CHAPTER VI

DISCUSSION OF RESULTS
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6.0. DISCUSSION OF RESULTS

The results of the study presented in the previous chapter are integrated and discussed here in three sections, namely:

- Discussion of Results of Standardization of the Tests;
- Discussion of Results of the Main Study; and
- Discussion of Results of the Follow Up Study.

The detailed information is presented as follows:

6.1. DISCUSSION OF RESULTS OF STANDARDIZATION OF THE TESTS

6.1.1. Discussion about the Standardization of the BAMIA

The main objective of constructing the BAMIA has been considered to measure the state of achievement motivation of the teacher-trainees of physical education. To measure the Ss' achievement motivation, seven dimensions (self-curiosity in athletics, athletic reward and punishment, personality of athletic coach or the teachers of physical education, external factors, aggressiveness in athletic competition, power of dominance and leadership in team sports, and recreation in athletics) have been selected. The psychologists (Fowler, 1965; Jones, 1965; Cratty, 1967; Butt, 1973; Alderman, 1974; Singer, 1977; Taylor, 1980; Zaichkowsky et al., 1980; Youngblood et al., 1982) are in opinion to support these dimensions as a measure of achievement motivation in athletics.

The result of item analysis reveals that 35 items are retained in the BAMIA. Although the number of items is small, yet the BAMIA is reliable and can validly measure the level of achievement motivation among the Ss selected for this study. However, the reliability coefficient of the BAMIA has been reported as 0.70 which is highly significant. The reliability coefficient of the BAMIA possessed adequate value and can reliably be applicable with such coefficients as suggested by senior psychologists (Jones, 1965; Alderman, 1974; Singer, 1977; Taylor, 1980).
The coefficient of external criterion validity of the BAHIA is 0.66 which is also highly significant. Although different investigators have reported different validity coefficients, yet the validity coefficient of the BAHIA is adequate (Ryan, 1963; Strong, 1963; Strickland, 1964; Butt, 1973; Dember, 1974). Therefore, the BAHIA possessing such validity coefficient can validly be applicable (Fowler, 1965; D'Amato, 1974; Butt, 1976) to the Ss of this study.

The percentile norms of the BAHIA ranged from $P_{10}$ to $P_{90}$. The score falling above $P_{90}$ represents the 'Excellent Grade' whereas the score falling below $P_{10}$ represents the 'Poor Grade'. The grades i.e., 'Good', 'Average', & 'Fair' fall in between $P_{10}$ to $P_{90}$. The T scale norms are also synchronized with the percentile norms. The similar process of grading the percentile norms and the T scale norms is also observed and followed by various investigators (Bhattacharyya et al., 1977; Garrett, 1985).

The discussion so far shows that the BAHIA as developed and standardized in this study may be helpful to measure the level of achievement motivation in athletes falling in the age group of 20-30 years.

6.1.2. Discussion about the Standardization of the BISTAA

The main objective of constructing the BISTAA has been considered to measure the state-trait anxiety in athletics of the teacher-trainees of physical education. To measure the Ss' anxiety in athletics, 5 dimensions (consciousness of fear or restless condition in athletic participation, obstruction in the digestive and circulatory functions, behaviour of trembling or short temperedness in athletic situation, condition of family and society to which the athletes belong, and nausea in athletics) have been selected. The psychologists (Slevin, 1970; Klein, 1976; Endler, 1977; Cattell, 1979; Suinn, 1980; Hamm, 1981; Monson et al., 1982; Wilson, 1982) are in opinion to support these dimensions as a measure of state-trait anxiety in athletics.
The result of item analysis reveals that 50 items are retained in the BISTAA. Although the number of items is small, the BISTAA is reliable and can validly measure the level of anxiety in athletics among the subjects selected for this study. However, the reliability coefficient of the BISTAA has been reported as 0.68 which is statistically significant. The reliability coefficient of the BISTAA is having similarity with the inventories of anxiety which are already developed by different psychologists (Spielberger, 1966; Slevin, 1970; Spielberger et al., 1970; Hamm, 1981).

The coefficient of external criterion validity of the BISTAA is 0.58 which is also highly significant. Although different investigators reported different validity coefficients, the validity coefficient of the BISTAA is more or less similar to the anxiety inventories developed by the psychologists (Slevin, 1970; Hamm, 1981). On the basis of the earlier reports (Slevin, 1970; Spielberger et al., 1970; Hamm, 1981), it is expected that the BISTAA can, reliably and validly, be applicable to the Ss of the study.

The percentile norms of the BISTAA ranged from $P_{0.0}$ to $P_{0.99}$. The score falling above $P_{0.90}$ represents the 'Excellent Grade' whereas the score falling below $P_{0.10}$ represents the 'Poor Grade'. The grades i.e., 'Good', 'Average', & 'Fair' fall in between $P_{0.10}$ to $P_{0.90}$. The T scale norms are also synchronized with the percentile norms. However, a similar process of grading the percentile norms and the T scale norms is also observed and followed by various investigators (Bhattacharyya et al., 1977; Garrett, 1985).

The discussion as stated above indicates that the BISTAA as developed and standardized in this study may be helpful to measure the level of anxiety in athletes falling in the age group of 20 - 30 years.

6.1.3. Discussion about the Standardization of the BLATA

The main objective of constructing the BLATA has been considered to measure the level of aspiration in athletics of the
teacher-trainees of physical education. To measure the Ss' level of aspiration in athletics, 6 dimensions (socio-economic status of athletes, athletic history and parental relation, expectations of athlete about performance, previous experience in athletics, judgement discrepancy ability of athlete, and goal discrepancy ability of athlete) have been selected. The psychologists (Frank, 1937; Eysenck et al., 1946; Ferguson, 1952; Sampson, 1962; Zander et al., 1965; Cratty, 1967; Kozar, 1973; Snyder et al., 1973. Snyder et al., 1973; Singer, 1977; Schnabl-Dickey, 1977; Orlick, 1978) are in opinion to support these dimensions as a measure of level of aspiration in athletics.

The result of item analysis reveals that 60 items are retained in the BLATA. Although the number of items is small, the BLATA is reliable and can validly measure the level of aspiration in athletics among the subjects selected for this study. However, the reliability coefficient of the BLATA has been reported as 0.71 which is statistically significant. The reliability coefficient of the BLATA is having similarity with the inventories of aspiration level which are already developed by different psychologists (Eysenck et al., 1946; Zander et al., 1965).

The coefficient of external criterion validity of the BLATA is 0.69 which is also highly significant. Although different investigators reported different validity coefficients, such a validity coefficient of the BLATA is accepted (Frank, 1941; Clark & Stratton, 1962).

The percentile norms of the BLATA ranged from $P_0$ to $P_{99}$. The score falling above $P_{90}$ represents the 'Excellent Grade' whereas the score falling below $P_{10}$ represents the 'Poor Grade'. The grades i.e., 'Good', 'Average' & 'Fair' fall between $P_{10}$ to $P_{90}$. The T scale norms are also synchronized with the percentile norms. However, similar process of grading the percentile norms and the T scale norms is also observed and followed by several investigators (Bhattacharyya et al., 1977; Garrett, 1985).
The discussion so far shows that the BLATA as developed and standardized in this study may be helpful to measure the level of aspiration in athletes falling in the age group 20-30 years.

6.1.4. Discussion about the DGIT

To measure the general intelligence, the DGIT has been administered on the Ss having their age ranging from 20 to 30 years. Although, the DGIT was actually developed by Dr. D. Bhattacharyya, professor, Deptt. of Education, University of Kalyani (India) for the age group ranged from 11-17 years, it was applied on the Ss of age ranged from 20-30 years on the basis of the fact that general intelligence do not differ after the attainment of 16 years of age and remains quite stable over the elementary, high school and college period (Anastasi , 1958; McCall, Appelbaum & Hogarly, 1973). However, the DGIT consists of 7 dimensions and a total of 72 items. As the DGIT possesses the accepted coefficients of reliability (r = 0.73, p < 0.01), it was administered on the Ss having age group ranging from 20-30 years. It is important to note that the reliability coefficient of the DGIT for the Ss of age group range of 11 years to 17 years was reported as 0.82 (Bhattacharyya, 1982) which is more or less similar with the obtained reliability coefficient (r = 0.76, p < 0.01) of this present report. This symmetrical value of reliability coefficient of a same test on different population helps to conclude that the administration of the DGIT, on the Ss of age group ranging from 11 to 17 years and on the Ss of age group ranging from 20 to 30 years is highly reliable. This may, also indirectly, be proved that general intelligence did not change after the age of 16 years. Wechsler (1982) scale has been repeatedly correlated with Standford Binet as well as with other well known tests of intelligence (Wechsler, 1958; Guertin et al., 1971; Matarazzo, 1972). Correlation is reported around 0.80. Within more homogeneous samples, such as college students, the correlation tends to considerably lower (Anastasi, 1982). The validity coefficient (r=0.73) of the DGIT showed considerably lower
correlation which supports the statement of Anastasi (1982).

The percentile norms of the DGIT ranged from $P_0$ to $P_{99}$. The score falling above $P_{90}$ represents the 'Excellent Grade' whereas the score falling below $P_{10}$ represents the 'Poor Grade'. The grades i.e., 'Good', 'Average', & 'Fair' fall in between $P_{10}$ to $P_{90}$. The T scale norms also synchronized with the percentile norms. However, similar process of grading of the percentile norms and the T scale norms is also observed and followed by several investigators (Anastase, 1982; Garrett, 1985).

The discussion made so far indicates that although the DGIT has been developed by Dr. D. Bhattacharyya (1982) for the Ss of age 11 to 17 years, it can validly be applied for the adult Ss chosen in this study to measure general intelligence.

The discussion of this study helps to recommend that the DGIT may be useful to measure general intelligence of athletes falling in the age group 20-30 years.

6.1.5. Discussion about the NPFP

In this study, the NPFP has been developed for Bengalee Ss to measure the physical performance in track & field athletics. Although it is a national test to measure physical fitness of Indian population, the coefficient of reliability and validity, and the norms are not available for the Ss of this study.

The results of this section reveal that the reliability coefficients of the events viz., 100 M run, running long jump, shot put, running high jump, and 800 M run for 'men Ss' are 0.84, 0.85, 0.90, 0.82, and 0.76 respectively. Similarly, the coefficient of reliability of the events viz., 100 M run, running long jump, shot put, running high jump and 200 M run for 'women Ss' are 0.82, 0.84, 0.80, 0.77, and 0.71 respectively.
The validity coefficients for the men and the women Ss against McCloy's General Motor Ability Test are 0.85 and 0.80 respectively. Both the validity coefficients are statistically significant (p < 0.01). This result reveals that the NPFP can be used as a test to measure general motor ability of the Ss.

As the NPFP possesses the accepted value of the coefficients of validity and reliability, it could be applied to the Ss of this study. This result also indicates that the NPFP can validly be used to evaluate the status of physical performance of the athletes (age group ranged from 20 to 30 years) in the selected track & field events.

The percentile norms of the NPFP ranged from $P_0$ to $P_{99}$. The score falling above $P_{90}$ represents the 'Excellent Grade' whereas the score falling below $P_{10}$ represents the 'Poor Grade'. The grades i.e., 'Good', 'Average', & 'Fair' fall in between $P_{10}$ to $P_{90}$. The T scale norms are also synchronized with the percentile norms. A similar process of grading the percentile norms and the T scale norms is also observed and followed by several investigators (Garrett, 1985; Verducci, 1980).

The discussion made so far indicates that-

- the NPFP may be used to measure general motor ability of the Ss falling in the age group of 20 to 30 years;
- the norms of the NPFP developed in this study may help to evaluate and grade the performance of athletes falling in the age group 20 to 30 years.

It may also be noted that LNCPE (Lakshmibai National College of Physical Education, Gwalior, India, recognized by the Govt. of India) has developed the NPFP which is applicable on an all India scale and measures the physical fitness/physical performance in selected athletic events.
The present study, however, is limited to the application of this test (NPFP) to a population from West Bengal state only. It was seen that the separate norms developed in this study seem to be applicable to the population from West Bengal with a greater accuracy rather than all India norms. It would, therefore, seem that the application of all India norms developed by LNCPE (India) to a group of athletes from W.B. is not justifiable.

There is, therefore, a need to develop separate norms for different ethnic groups in our country. This point is fairly established on the basis of the present study.

6.2. DISCUSSION OF RESULTS OF THE MAIN STUDY

6.2.1. Discussion about Achievement Motivation in Relation to Physical Performance in Athletics

The findings of this study reveal that a significant and positive relationship exists between the scores of achievement motivation in athletics and the scores of physical performance in athletics for both the sexes. This result is in agreement with the reports of Duffy (1962), Martin (1962), Wills (1968), Kruglanski, Friedman & Zeevi (1971), Lepper, Greene, & Nisbett (1973), Eden (1975) and Kamlesh (1987).

It is evident from this study that higher motivation group shows better physical performance in the selected athletic events for both the sexes than the lower motivational one. Wills (1968) has, however, found the different result. In a report, Wills (1968) subscribed to the view that high performance is not linked with high achievement motivation and poor performance with low achievement motivation. It is important to note that the report of Wills (1968) is related with individual power sports (i.e., wrestling) which may not be fruitful in all sports. However, the result of the present study do not synchronize with the report of Wills (1968), rather it supports the findings of Maxson (1982).
The Multiple Step Up Regression Analysis of this study shows that the highest percent of the variance of physical performance in selected athletic events is explained by the linear regression on achievement motivation. The result of this analysis also shows that a main significant effect or interaction effect between achievement motivation and physical performance in selected athletic events is found. Martin (1962) and Maxson (1982) have shown the results similar to the result of the present study. They (Martin, 1962; Maxson, 1982) reported that achievement motivation plays an important role to enhance the level of physical performance in athletics. However, the result of this present study supports the reports of Martin (1962) and Maxson (1982).

The discussion so far shows that although achievement motivation has higher positive correlation with physical performance in athletics, it may logically be concluded that achievement motivation is influential for improvement of physical performance in the selected athletic events for both the sexes.

6.2.2. Discussion about Anxiety in Relation to Physical Performance in Athletics

The results of this study indicate that a significant and negative relationship exists between the scores of anxiety in athletics and the scores of physical performance in selected athletic events for both the sexes. The result of the present study has shown the similar trend with an earlier report of Kirchner (1982). Kirchner (1982) reported that anxiety is negatively correlated with the proficiency scores in Basketball. However, the coefficient of correlation is very low (r = -0.26) as reported by Kirchner (1982), whereas the result of the present study reveals a high negative correlation. It might be due to a small number of subjects included in the study of Kirchner (1982).

Hottelling's $T^2$ and Profile Analysis reveals that the higher anxiety group shows poor physical performance in the selected athletic
events than the lower anxiety one. Similar results are observed in the case of both the sexes. Rinehurt (1982) is of same opinion about the result of the present study. The report of Rinehurt (1982) indicates a significant correlation between lower arousal and better performance of college males. Rinehurt (1982) also supports the report of Houseworth (1981) who states that poor running performance of subjects possess significantly higher anxiety scores than did more successful performers. Therefore, the result of the present study is a valid one for both the sexes.

The Multiple Step Up Regression analysis of this study indicates that a higher percent of the variance of physical performance in the selected athletic events is explained by the linear regression on anxiety level. The result of this analysis also suggests that a significant effect or interaction effect between anxiety level and physical performance in selected athletic events is evident. These results are contrary to the findings of Mahoney & Avener's (1977). However, majority of the studies (Easterbrook, 1959; Hollingsworth, 1965; Slevin, 1970; fenz, 1975; Kirchner, 1982; Singh, 1986) are in agreement with the result of the present study. As in this study, the negative correlation exists between anxiety level and physical performance in athletic events i.e., lower arousal and better performance, vice-versa, it does seem plausible to state that higher anxiety level is detrimental to the physical performance in selected athletic events for both the sexes.

6.2.3. Discussion about Level of Aspiration in Athletics in Relation to Physical Performance in Athletics

It is evident from the result of this present study that a significant and positive relationship exists between the scores of level of aspiration and physical performance in athletic events for both the sexes. Although the investigator did not get the literature about track & field athletics and level of aspiration at his disposal, yet the result of this study shows similar trend
with the reports of Rutledge (1954), Rosen (1959), Clarke et al. (1961), Price (1961), Frost (1971), and Hamlett (1976) who studied about different games performance with level of aspiration.

Hottelling's $T^2$ and Profile Analysis reveals that the group having higher level of aspiration shows better physical performance in athletic events than the lower aspiration group. This is true for both the sexes. However, the report of Avimelech (1977) is in agreement with the result of the present study. Avimelech (1977) observed that suppressed level of aspiration shows poor achievement in games and sports. The results of this present study also support the work of Clarke & Clarke (1961) who concluded that an individual having high level of aspiration exhibits superior ability in motor task.

The findings of Multiple Step Up Regression Analysis show, therefore, that a low percent of the variance of physical performance in the selected athletic events is explained by the linear regression on level of aspiration. The result of this analysis also suggests that a significant effect or interaction effect between level of aspiration and physical performance in selected athletic events are observed. This result is very much similar to the results of Rutledge (1954), Clarke & Clarke (1961), Price (1961), & Hamlett (1977). Other senior investigators (Frank, 1937; Frank, 1941; Summer, 1949; Rosen, 1959; Eysenck, 1961; Gould, 1961; Frost, 1971) are also in agreement with the result of the present study. Although, in this study, the moderately positive correlation obtained between physical performance in athletic events and aspiration level, it seems likely that higher level of aspiration may influence the physical performance in the selected athletic events for both the sexes.

6.2.4. Discussion about General Intelligence in Relation to Physical Performance in Athletics

The findings reveal that a significant and low positive
relationship exists between general intelligence and physical performance in selected athletic events for both the sexes. The result of this study shows similarity with the result of the research reported by Van Dalen (1947), Fahrner (1960), & Bera (1984). However, Johnson (1942) revealed that no significant correlation exists between physical skill and intelligence among college men and women. The result of the present study is showing disagreement with the result of the study reported by Johnson (1942).

The reports of Johnson (1942), Van Dalen (1947), and Fahrner (1960) revealed that the relationship between motor performance and intelligence is very low but positive. The result of this present study partially supports the findings of these investigators (Johnson, 1942; Van Dalen, 1947; Fahrner, 1960). In these reports college students have shown poor relationship, as compared with the school going children, between motor performance and intelligence. It may be due to the fact that school age is considered as growing period of both the physical domain and intellectual domain. But in college level, the vertical growth of physical domain and intellectual domain are being checked which may be facilitating to show such low relationships.

Hottelling's $T^2$ and Profile Analysis of this study reveals that the higher intelligent group shows better physical performance in the selected athletic events than the lower intelligent one. This finding of the present study is showing agreement with the findings of Kock (1969) and Yurick (1969).

The result of Multiple Step Up Regression Analysis of this study reveals that general intelligence adds an increment of very low percent of variance in favour of enhancing physical performance in athletics. The result of this analysis also shows that no significant effects or interaction effects between general intelligence and physical performance in selected athletic events are
observed. Ladwing (1969) has reported the results similar to the result of the present study. The Multiple Step Up Regression analysis of the present investigation supports the result of Ladwing (1969).

Therefore, although general intelligence shows lower positive correlation with physical performance in athletics, it may be concluded that intelligence does not play a significant role for the enhancement of physical performance in selected athletic events.

The discussion of the main study made so far indicates that achievement motivation in athletics, level of aspiration in athletics and general intelligence are the positive correlates of athletic performance whereas the anxiety in athletics is the negative correlate of athletic performance.

The discussion of Multiple Step Up Regression Analysis indicates achievement motivation, level of aspiration and general intelligence may influence an athletic performance of athletes falling in the age group of 20-30 years. However, an excessive anxiety may be detrimental for an athletic performance of athletes falling in the said age group.

6.3. DISCUSSION OF RESULTS OF THE FOLLOW UP STUDY

The results of the Follow Up Study are discussed here. The discussion of results are presented through three headings:

0 Discussion about the Planning of 'suggestive model';
0 Discussion about the Planning of 'vertical teaching model';
0 Discussion of Results of the 'Experimental Study'.

6.3.1. Discussion about the Planning of 'Suggestive Model'

The result of this present study indicates that the selected psychological determinants are influencing the physical performance in selected athletic events. It is also evident from this present study
that the lower performers in athletic abilities are having following psychological shortcomings: lower motivation, higher anxiety, lower aspiration level and lower intelligence. Therefore, to overcome these psychological shortcomings among the athletes participating in the selected athletic events, the planning of a 'suggestive model' is felt useful.

This model has been planned on the basis of the principles of physical training schedule and psychological training one. Similar principles have been appreciated by the earlier sport psychologists (Suinn, 1976; Singer & Hilmer, 1980).

In this part of the study, five dimensions have been chosen: muscle relaxation ($E_1$), practice of mental imagery ($E_2$), demonstration of athletic performance ($E_3$), practice of athletic skills ($E_4$), and error correction and discussion ($E_5$). These dimensions have already been given importance by the earlier investigators (McKenzie, 1972; Nesvig, 1980; Singer & Hilmer, 1980). Therefore, the selection for this 'suggestive model' is justified.

Although the reliability and validity coefficients of this 'suggestive model' have not found out, this model could be used on the basis of the fact that -

- the model is planned depending upon the results of the 'main study' of this investigation;
- the model is based on the principles and methods followed by the earlier investigators (McKenzie, 1972; Suinn, 1972; Suinn, 1976; Lane, 1977; Corran, 1978; Nesvig, 1980; Singer & Hilmer, 1980).

6.3.2. Discussion about the Planning of 'Vertical Teaching Model'

The purpose of planning this 'vertical teaching model' is to see its comparative effect with the 'suggestive model' on physical performance in athletics. However, the 'vertical teaching model' has been planned on the basis of the principles as suggested by
senior investigators (Kozman, Cassidy & Jackson, 1960; Tirunarayana & Sarma, 1975; Lydon & Cheffers, 1984; Bhatia & Arora, 1985).

The planning of this model follows four stages: Introductory part, Developmental part, Recreational or Lead up practice part, and Dismissal part. These stages have already been given importance by several investigators (Knapp & Hagman, 1953; Bhatia & Arora, 1985; Kamlesh & Sangral, 1985) in India during teaching sports skill in the field of physical education. Therefore, the selection of these stages for this 'vertical teaching model' is justified.

In India, majority of physical education institutions are teaching their students following the principles of 'vertical teaching model'. Therefore, to see its effect on physical performance in athletics is having equal importance.

6.3.3. Discussion of Results of the 'Experimental Study'

This experiment was conducted to see the treatment effects of the 'suggestive model' and 'vertical teaching model' on physical performance in selected athletic events.

The result of this study indicates that the 'suggestive model' is influential for improving physical performance in most of the selected athletic events for both the sexes. However, the 'vertical teaching model' has also shown a similar influence for improving physical performance only in shot put event for 'men subjects' and in running high jump event for 'women subjects'.

The 'vertical teaching model' did not show better result to improve physical performance in selected athletic events as compared to the 'suggestive model'. This result obtained may be due to the fact that the 'vertical teaching model' gives more stress on the physical training schedule whereas the 'suggestive model' considers both the physical training schedule as well as psychological training one. The fact (i.e., the importance of psychological determinants enhancing the physical performance) supports the findings of
several investigators (Cratty, 1970; Frost, 1971; Singer, 1972; Atkinson, 1974; Suinn, 1976; Kodym, 1977; Llewellyn, 1982; Bera, 1984; Khan, 1986). However, it is more evident that the combined implication of the schedule of physical training principles and the principles of psychological training is useful for the enhancement of physical performance in the selected athletic events. It is also of interest to note that the 'suggestive model' which has been brought up as a result of this study is useful and may, beneficially, be applied to the Ss (men & women) of this study for improvement of physical performance in selected athletic events. It may strongly, therefore, be recommended that the 'suggestive model' is useful to the athletes having age group range of 20-30 years participating in the selected athletic events.

The discussion made so far may be summarized as follows:

- The result of standardization of the tests revealed that the inventories viz., BAMA, BISTAA, & BLATA possess adequate reliability and validity as tested by standard techniques for the Ss of the present study. Several investigators (Frank, 1941; Clark & Stratton, 1962; Jones, 1965; Spielberger et al., 1970; Alderman, 1974; Singer, 1977; Taylor, 1980; Hamm, 1981) are in agreement with the coefficients of reliability and validity of the said inventories as reported in this study.

- The DGIT also possessed adequate reliability and validity coefficients to measure general intelligence of the Ss of this study. This result supports the results of earlier investigations done by senior researchers (Wechsler, 1958; Guertin et al., 1971; Matarazzo, 1972; Anastasi, 1982). The DGIT developed by Prof. D.Bhattacharyya (1982) is considered to be applicable only to the age group 11+ to 17 years. However, this study has established that the DGIT can be applied to the adult athletes (age 20+ to 30 years) also for measuring general intelligence with the same accuracy.

It is of interest to note that each event of the NPFP
possessed adequate reliability and validity coefficients. Therefore, the NPFP could be applied to the Ss of the present study.

As there is no information about the reliability and validity coefficients of each event of the NPFP, the present study has its own importance. The result obtained from this study has a direct implication for evaluation of physical performance in the athletic events. The norms established in this study may help the sports professionals to evaluate and to grade the performance of their athletes in the selected athletic events. It may be noted that the LNCPE (Lakshmibai National College of Physical Education, Gwalior, India) has developed the NPFP. The norms of the NPFP are applicable on an all India scale. However, it was seen that the separate norms developed in this study seem to be applicable to the population from West Bengal state (INDIA) with a greater accuracy rather than the norms of the NPFP developed by the LNCPE, Gwalior (India).

Therefore, there is a need to develop separate norms for different ethnic groups of our country. The future research workers may get direct help to analyze the data from the norms which have been established and highlighted in this study.

The result of the main study revealed that achievement motivation in athletics, level of aspiration in athletics and general intelligence have significant and positive relationships with the physical performance in 100 M run, running long jump, shot put, running high jump, 200 M run and 800 M run respectively. Other investigators have similar opinion about the said results (Van Dalen, 1947; Duffy, 1962; Friedman & Zeevi, 1971; Frost, 1971; Eden, 1975; Hamlet, 1976; Bera, 1984; Kamlesh, 1987).

The result of Multiple Step Up Regression Analysis shows that achievement motivation in athletics explains the highest percent of variance of physical performance as compared to level of aspiration in athletics and general intelligence. This result is in agreement
with the earlier report of senior researchers (Martin, 1962; Ladwing, 1969; Frost, 1971; Hamlett, 1977; Maxson, 1982). The result of the main study establishes the fact that achievement motivation in athletics, level of aspiration in athletics and general intelligence are important for better physical performance in athletics. However, achievement motivation is more influential to enhance physical performance in athletics. This result suggests that the physical education professionals and sports coaches should give more stress on achievement motivation during teaching and coaching sports skill to their athletes.

It is also evident from the result of the main study that anxiety in athletics has a significant negative relationship with the physical performance in 100 M run, running long jump, shot put, running high jump, 200 M and 800 M run respectively for both the sexes. Most of the senior research workers are in agreement with this result (Houseworth, 1981; Kirchner, 1982; Rinehurt, 1982).

The result of Multiple Step Up Regression Analysis indicates that a higher percent of the variance of physical performance in selected athletic events is explained by linear regression on lower anxiety level. From the negative correlation, it does seem plausible to state that higher anxiety level is detrimental to physical performance in athletics.

It is of interest to support the fact that a teacher of physical education or sports coach should give careful attention about sports anxiety during teaching or coaching sports skills to their athletes.

The result of the follow up study has already been discussed and is summarized here. On the basis of the result of the main study and literature reviewed, a 'suggestive model' has been prepared. Along with this, a 'vertical teaching model' has also been prepared based on some principles as suggested by
renowned investigators (Kozman, Cassidy & Jackson, 1960; Tirunarayana & Sharma, 1975; Lydon & Cheffers, 1984; Bhatia & Arora, 1985).

An experiment was designed to see the treatment effect of the 'suggestive model' and 'vertical teaching model' on physical performance in selected athletic events. The result of this follow-up study indicates that the 'suggestive model' is influential as compared to the 'vertical teaching model' for improving physical performance in most of the selected athletic events.

To the researcher's knowledge this is first time that an effort has been made to use a specific scientific 'suggestive model' developed indigenously to enhance athletic performance. This opens up new horizon for developing more specialized 'model' to improve and enhance the prestige of our sportsman.

The advancement of techno-sports has established the fact that the combined implication of physical training and psychological training helps to uplift the physical performance in athletics. The result of the experiment designed in this study is in agreement with the stated fact. This strategy has been adopted by most developed countries like USA, USSR, GDR among their athletes from early childhood. As a result, they are able to win maximum number of medals from the athletic competition at the international level.

In India, till today, majority of our sports coaches give stress on the physical training schedules only, during sports coaching. Although the coaches are aware about the importance of psychological training there is no indigenous 'model' available in India based on both the psychological and physical training schedules. Therefore, the 'suggestive model' planned in this study is useful for the Ss of this study and may effectively be adopted to our Indian athletes for enhancement of their athletic performance.