

CHAPTER - IV

Results And Discussions

The data collected according to the test procedures discussed in chapter III and the analyses of said data and their appropriate discussions have been made in this chapter. The results are presented dimensionwise in tabular form and discussions are made accordingly .

4.1. Personal data

The age, height and weight of the subjects have been considered as personal data and their mean values, range and SD are presented in Table No. -1.

Table - 1 Mean, range and SD of age, height and weight of the subjects.

Variables	Mean	Range	SD
Age (Year)	23.11	21 – 25	± 1.28
Height (cm)	156.66	150 – 168	± 4.62
Weight during Pre test July '94 (kg)	46.29	36 – 72	± 8.44
Weight during Post test March '95 (kg)	47.83	38 – 75	± 8.30

4.1.1. Age

It appears from the Table No - 1 that the mean age of the subjects was 23.11 years with the range between 21-25 and the variation of 1.28 years.

4.1.2. Height

From the Table No-1 it appears that the mean height of the subjects was 156.66cm tallest with a variation of 4.62 cm. The tallest subject was 168cm and the shortest one was 150cm.

4.1.3. Weight

It appears from the Table No-1 that a wide variation in weight was observed with the highest weight of 72Kg and the lowest 36 Kg. The mean weight was 46.29 Kg with a SD of 8.44 Kg at the onset of the training and after completion of training mean weight increased slightly and was 47.83 ± 8.30 Kg.

Regarding influence of training on body weight great variation may be observed among the researchers. While Glick and Kaufmann (1976), Housh et al. (1988). Yoshizawa et al. (1990) found increase of body weight following training, Pollock et al. (1975), Buccola and Stone (1976), McIntosh (1983), Whatley et al. (1994) found decrease in body weight following training.

On the other hand Gettman et al. (1978), Thomas (1978), Stacy et al. (1982), Hurley et al. (1984), MCGown et al. (1990), Garber et al. (1992), found no change in body weight following training.

In the present study increase in body weight was observed following training. From the findings of the present study it may be inferred that, body weight may be altered due to influence of training depending on the nature of the training regimen.

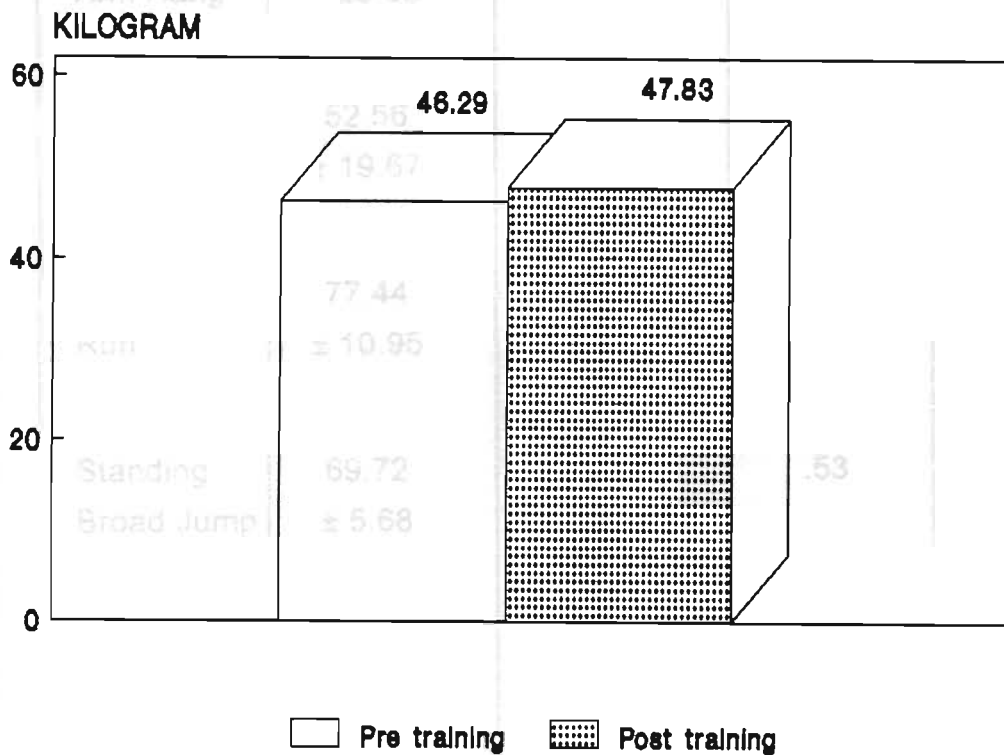
4.2. Fitness variables

Six standard tests on fitness variables were conducted at the onset (July 1994) and at the end of the training course (March 1995) according to the test procedures mentioned in chapter III. The raw data collected from each test was converted to percentile scores according to the AAHPER Youth Fitness norms (1976) cited by Barrow (1979). The raw data and their corresponding percentile score of all the subjects have been given in Appendix No- A₁. In Table No -2 the mean of the percentile scores of six items obtained from pre and post tests are presented.

Table - 2 Mean and SD of the pre and post test data of fitness variables and their comparison.

Variables	Pre Test	Post Test	SED	Obtained t' value
	Mean SD	Mean SD		
Flexed Arm Hang	29.68	21		

Fig.7. Comparison of body weight of the subjects before & after training.



Accordingly during discussion and analyses of the data the percentile scores would only be considered.

Table - 2 Mean and SD of the pre and post test data of fitness variables and their comparison.

Variables	Pre Test Mean SD	Post Test Mean SD	SED	Obtained 't' value
Flexed Arm Hang	52.33 ± 29.68	67.61 ± 22.72	3.21	4.76*
Sit Up	52.56 ± 19.67	72.78 ± 20.40	3.18	6.36*
Shuttle Run	77.44 ± 10.95	86.27 ± 5.83	2.52	3.49*
Standing Broad Jump	69.72 ± 5.68	72.55 ± 6.17	.53	5.32*
50 Yard Dash	64.44 ± 19.67	81.43 ± 15.37	3.67	4.65*
600 Yard Run-walk	74.89 ± 13.51	83.11 ± 16.37	1.07	7.65*

* Signifiant at .05 level.

4.2.1. Strength Test.

It appears from the Table -2 that the mean percentile scores of the pre and post tests of the Flexed Arm Hang test were 52.33 and 67.61. And the obtained 't'

value between two sets of scores was 4.76 which was significant at .05 level. 29.20% net improvement was observed on the post test score.

4.2.2. Muscular Endurance Test

The mean scores of pre and post test in Sit up were 52.56 and 72.78. The obtained 't' value between the two sets of scores was 6.36 which was also significant. Following organised physical education training the performance in sit up test was improved significantly in post test and the magnitude of improvement was maximum (38.50%) among the physical fitness tests conducted.

4.2.3. Agility Test

From Table No. -2 the mean scores of the pre and post tests in the Shuttle Run (agility test) performance were 77.44 and 86.27 respectively. 11.40% improvement was observed on the post test score. Physical training programme has positively influenced this improvement. The two sets of score when compared, the obtained 't' value 3.49 was also found significant at .05 level.

4.2.4. Leg Power Test

It appears from Table No. 2 that the mean percentile scores of the pre and post test in the Standing Broad Jump performance were 69.72 and 72.55 respectively. The obtained 't' value was 5.32 and found significant at .05 level. In comparison to other fitness tests the improvement in leg power test was minimum, only 4.06%.

4.2.5. Speed Test

The mean percentile scores of the pre and post tests in the 50 Yard Dash test were 64.44 and 81.43 respectively. Significant difference existed between the two means as the 't' value obtained was 4.65. 26.36% improvement was observed at the post test score from that of pre test score and may be attributed due to the training programme.

4.2.6. Cardiorespiratory Endurance Test

The mean scores of the pre and post tests in the 600 Yard Run-Walk test were 74.89 and 83.11 respectively. Comparing the means the obtained 't' value 7.65 was found significant at .05 level. Improvement in the post test was 10.97% from that of pre test and was comparatively low.

Fig.8.Comparison of strength performance (shoulder girdle) before & after the training

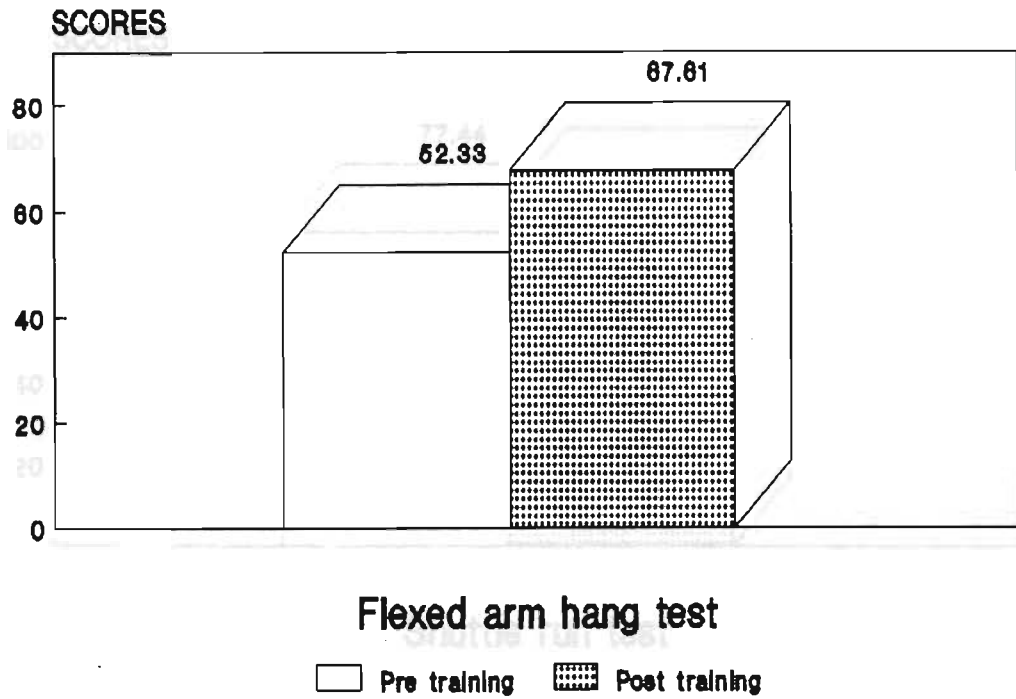


Fig.9.Comparison of endurance performance (muscular) of the subjects before & after the training

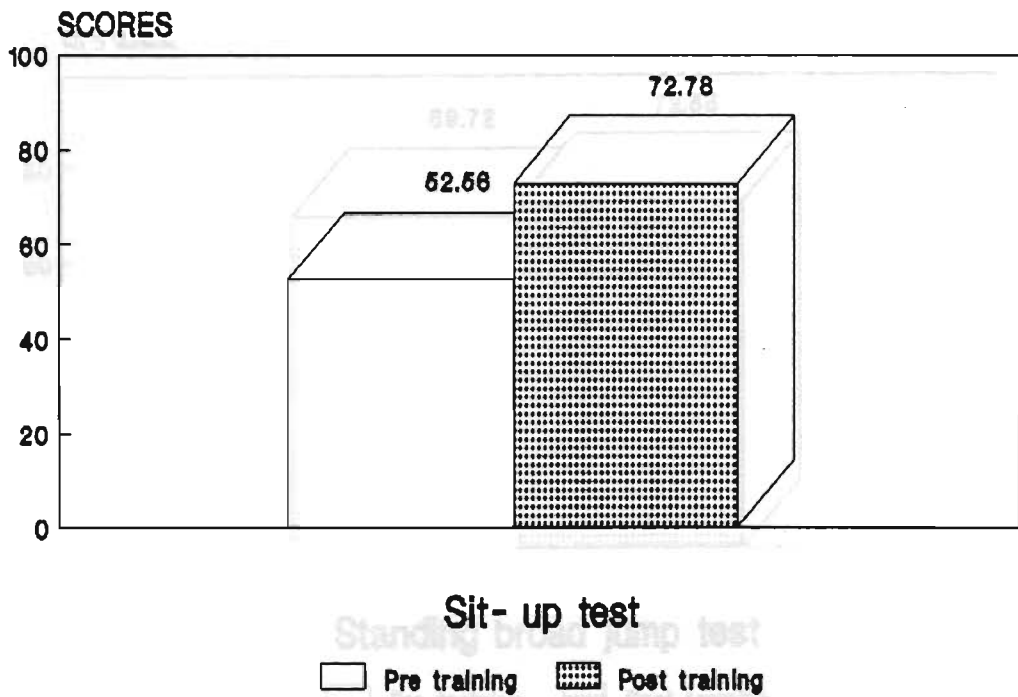


Fig.10. Comparison of agility performance of the subjects before & after the training

4.2.7. Discussion

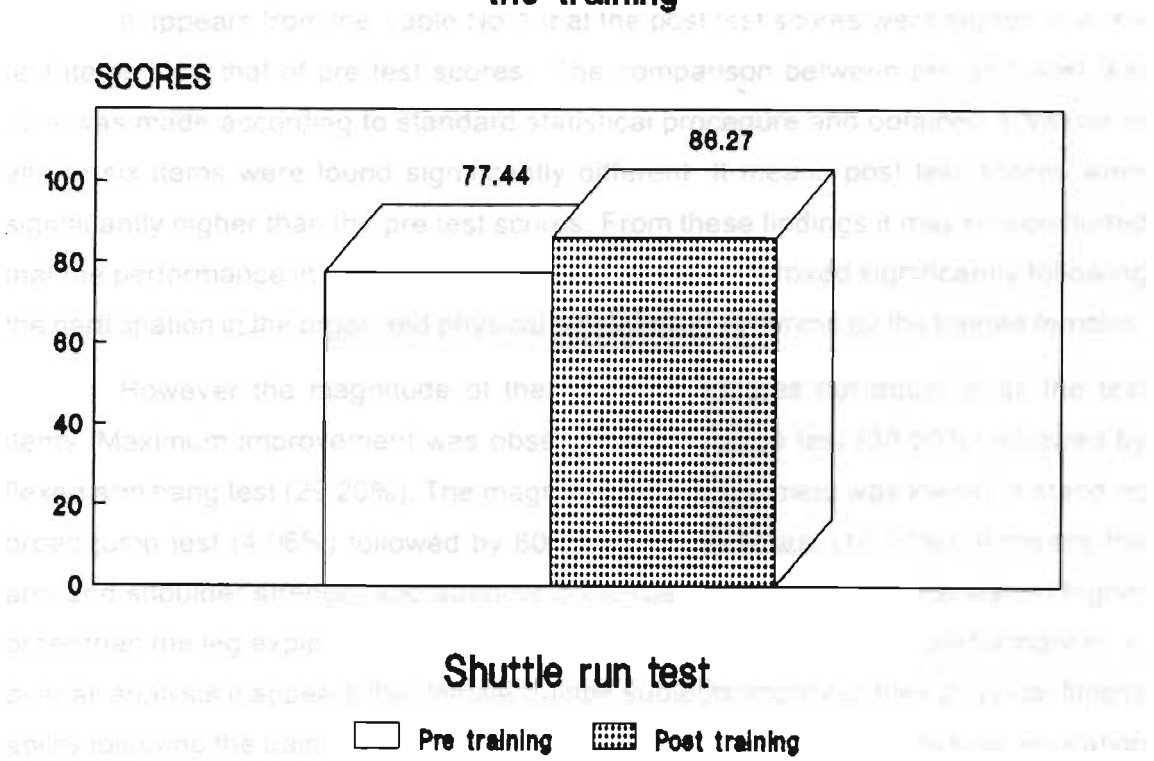
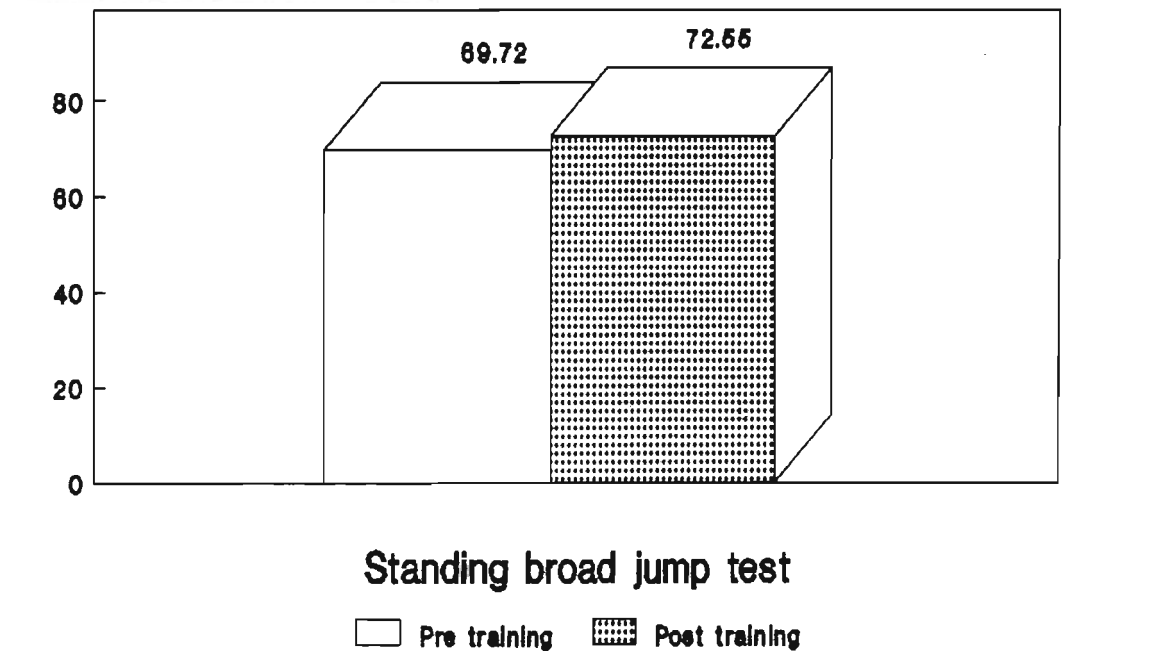


Fig.11. Comparison of leg power performance of the subjects before & after the training

4.2.8. Discussion



4.2.7. Discussion

It appears from the Table No-1 that the post test scores were higher in all six test items than that of pre test scores. The comparison between pre and post test data was made according to standard statistical procedure and obtained 't' values in all the six items were found significantly different. It means post test scores were significantly higher than the pre test scores. From these findings it may be concluded that the performance in the six fitness test items were improved significantly following the participation in the organised physical education programme by the trainee females.

However the magnitude of the improvement was not equal in all the test items. Maximum improvement was observed in the sit up test (38.50%) followed by flexed arm hang test (29.20%). The magnitude of improvement was lowest in standing broad jump test (4.06%) followed by 600 yard run-walk test (10.97%). It means the arm and shoulder strength and abdominal muscle strength-endurance was in higher order than the leg explosive strength and general cardiorespiratory performance. In over all analysis it appears that female trainee subjects improved their physical fitness ability following the training programme adopted by the professional physical education training institute.

A number of researchers have shown that following well planned organised physical training, performances in selected physical fitness tests were improved significantly in men (Nunneys 1960; Metz, 1968; Mcnamara, 1978; Cunningham, 1981; Mandal and Bannerjee, 1990; etc) and in women (Edwards, 1974; Macdonald, 1983; Hassmen and Backmen, 1992;).

Sharkey (1990) has reported that exercise with medium resistance and repetition 15 to 25 may improve endurance as well as strength. Clark and Vaccaro (1979), Reid et al. (1987) have shown improvement in muscular strength endurance among young boys & girls and adult male respectively.

Weltman et al. (1986), Leatt et al. (1987) Housh et al. (1988) have particularly found improvement in vertical jump performance following training.

Harre (1982) and Fox (1981) have shown that running speed may be improved through training. Nunney (1960) found improvement in speed by circuit training method Bandopadhyay (1992) observed that improvement of running speed is possible if the training is very specific for the purpose and the duration of the training be not less than 8 to 10 weeks. Mandal and Banerjee (1989) found no improvement in running speed following six weeks multigym training, though strength gain was significant

Fig.12. Comparison of speed performance of the subjects before & after the training

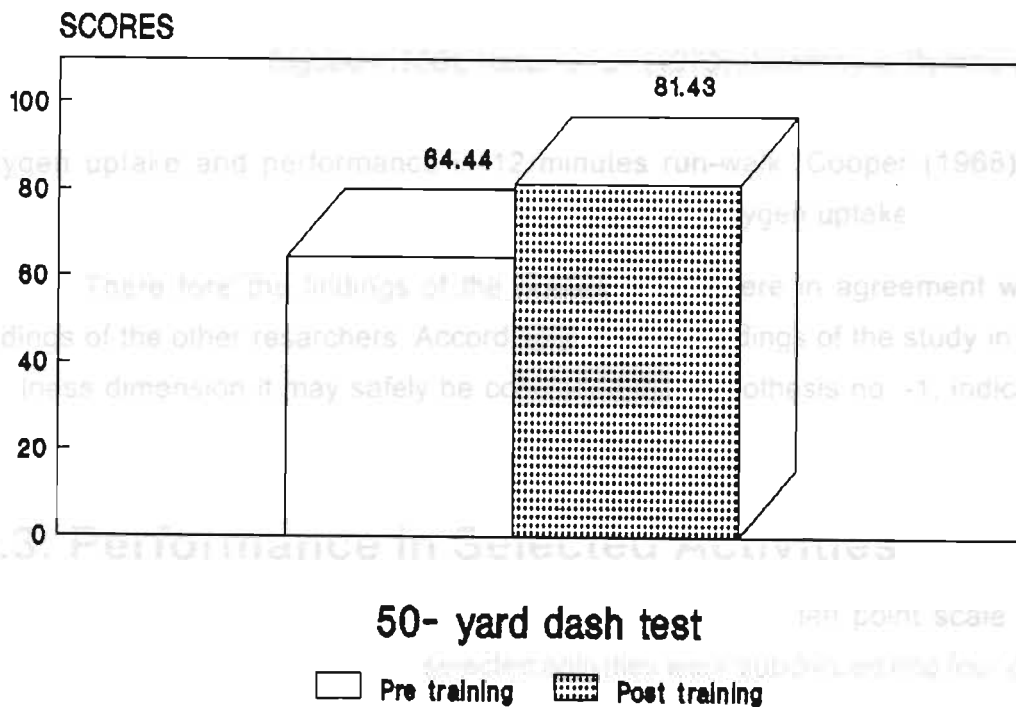
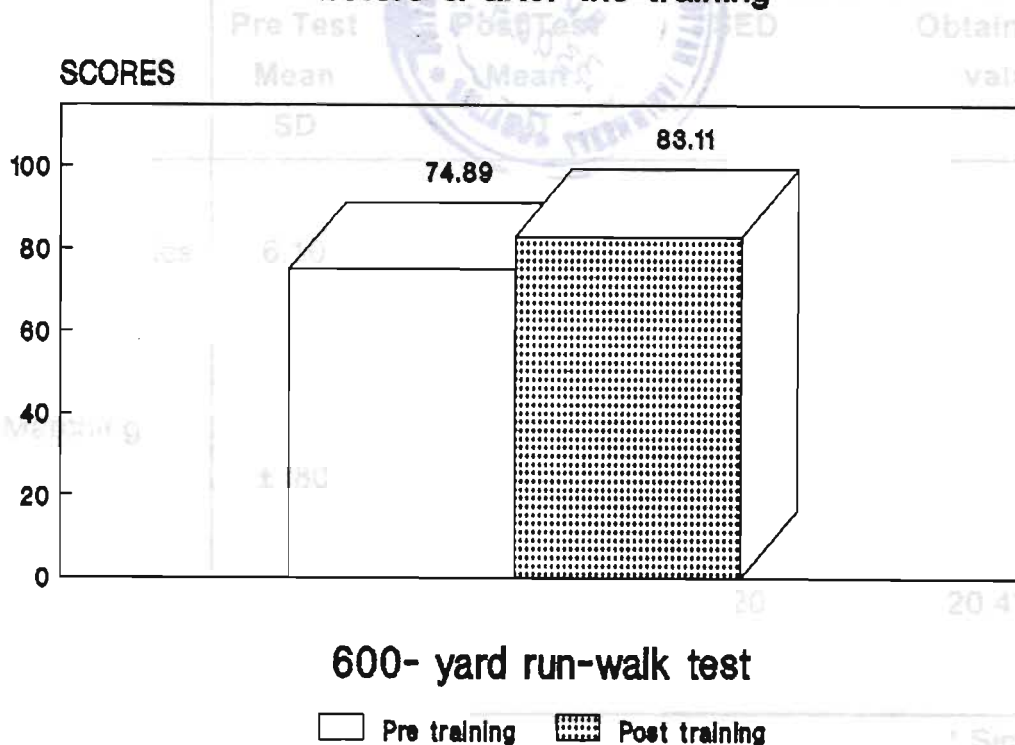


Fig.13. Comparison of endurance performance (cardiorespiratory) of the subjects before & after the training



Das and Banerjee (1992) observed that speed performance may be improved through appropriate training and longer the duration better was the magnitude of the improvement, among young soccer trainees.

Doolittle and Bigbee (1968), Katch et al. (1973), Kearney & Byrnes (1974), Ghosh and Banerjee (1985) found significantly high correlation between predicted oxygen uptake and performance in 12 minutes run-walk. Cooper (1968) found correlation of .897 between 12 min run with maximum oxygen uptake.

There fore the findings of the present study were in agreement with the findings of the other resarchers. Accordingly from the findings of the study in regard to fitness dimension it may safely be concluded that hypothesis no. -1, indicated in chapter 1.7 is accepted.

4.3. Performance in Selected Activities

Performance in selected activities were rated in a ten point scale as per procedure indicated in chapter III. selected activities were subdivided into four groups. Discussion are made group wise.

Table - 3 Mean and SD of the pre and post test data of formal activity and their comparison.

Activities	Pre Test Mean SD	Post Test Mean SD	SED	Obtained 't' value
Callisthenics	6.10 ± .45	6.58 ± .46	.04	12*
Marching	3.77 ± .80	5.13 ± .87	.05	27.2*
Dumbbell	3.06 ± .86	7.14 ± .80	.20	20.4*

* Significant

4.3.1. Formal Activity

Formal activities comprised of callisthenics, marching and dumbbell. The mean scores in these three activities at pre and post test respectively and 't' value comparing the mean scores are presented in Table No - 3. In these three activities the post test means were found significantly higher than the pre test mean scores. It means performance in these three activities improved following participation in the physical education training programme. The duration of participation in these activities were about six weeks. However the magnitude of improvement in these three activities were not equal. The maximum improvement noticed in dumbbell (133.33%) followed by marching (36.07%) and in callisthenics it was minimum (7.86%). Since the pre test score in Callisthenics was considerably high, the magnitude of improvement after six weeks was minimum. Further more learning in dumbbell activity was probably easier and due to very nature of the activity the magnitude of improvement was considerably high.

Table - 4 Mean and SD of the pre and post test data of Rhythmical Activity rating scores and their comparison.

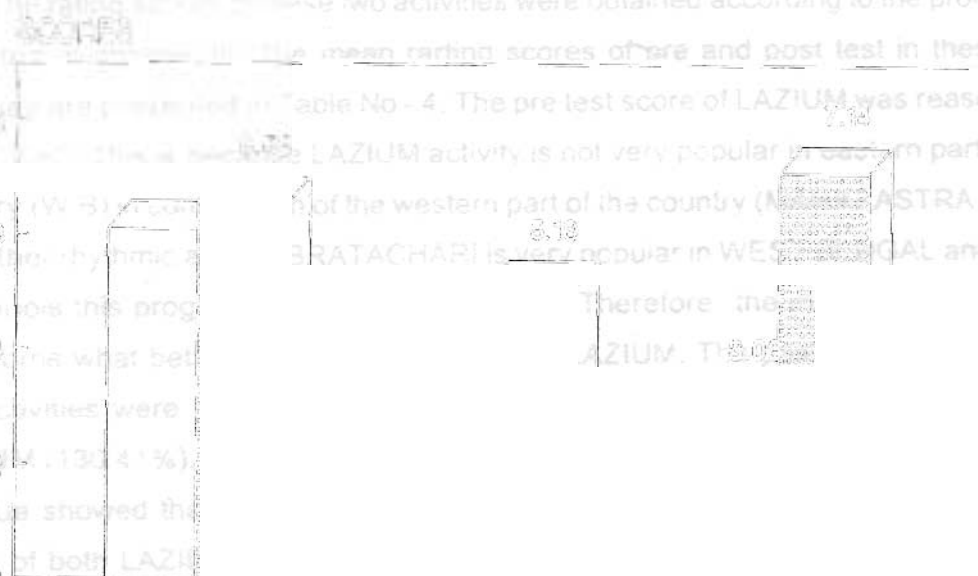
Activities	Pre Test Mean SD	Post Test Mean SD	SED	Obtained 't' value
Lazium	2.63 ± .54	6.06 ± .78	.11	31.2*
Bratachari	5.39 ± 1.09	6.22 ± 1.31	.17	4.88*

* Significant

4.3.2. Rhythmical activity

In rhythmic group subjects participated in two different types of activities. These were LAZIUM (a classical indian light apparatus drill in combination with

The rating scores of these two activities were obtained according to the procedure explained in the methodology. The mean rating scores of pre and post test in these two activities are presented in Table No-4. The pre test score of LAZIUM was reasonably low (3.13) because LAZIUM activity is not very popular in western part of the country (W-B) region. The other rhythmic activities in schools this program was not the what before the activities were LAZIUM (4.1304%). It value showed the score of both LAZIUM



the week of July 2019 to the post test was conducted in 3rd week of September '84. With the eight weeks period of participation in various physical activities and conditioning programme general physical fitness was improved. This has perhaps contributed to the improvement in the performance of rhythmic activities. A good performance in rhythmic activity is related to have a high degree of balance and co-ordination. Therefore improvement in the performance of rhythmic activities may be attributed due to the improvement of general fitness along with balance, co-ordination etc. Moreover learning in rhythmic activities for female students are enjoyable and have a natural inclination towards dancing movement which perhaps influenced in the improvement

Fig.15. Comparison of performances in the rhythmic activities before & after

Activity.

Activities in pre test and post test were: Aerobic, Badminton, Football, Gymnastics, Judo, Karate, Netball, Soccer, Table Tennis, Taekwondo, Volleyball, and Wrestling. The activities in pre test and post test were: Aerobic, Badminton, Football, Gymnastics, Judo, Karate, Netball, Soccer, Table Tennis, Taekwondo, Volleyball, and Wrestling. The activities in pre test and post test were: Aerobic, Badminton, Football, Gymnastics, Judo, Karate, Netball, Soccer, Table Tennis, Taekwondo, Volleyball, and Wrestling.

Highball etc. and have played Kabaddi and improved their performance



other games

Considering the performance capacity in various physical activities participated by the trainee females in the organised physical education training course may safely be concluded that performances in formal, individual, rhythmical and group activities were improved significantly. Hence, the hypothesis no. - 2 relating skilled performance in selected physical activities is rejected.

4.4. Physiological variables

Physiological variables measured in this study were heart rate at rest and following submaximal exercise, physical efficiency and the maximum O₂ uptake. The data collected according to the procedure and the results are presented in this Chapter in Table 4.1 and 4.2 respectively.

associated with training

during submaximal exercise following training. The exercise

induced tachycardia is thought to be caused by modification with
associated within the autonomic nervous system

decreased submaximal heart rate may be either due to 1) an increase in
muscle itself or 2) an extra
resulting from alteration in
Fox and Mathews, 1951



The findings of the present study are in line with other investigators. Saha
(1964), Kibom (1974), Scherer and Tanton (1965) and many other workers
have shown that training significantly decreases in the heart rate response to submaximal
exercise.

Chatterjee (1965), Ghosh (1976) and Ghosh (1976) also investigated the specificity
of and endurance training effects in both animals and humans. However, the
magnitude of improvement (7.3%) for the female trainee subjects may be different

4.1. Physical Efficiency Index

The data of physical efficiency index are presented in Table No. 4



It appears from the table that the mean P.E.I. score was 75.00 before training and 65.00 after training. Since the mean scores were not equal, the difference was highly significant at 0.05 level.

P.E.I. reveals the cardio-respiratory endurance capacity and in the field of physical education and sports the P.E.I. is considered to be an important criterion for evaluation of fitness. Ghosh and Banerjee (1965) have shown a highly positive correlation between P.E.I. and aerobic fitness. Ghosh (1976) also observed that higher

of cal programmes. Therefore it may be concluded that improvement of $\dot{V}O_2$ max
ing aspects of the study is a clear indication of physiological adaption due
exercise programmes that are being followed in the physical education training

during exercise. Physical
use and after completion of
logical orientabilities of the
test (test no-3 relative to

4.5. Psychological variab

might be achieved. The response capabilities of the individual are dependent upon

sitivity the mental health aspect, mood, and decreased anxiety and tiredness; beneficial
the individual (Brown 1988, Dishman 1988, Morgan 1980).

The result and discussion on the findings of the three psychological variables
ed on the subjects of the study are presented below.

systematic effort with increases in education to a certain point. Increases beyond that point would hinder or lower performance. Recent evidence relative to performance and anxiety has demonstrated support for the inverted-U hypothesis (Naulier & Idep, 1970; Weingberg and Hagan (1978)

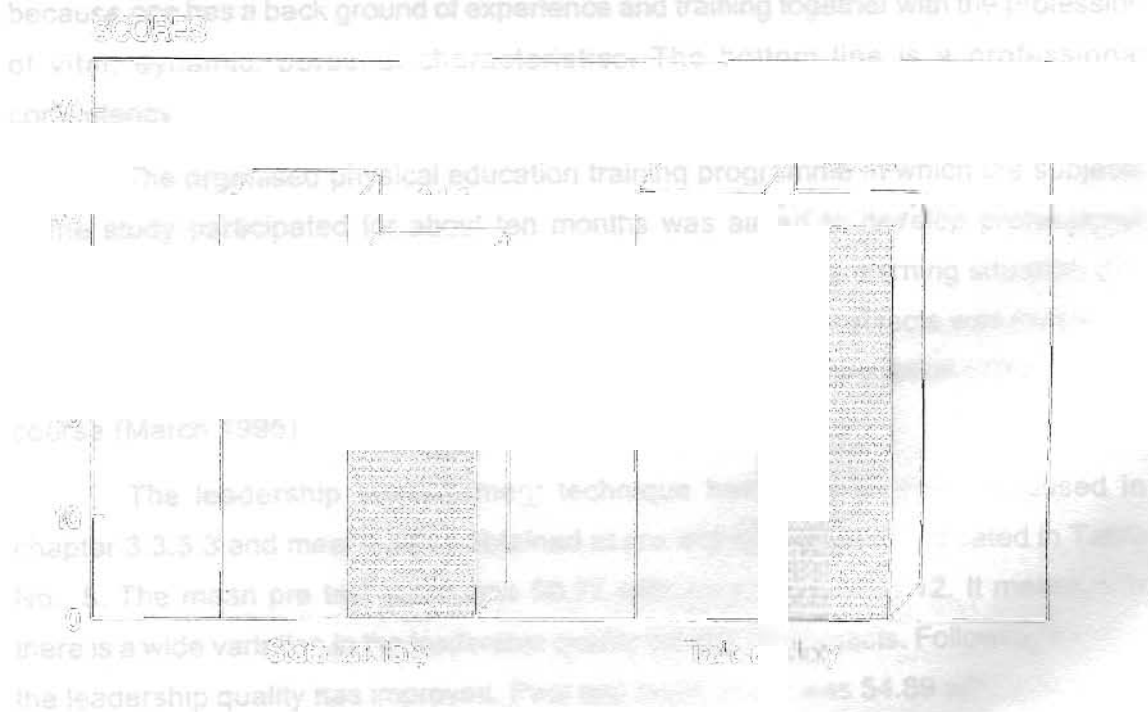
education programme as shown by the consistent with the findings of leading re

achievement motivation and ind significantly influenced . Thereby it may safely be

4.5.3 Leadership

Progress in a profession, particularly with the health care professions, and progress are closely related to leadership. Professional leadership is the force which starts and then continues to define the wheels of professional growth and progress. Bockwiler (1967), Heister (1964) developed a model to explain leadership effectiveness and indicated interrelationship of four factors: 1) The situation or task to be accomplished by leader, 2) the characteristics of the leader, 3) the leader does not become a leader in the profession through chance, however, the leader probably falls on one because one has a back ground of experience and training together with the professional of vital dynamic personal characteristics. The bottom line is a professional confidence.

Fig. 29. Comparison of anxiety level of the subjects before & after the training



The professional education training programme in which the subjects participated for about ten months was an effective leadership training programme. Following the training, the anxiety level of the subjects decreased from 55 to 45. This indicates that the leadership quality has improved. Post-training anxiety scores were 54.89.

4.6.1. Reaction Time.

response. Physical activity particularly on the chronic type might be expected to influence cognitive factors which would otherwise diminish with age. Reaction time measures provide a broad index of how effectively the central nervous system is functioning. In the present study reaction time both simple and choice have been used as a measure of psychophysiological reactivity.

The data collected according to the procedure mentioned in the chapter No - 4.6.1.1. pre and post test are

Table - 9 Mean and SD of the pre and post test data of Psychophysiological reactivity and their comparison.

	Pre Test	Post Test	SD	Obtained 't' value
Reaction Time (S)	341.11	312.22	43.37	7.64*
Reaction Time (C)	425	392	32.76	4.90
Skin Conductance	1.12	.92	.19	.03
				6.67*

* Significant

4.6.1.1. Simple Reaction Time.

It appears from the Table No-9 that mean pre test score of simple reaction time was 341.11 ms \pm 43.37 ms and in the post test mean score reduced to 312.22

pre test score of G.S.R was 112 mhos and score following training mean post score was reduced to 92 mhos

Since the means were different, T test was conducted to find the significance of difference, if any. The obtained T value was 5.67 which revealed that the difference between pre and post test scores was significant. It means following organised physical education training programme for consistent period of time (minimum 6 months) the skin conductance reduced significantly among subjects of the study. Similarly (et al (1992) observed that SC level at rest did not change during training phase.

Well (1983) found a difference between skin conductance in the laboratory. Holionander (1990) opined that the subjects manifested higher skin conductance. Similarly (1991) found that subjects this reduction was not evident.

A reduction of skin conductance may be due to a decrease in autonomic arousal. Thus the observations of the study found similarities with other researchers.

It may not be surprising that the subjects before training had lasting effects on psychological functioning, effecting the physiological response to stress in general. Regular physical exercise may enhance the belief that one is capable of performing certain physical activities. This in turn increase the physical self efficacy, together with true improvements in endurance capacity, flexibility, body composition etc and will improve physical self confidence and physical self acceptance. Training influences the physiological stress response is now well established but how far it can influence the psychophysiological reactivity has not been fully established by the current literature. Since stress reactivity is dependent on subjective appraisal of the stressor, that in turn depends on psychological appraisal. A training-induced change in psychological appraisal is not unrealistic to expect to be reflected in reduced physiological reactivity. The various training induced adaptations in the autonomic nervous system and in the target organs may reduce stress reactivity. By its physiological effects fitness may reduce stress reactivity. even if little psychological effects of training on stress reactivity are found (Geus 1992).

