CHAPTER V

MAIN FINDINGS, DISCUSSION, IMPLICATIONS,
LIMITATIONS AND SUGGESTIONS

The major findings of the present investigation are presented in the following pages under two headings: (i) Results of Analysis of Variance, and (ii) Results of 't' test. The findings will be followed by discussion of results, implications for physical education, limitations, and suggestions for further study.

Main Findings:

(i) Results of Anova: Two-way Anova was applied to see the independent and interactive effects of the two independent variables, viz., sports participation and socio-economic status on intelligence, scholastic achievement, and sixteen personality factors, the results of which are condensed in Table 86.

Sports participation has significant independent effect on intelligence, scholastic achievement, personality factors — B and M in case of boys; and on intelligence, scholastic achievement, personality factors — B, C, E, M and N in case of girls. It has no significant independent effect on the remaining variables in both boys and girls. In case of boys, SES has significant independent effect on intelligence,
TABLE 86
Sports Participants Socio-Economic Status's and SP x SES's Effects on Intelligence, Scholastic Achievement and Personality Traits

| Sr. No. | Eighteen dependent variables | SP* | | | SES** | | | SP x SES*** | | |
|---------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
|         |                               | Girls| Boys|     | Girls| Boys|     | Girls| Boys|     |
| 1       | Intelligence                  | *    | *    |     | **   |     | *** |     |     |     |
| 2       | Scholastic Achievement        | *    | *    |     |     |     | *** |     |     |     |
| 3       | A-Factor                      |     |     | **  |     |     |     |     |     |     |
| 4       | B-Factor                      | *    | *    |     | **   |     |     |     |     |     |
| 5       | C-Factor                      | *    |     | *** |     |     | *** |     |     |     |
| 6       | E-Factor                      |     |     |     |     |     |     |     | *** |     |
| 7       | F-Factor                      |     |     |     |     |     | *** |     |     |     |
| 8       | G-Factor                      |     |     | **  |     |     | *** |     |     |     |
| 9       | H-Factor                      |     |     |     | **   |     |     |     |     |     |
| 10      | I-Factor                      |     |     |     |     |     | *** |     |     |     |
| 11      | L-Factor                      |     |     |     |     |     |     |     |     |     |
| 12      | M-Factor                      | *    | *    |     | **   |     | *** |     |     |     |
| 13      | N-Factor                      | *    |     |     |     | **   |     |     |     |     |
| 14      | O-Factor                      |     |     |     |     |     |     |     |     |     |
| 15      | Q₁-Factor                     |     |     |     |     |     |     |     |     |     |
| 16      | Q₂-Factor                     |     |     | **  |     |     | **  |     |     |     |
| 17      | Q₃-Factor                     |     |     | **  |     |     | **  |     |     |     |
| 18      | Q₄-Factor                     |     |     | **  |     |     |     |     |     |     |

* = Significant, independent effect of SP on different variables;
** = Significant independent effect of SES on different variables;
*** = Significant interaction effect of SP and SES on different variables.
personality factors — A, G, H, M, Q₂ and Q₃; and in case of girls, it has significant independent effect on personality factors — B, H, N, Q₂, Q₃ and Q₄. SES does not have significant independent effect on the remaining variables.

The interaction of two independent variables, viz., sports participation and socio-economic status has significantly influenced scholastic achievement, and personality factor — C in case of boys; and intelligence, personality factors — C, G, I and M in case of girls. The interaction of these two independent variables does not have any significant affect on the remaining sixteen variables in case of boys and the remaining thirteen variables in case of girls.

(ii) Results of 't' Test: The actual sports participation and SES differences in the variables found significant in case of both boys and girls were calculated with the help of 't' test and the findings are present in the following pages.

Significant Differences:

Intelligence:

Boys: Boys having university position are more intelligent than those having university participation. Similarly, those boys having inter-university position are more intelligent than those of university participations. Boys who are having university position are more intelligent than the inter-university position group. In case of socio-economic status, it is found that HSES boys are more intelligent that MSSES and LSSES boys.
**Girls**: Comparison of mean intelligence scores of various groups indicates that girls belonging to university position, inter-university participation and inter-university position groups possess higher intelligence than girls having university participation.

**Scholastic Achievement:**

**Boys**: Boys who are having university participation have higher scholastic achievement than those having university position; those having inter-university participation do possess higher scholastic achievement than those having university position in sports; and those having inter-university position have achieved higher in scholastic lines than those having university position. In other combinations, they have approximately same scholastic achievement.

**Girls**: Girls having university participation, university position and inter-university position in sports have higher scholastic achievement than those having inter-university participation. Girls having university position have higher scholastic achievement than those having inter-university participation.

**Factor-A**:

**Boys**: Regarding SES, boys of HSES group possess higher factor-A than LSES boys, and MSES boys also do possess high score on personality factor "Reserved vs Outgoing" than LSES group boys.
Factor-B:

**Boys:** In case of scholastic mental capacity boys of inter-university position have more scholastic mental capacity than other remaining three groups.

**Girls:** Girls belonging to the university position, inter-university participation, inter-university position have high scholastic mental capacity than university participation group. Similarly, inter-university position girls possess higher scholastic mental capacity than girls belonging to university participation and inter-university participation groups. Girls having inter-university position and inter-university participation do not differ in factor-B. Girls belonging to MSES possess the highest scholastic mental capacity and those belonging to LSES possess the lowest personality factor-B.

Factor-C:

**Girls:** Girls having university position and inter-university participation have higher ego strength than university participation girls. Girls having inter-university participation have more higher ego strength than university participation girls.

Factor-E:

**Girls:** Girls having university position and inter-university position and inter-university participation possess significantly higher personality factor-E than girls having university participation. Moreover, girls having inter-university position
are higher in personality factor-\( F \) than girls having university position and inter-university participation. So girls having inter-university positions are dominant and girls having university participation are found submissive.

**Factor-\( F \):**

**Boys:** Boys belonging to HSES group have possessed higher personality factor-\( F \) than MSES and LSES students; and MSES students are higher in personality factor "Desurgency vs Surgency" than LSES boys.

**Factor-\( G \):**

**Boys:** The boys of MSES group do possess higher personality factor-\( G \) scores than those belonging to high and low levels of SES, and HSES boys are higher in personality factor "Weaker super ego strength vs Stronger super ego strength" than LSES boys.

**Factor-\( H \):**

**Boys:** In case of SES, boys belonging to HSES and MSES possess higher personality factor "Shy vs Venturesome" than boys belonging to LSES.

**Girls:** Girls belonging to HSES and MSES possess significantly higher personality factor-\( H \) than those belonging to LSES group. Girls belonging to HSES are found more venturesome than those belonging to other two levels of socio-economic status.
Factor-\(M\):

**Boys:** In respect of boys, it is found that inter-university position group is better than university participation, university position and inter-university participation groups. In case of SES, the HSES group is higher in personality factor "Praxemia vs Autia" than LSES group. The HSES and MSES boys, MSES and LSES boys possess equal level of personality factor-\(M\).

**Girls:** Girls belonging to university position and inter-university participation possess higher scores on personality factor-\(M\) than those belonging to inter-university position. Girls having inter-university participation are found more imaginative and girls having inter-university position are more practical.

Factor-\(N\):

**Girls:** Comparisons of means indicate that girls having inter-university position in sports are higher in personality factor "Forthright vs Shrewd" than girls having university participation and those having university position. Regarding socio-economic status, HSES girls possess higher personality factor-\(N\) scores than low SES girls and middle SES girls possess higher personality factor-\(N\) scores than low SES girls. Above all, girls belonging to MSES possess the highest score and girls belonging to LSES possess the lowest mean score on personality factor-\(N\).
Factor-Q₂:

Boys: It is found from mean comparison that HSES and LSES boys possess higher personality factor "Group adherence vs Self sufficiency" than boys of MSES group.

Girls: It is found that HSES girls possess higher personality factor-Q₂ than MSES and LSES girls. Girls belonging to HSES group have possessed higher scores on personality factor-Q₂ and LSES girls lowest.

Factor-Q₃:

Boys: It is predicted that boys belonging to MSES group have high self-concept control and LSES boys have undisciplined self conflict.

Girls: It is found that MSES girls have high self concept control and LSES girls have undisciplined self concept.

Factor-Q₄:

Girls: Girls belonging to HSES group are significantly higher in personality factor "Relaxed vs Tense" than girls belonging to LSES group.

Insignificant Differences:

Boys: In case of other remaining personality factors such as A, C, E, F, G, H, I, L, M, O, Q₁, Q₂, Q₃ and Q₄ boys belonging to various four groups of sports participation do not differ
significantly. Boys belonging to three groups of SES do not differ significantly in scholastic achievement and various personality factors such as B, C, E, I, L, M, O, Q₁ and Q₄.

Girls: Girls belonging to four groups of sports participation do not differ significantly in such personality factors as A, F, G, H, I, L, O, Q₁, Q₂, Q₃ and Q₄. In case of socio-economic status girls belonging to HSES, MSES and LSES do not differ significantly in following personality factors: Intelligence, Scholastic achievement, A, C, E, F, G, I, L, M, O, Q₁.

Discussion of Results:

The first objective of the study was to find out the independent and interaction effects of sports participation and socio-economic status on intelligence of male and female sports students. The results of two-way Analysis of Variance reveal that sports participation has significant independent effect on intelligence in case of both males and females; SES has significant independent effect on intelligence in case of males (and not females); and the interaction of these two independent variables has caused variation in intelligence of females (and not males). On the basis of these findings, the first hypothesis of the study is accepted for: (a) significant independent effects of sports participation on intelligence of both males and females, (b) significant independent effect of SES on intelligence of boys, and (c) significant interaction effect of the two variables on
intelligence of females; and the same hypothesis is rejected for: (a) significant independent effect of SES on intelligence of females, and (b) significant interaction effect of the two variables on intelligence of males. These findings are supported by the results achieved by Rube (1928), Ruffer (1965), Schafer and Armer (1968), Buhrmann (1972); and contradict the results obtained in the studies conducted by Biddulph (1954) and Thorpe (1967).

The second objective of the study that is finding out the independent and interactive effects of sports participation and socio-economic status on scholastic achievement was fulfilled with the help of 2x2 Anova, the results of which show that sports participation has significant independent effect on scholastic achievement in case of both males and females; SES does not have significant independent effect on scholastic achievement of either males or females; and interaction of SP x SES does have significant effect on scholastic achievement of males but not females. On the basis of these results, the second hypothesis of the study is accepted for: the independent effect of SP in case of males and females; the interactive effect of SPxSES in case of males. The same hypothesis is rejected for: the independent effect of SES on scholastic achievement of males and females; and the interactive effect of SPxSES in case of females.

The findings concerning sports performance and scholastic achievement are supported by Sighultz (1972), Buhrmann (1972),
Lueptow and Kayser (1973-74), and Hanks and Eckland (1976), and contradicts the results obtained by Jorndt (1968).

Two-way Anova was applied to fulfil the third objective of the study: to find out the independent and interactive effects of sports participation and SES on sixteen personality factors. The results show that in case of females: sports participation has significant independent effect on personality factors-B, C, E, M and N; SES has significant independent effect on personality factors-B, H, N, Q₂, Q₃ and Q₄; and the interaction of the two has caused significant variation in personality factors-C, G, I and M. In case of males: SP has significant independent effect on personality factors-B and M; SES has significant independent effect on personality factors-A, G, H, M, Q₂ and Q₃; and the interaction of the two has significantly affected personality factor-C only. So, the hypothesis concerning the existence of significant independent and interactive effects of sports participation and SES on sixteen personality factors is accepted for significant results in case of males and females respectively; and the same hypothesis is rejected in case of the insignificant results.

The statistical technique of 't' test was applied to fulfil the fourth objective of the study. The results reveal that there exist significant sports participation differences in intelligence, scholastic achievement, personality factors-B and M in case of males, and in intelligence, scholastic achievement, personality factors-B, C, E, M and N in case of females. On the
basis of these results, the fourth hypothesis of the study is accepted for these significant factors and is rejected for the insignificant factors.

Similarly, the analysis of 't' results for the fifth and last objective of the study reveals that significant SES difference exist in intelligence, personality factors-A, B, H. M, Q₂ and Q₃ in case of males; and in personality factors-B, H, N, Q₂, Q₃ and Q₄ in case of females. So, the fifth hypothesis of the study is accepted for the above significant variables, and the same hypothesis is rejected in case of the other insignificant variables.

**Implications for Physical Education**

The findings of the present study have obvious implications for physical education and sports in our country. Sportsmen/women, participating in various categories of sports activities, express significant variations in their mental capacity. Sports participation helps in increasing the crystallized intelligence or collection of skilled judgements of the individuals that further contribute to better performance in sports. Intelligent sportsmen/women can better understand various aspects of sports viz., sports techniques, sports medicine, etc. and can develop a discrimination in the sports abilities, quality of sports and the factors responsible for better sports performance. These activities are not within the reach of ordinary people who can hardly afford to understand the movement analysis and
techniques in sports, comparison of correct and incorrect performance to find out faults to be rectified for better performance. So, only such persons in sports, games and the Department of Physical Education should be selected as possess an adequate level of intelligence necessary for better performance in various sports activities.

Personality traits are highly related to performance in sports and games. There are certain personality characteristics that contribute to increment in sports capacity in one category of games while the same may not help or even at times hinder performance in another category of games. Moreover, a moderate quantity of certain personality traits is essential for sportsmen/women irrespective of their participation in varied and sometimes opposing sports categories. So, along with physical fitness, factors like personality fitness, optimum level of mental health and personality adjustment are to be kept in mind while selecting or putting sportsmen/women in various sports activities. Furthermore, development of personality characteristics congenial to sports activities be formed a part of regular curricular activities for the budding or emerging sportsmen/women at the adolescent stage.

Though socio-economic status has significant effect on personality factors that ultimately influence performance in sports, there should be maximum exploitation talent in sports irrespective of the socio-economic background of the players. The Government of India should provide more scholarships and incentives to the emerging talented players especially from
families of low socio-economic status. Of course, the Government of India has opened "Sports Wings" in various educational institutions to help the talented players who are exempted from tuition fees, get free board and lodging, etc. It is an encouraging news that the Haryana Government is giving State Awards to position holders in sports in Haryana.

Parents need be rid of old notion that the participation of their children in sports activities tells upon their academic performance and level of attainment. Such wrong ideas have done considerable damage to the cause of sports and have deprived the nation of many potential top-class sportsmen and sportswomen.

The findings of the present study have significant implications for teachers, physical educators, coaches, administrators and organisers of sports in our country. They have to frame more scientific curriculum including the latest developments in sports techniques, sports medicine, etc. Moreover, more effective and more scientific training activities are to be imparted to those engaged in teaching physical education and sports at various levels.

Limitations:

1. Sports participation is divided into four categories only, viz., university participation, university position, inter-university participation, and inter-university positions. No non-sportsmen/women has been included in the present study.

2. The sample consisted of only 256 sportsmen and 248 sportswomen.
3. Only students participating in the North Zonal and All-India Inter-University Championship and coaching camps held at Kurukshetra University have been included in the study.

4. Only two independent variables viz., sports participation and SES, and three dependent variables viz., intelligence, scholastic achievement and personality traits (sixteen factors) have been studied.

Suggestions for Further Study:

(1) Categories of sports participation may range from regional participation to national level. More than four categories of sports participation can be made to find out a continuum in the relationship between sports performance and the N-variables.

(2) Non-sportsmen/women can be included in the comparison with various categories of sportsmen/women concerning various cognitive and non-cognitive variables of personality and other academic variables.

(3) Sample size can be increased to include a large array of subjects with specialization in various categories of sports, like gymnastics, swimming, cricket, volleyball, etc.

(4) More than two independent variables and more than three dependent variables such as adjustment, cognitive style, locus of control, achievement motivation, etc. may be included for a broader understanding of personality and performance in physical education and sports.

(5) A similar but highly useful study may be conducted on school-going subjects for very obvious reasons.