic Tension V/S High Ergic Tension). The continuum of this trait is extended from relaxed, tranquil, torpid, unfrustrated and low ergic tension at the lower end to tense, frustrated, and high ergic tension at the higher end. The mean ten scores of high and low fit soccer players were 4.666 and 5.05 respectively. It showed that both the groups fell at the average level on the profile of this factor, hence, high and low fit soccer players were neither relaxed, tranquil, torpid and unfrustrated nor tense and

\(^{80}\text{Sahu, (Unpublished Master's Thesis, Jiwaji University, 1984).}\)

\(^{81}\text{Gill, (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1982).}\)
frustrated which may be attributed to the nature of the game. The mean difference (t = 1.505) was not found to be statistically significant at .05 level of confidence.

This study is in consonance with the findings of Gill\textsuperscript{82}, Keogh\textsuperscript{83} and McDonald\textsuperscript{84}.

Thus the results of the study clearly indicate that high fit soccer players scored significantly higher in 9 out of 16 Personality Trait Factors namely, A,B,C,E,I,M,N,O and Q\textsubscript{3} as compared to the low fit soccer players and were characterized as neither reserved nor out-going, averagely intelligent, neither affected by feelings nor emotionally stable, neither humble nor assertive, tough minded, practical, shrewd, neither placid nor apprehensive and controlled on the other hand, the low fit soccer players seemed to be reserved less intelligent.

\textsuperscript{82}Ibid.

\textsuperscript{83}Keogh, Research Quarterly, pp. 438-444.

\textsuperscript{84}McDonald, Dissertation Abstracts International, p. 3935-A.
affected by feelings, humble, tender minded, neither practical nor imaginative, neither forthright nor shrewd, guilt proneness, and undisciplined self-conflict.

Significant differences between high and low fit soccer players were not noticed in remaining 7 other traits out of 16 Personality Trait Factors i.e. F, G, H, L, Q₁, Q₂, and Q₄, which indicate that all the soccer players irrespective of their level of fitness were equally sober, neither weaker nor stronger super-ego strength, neither shy nor venturesome, neither trusting nor suspicious, neither conservative nor experimenting, neither group dependent nor self-sufficient and neither relaxed nor tense.

Therefore, the hypothesis stated earlier is rejected in case of personality trait factors i.e., A, B, C, E, I, M, N, Q, and Q₃ and accepted in case of the personality trait factors F, G, H, L, Q₁, Q₂, and Q₄.
Self-concept Dimensions

The statistical analysis of the dimensions of self-concept namely, physical, social, temperamental, educational, moral, intellectual and the sum of all these self-concepts as total self-concept of high and low fit soccer players were done using 't' test. The data pertaining to this has been presented in Table 8. The same has also been graphically represented in Figure 3.

TABLE 8

SIGNIFICANCE OF DIFFERENCES OF DIMENSIONS OF SELF-CONCEPT OF HIGH AND LOW FIT SOCCER PLAYERS

<table>
<thead>
<tr>
<th>Dimensions of Self-control</th>
<th>Mean±S.D.</th>
<th>Mean S.E. 't' ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Fit Soccer Players</td>
<td>Lot Fit Soccer Players</td>
</tr>
<tr>
<td>A. Physical</td>
<td>27.916±2.628</td>
<td>25.466±2.929</td>
</tr>
<tr>
<td>B. Social</td>
<td>24.916±3.328</td>
<td>22.930±2.786</td>
</tr>
<tr>
<td>C. Temperamental</td>
<td>23.100±3.961</td>
<td>21.200±3.580</td>
</tr>
<tr>
<td>D. Educational</td>
<td>26.130±2.969</td>
<td>24.960±2.456</td>
</tr>
<tr>
<td>E. Moral</td>
<td>25.766±2.208</td>
<td>23.966±3.090</td>
</tr>
<tr>
<td>F. Intellectual</td>
<td>23.716±2.569</td>
<td>21.400±2.887</td>
</tr>
<tr>
<td>Total</td>
<td>151.550±7.216</td>
<td>139.930±10.714</td>
</tr>
</tbody>
</table>

*Significant at .05 level of confidence. 't' value required to be significant at .05 level of confidence with 118 degree of freedom was 1.98.
Fig. 3. Self-concept Dimensions Distinguishing High and Low Fit Soccer Players.
From the Table 8 it is clear that all the six dimensions of self-concept namely, physical \( (t = 4.819) \); social \( (t = 3.542) \); temperamental \( (t = 2.754) \); educational \( (t = 2.350) \); moral \( (t = 3.671) \); and intellectual \( (t = 4.642) \) and the sum of all these self-concept as total self-concept \( (t = 6.967) \) showed significant differences between high and low fit soccer players, at .05 level of confidence.

In further attempt to observe the positional existence of the mean score of total self-concept of high and low fit soccer players in the scale of classification, it is noticed that the mean of the total self-concept of high fit soccer players \( (m = 151.55) \) fell at the above average level as it fall within the above average range i.e., 145-192 in the classification scale. While the mean score of total self-concept of low fit soccer players \( (m = 139.93) \) fell at the average level as it fall within the average range i.e., 97-144 in the scale of classification.
Discussion of Findings:

**Physical Self-concept:** Significant difference was observed between the high and low fit soccer players in physical self-concept (t = 4.819).

Physical Self-concept includes the individual's view of their body, health, physical appearance and strength.

Fitness may have psychological consequences, because enhanced fitness level often has a positive effect on one's body image. Thus, improving one's fitness through sport would increase his positive feeling about his body and enhance his self-concept. Thus physical self-concept changes as bodily changes occurs.

Body build, energy level and body control are interrelated factors and are directly associated with the state of physical fitness which further

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86 Hurlock, Development of Personality, p. 26.
influence the self-concept of an individual.\textsuperscript{87} Thus development of self-concept is based on physical competence.\textsuperscript{88}

Fitness is the root-cause of zestful healthy life and it assists in functioning as well as in maintenance of optimum level of performance.\textsuperscript{89,90,91} Thus it happened to be the innate tendency of top sportsmen to remain in bodily healthful and fit condition in order to execute high standard of performance over a longer period of time which assist

\textsuperscript{87}Ibid., pp. 144-146.


\textsuperscript{91}Peter V. Karpovich and Wayne E. Sining, \textit{Physiology of Muscular Activity} (Philadelphia: W.B. Saunders Co., 1971), p. 32.
the sportsmen to gain stable recognition.\textsuperscript{92,93}

Probably such awareness might have enhanced the sense of physical self-concept of high fit soccer players due to prolonged involvement with the game and significant difference was found between high and low fit soccer players in this dimension.

This study is in consonance with the findings of Keffer,\textsuperscript{94} Choubey\textsuperscript{95} and Vincent.\textsuperscript{96}

**Social Self-concept:** Significant difference was also observed in social self-concept between high and low fit soccer players (t = 3.542).

Social self-concept includes individual's sense

\textsuperscript{92}Hurlock, *Development of Personality*, pp. 68-71.

\textsuperscript{93}Csanadi, *Soccer*, pp. 490-499.

\textsuperscript{94}Keffer, *Completed Research in Health, Physical Education and Recreation*, p. 181.

\textsuperscript{95}Choubey, (Unpublished Master's Thesis, Jiwaji University, 1987).

\textsuperscript{96}Vincent, *Research Quarterly*, p. 218.
of worth in social interaction.97

The effect of social self-concept on the behaviour of the individual usually depend largely on how important the opinions of others are to him.98 Thus understanding of the self is enhanced by social comparison or the ability to evaluate the self in relation to others.99

One's perception of oneself as a cooperative or competitive individual influences performance levels.100

Further high levels of cohesiveness are associated with the greater success and satisfaction.101

We know, that success, reputation and recognition is earned at the cost of hard labour, high

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97 Hurlock, Personality Development, pp. 22-23.
98 Ibid.
coordination and lot of cooperation.\textsuperscript{102} Once the reputation is established, the individual sportsman carefully behaves and effectively adjust with his own and other team mates, officials, and spectators in order to maintain the reputation, which enhances social interaction.

Because of such positive reasons probably the high fit soccer players, who had lot of such experiences in the past, were able to scored significantly higher than that of the low fit soccer players and thus significant difference between these two groups was observed in social self-concept.

This study is in consonance with the finding of Martens.\textsuperscript{103}

\textbf{Temperamental Self-concept} : Significant difference was observed between high and low fit soccer players in temperamental self-concept (t = 2.754).

Success in the games and sports lies behind many troublesome hurdles and it march with hard

\textsuperscript{103}Martens, \textit{Coaches Guide to Sport Psychology}, p. 7.
happenings. An athlete will be successful in stressful competition only if he is able to evidence and maintain a degree of cool temperament and emotional control. 104

Soccer is a body contact team game, where time and again the physical collisions and foul actions are intentionally committed by one player to other with the negative intention to minimise the sharpness of rival's efficiency which is usually done through playing with the player's temperament. On the other hand, in anticipation, the proficient athletes are likely to be more alert and aware on this factor.

Through the process of prolonged involvement with this game, the high fit soccer players might have developed strong grip on their temperament and thus they have scored significantly higher than that of low fit soccer players in this dimension.

104 Cratty, Psychology in Contemporary Sport: Guidelines for Coaches and Athletes, p. 90.
This study is in consonance with the finding of Bash. 105.

**Educational Self-concept:** From the result of the study it is clear that the mean score of educational self-concept of high fit soccer players is higher than that of low fit soccer players ($t = 2.35$).

Educational self-concept includes the individual's view of themselves in relation to educational institution, teachers and extra-curricular activities.

High proficient athletes of the educational institution represent their institutions in various competitions and thereby the sense of belongingness and high esteem towards the teachers, educational values and extra-curricular activities, gradually enhance.

Thus, due to all these factors, probably, the high fit soccer players scored significantly higher in this dimension than that of the low fit soccer players.

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players.

The study is in consonance with the finding of Keffer. 106

**Moral Self-concept**: Significant difference in moral self-concept between the high and low fit soccer players was observed ($t = 3.671$).

Moral self-concept express the individual's estimation of their moral worth, right and wrong activities.

To attain high fitness level, soccer players have to follow vigorous training programme. They cannot indulge in socially unaccepted activities. They have to be more disciplined. 107

Further, in the game of soccer, the foul actions are strictly treated through application of respective rules. On the other hand, the fair play trophy is awarded to the deserving player/team.


Thus, high proficient soccer players are expected to have high estimation of right and wrong activities. Due to such attributory factors, probably the high fit soccer players scored significantly higher in this dimension and thus, significant difference was observed between the high and low fit soccer players in moral self-concept.

This study is in consonance with the findings of Black\textsuperscript{108} and Choubey.\textsuperscript{109}

**Intellectual Self-concept**: In intellectual self-concept also significant difference was observed between high and low fit soccer players. (t= 4.642).

It includes individual’s awareness of his intelligence and capacity of problem solving and judgment.

New and critical situations arise frequently in the game of soccer. So, number of decisions and accurate judgment are to be made at the spur of the moment. Thus, the considerable degree

\textsuperscript{108} Black, *Completed Research in Health, Physical Education and Recreation*, p. 220.

of intelligence, anticipation ability, judgment and problem solving capacity within the shortest possible time is highly expected to overcome the difficulties in soccer.110, 111

Probably high fit soccer players was highly equipped with these qualities and thus they have scored significantly higher than that of low fit soccer players in this dimension.

This study is in consonance with the findings of Breedlove,112 and Johnson.113

**Total Self-concept**: High significant difference was observed between the high and low fit soccer players in total self-concept (t = 6.967).

The total self-concept includes the sum of physical, social, temperamental, educational, moral and intellectual dimensions of self-concept.

113Johnson, *Dissertation Abstracts International*, p. 5180-A.
From the previous discussion it is evident that all six dimensions of self-concept showed significant differences between high and low fit soccer players. Thus, the sum of these dimensions is also expected to show significant difference between these two groups.

Because of such reason, probably the high fit soccer players scored significantly higher in total self-concept than that of the low fit soccer players.

The study is in consonance with the findings of Keffer,\textsuperscript{114} Choubey,\textsuperscript{115} and Bhattacharjee.\textsuperscript{116}

Thus, the hypotheses stated earlier in respect to the absence of significant differences between high and low fit soccer players in physical, social, temperamental, educational, moral, intellectual and total self-concept is totally rejected in this study.

\textsuperscript{114}Keffer, \textit{Completed Research in Health, Physical Education and Recreation}, p. 101.

\textsuperscript{115}Choubey, (Unpublished Master's Thesis, Jiwaji University, 1987).

\textsuperscript{116}Bhattacharjee. (Unpublished Master of Philosophy Dissertation, Jiwaji University, 1989).