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## Effect of cross training programme on body composition variables of M.P.Ed and B.P.Ed students

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### Abstract

The purpose of the present study was to find out the effects of cross training programme on Body composition variables of M.P.Ed. and B.P.Ed male students of S.R.S Chahal College of Physical Education, Kalayan, Patiala, Punjab. To achieve this purpose, twenty M.P.Ed & twenty B.P.Ed male students were randomly selected as subjects. The age of the subjects ranged between 19-23years. Two months cross training programme (morning and evening activity) was provided to all subjects. Pre-test was administered immediately on the commencement of classes and data of pre-test was collected. Post test data was also collected after two months of cross training programme. Body composition i.e. total body weight, skinfold measurements (Sum of Triceps and Calf), lean body mass and fat weight were chosen as criterion variables.

Body composition was measured by total body weight (measured with the help of weighing machine), skinfold measurement (Sum of Triceps and Calf), lean body mass (measured by total body weight minus the weight of body's fat) and fat weight, were chosen as criterion variables. In order to find out the differences between the pre-test and post-test t- ratio was applied. The results of the study showed that total body weight was increased after two months cross training programme. Sum of skinfold measurement and fat weight was decreased whereas lean body mass was slightly increased but not to the significant level. The results of the study also showed that the effect of cross training programme was more on M.P.Ed students rather than B.P.Ed students.

**Keywords:** cross training programme, body composition variables, skinfold measurements

### Introduction

Sports and physical activities have been an integral part of human life since its inception. In is universally accepted that sports and games act as tools for achieving the fitness goal. In modern times physical education is considered as the process of 'human engineering', and it is having much to do with the human body. Cross training programme effects positively on physical fitness and body composition. Body composition is most popular and frequently used term in physical education and the major concern of physical education teachers and coaches is to develop it. Body composition variables can be developed through systematic and planned training programme.

Body composition has been considered as a vital factor along with the physical fitness components which contribute to the athletic performance. Body composition is the proportion of the lean body mass, fat free body mass and depot fat. According to Uppal and co-workers body composition changes as a result of training and there is decrease in body fat and slight change in lean body weight. In this study an attempt is made to find out the effects of cross training programme on body composition variables of M.P.Ed. & B.P.Ed students of S.R.S Chahal College of Physical Education, Kalayan, Patiala, Punjab

### Methodology

To achieve this purpose forty male subjects (20 M.P.Ed And 20 B.P.Ed) were selected randomly from S.R.S Chahal College of Physical Education, Kalayan, Patiala, Punjab and their age ranged from 19 to 23 years,. During the training period, all subjects, Underwent two months cross training (Morning and Evening activity). Prior and after the training session subjects had fifteen minutes of warm up and fifteen minutes cool down exercises involving jogging, mobility and stretching exercises.

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Body composition was measured by total body weight (i.e. measured with the help of weighing machine), skinfold measurement (i.e. Sum of Triceps and Calf), lean body mass (measured by total body weight minus weight of body's fat) and fat weight were chosen as criterion variables. To find out the difference between the pre-test and post-test means, t-ratio was applied.

**Analysis and Interpretation of the Study**

To find out significant of difference, if any, between the pre and post-test means of M.P.ED and B.P.ED male students, following the two months cross training programme, t-ratio was computed. The level of significance chosen to test the hypothesis was set at 0.05.

**Table 1:** Significance of Difference between the Pre and Post Test Scores of M.P.Ed and B.P.Ed Male Subjects in Total Body Weight

| Group  | Pre test | Post test | Pre S.D. | Post S.D. | t-ratio |
|--------|----------|-----------|----------|-----------|---------|
| M.P.ED | 61.75    | 65.40     | 2.63     | 2.21      | 4.74    |
| B.P.ED | 54.55    | 57.35     | 4.35     | 4.20      | 2.04    |

\* Significant at 0.05 level  
t- 0.05 (38) = 2.01

Table No 1. Indicates significant difference between the pre and post-test means of M.P.ED and B.P.ED students in total body weight. The table indicates t-ratios of 4.74 and 2.04 respectively, both of which are significant at 0.05 level. The above finding indicates significant improvement in total body weight from pre to post test for both M.P.ED and B.P.ED students. Thus the hypothesis was rejected in case of Total Body Weight. The two groups also differ with respect to improvement in total body weight from pre to post test, as M.P.ED students shows better improvement than B.P.ED students.

**Table 2:** Significance of difference between the pre and post test scores of M.P.Ed and B.P.Ed male subjects in body composition (sum of triceps and calf skinfolds).

| Group  | Pre-test M | Post-test M | Pre S.D | Post S.D | t-ratio |
|--------|------------|-------------|---------|----------|---------|
| M.P.Ed | 25.65      | 20.08       | 2.75    | 2.93     | 5.38    |
| B.P.Ed | 37.05      | 32.95       | 5.13    | 4.09     | 2.79    |

\* Significant at 0.05 level  
t- 0.05 (38) = 2.01

Table No 2. Indicates significant difference between the pre and post-test means of M.P.ED and B.P.ED students in sum of triceps and calf skinfold. Above table indicates t-ratios of 5.38 and 2.79 respectively, both of which are significant at 0.05 level. The above finding indicates significant decrease in sum of triceps and calf skinfold from pre to post test for both M.P.ED and B.P.ED students. Thus the hypothesis was rejected in case of sum of triceps and calf skinfolds. The two groups also differ with respect to reduction of sum of triceps and calf skinfolds from pre to post test, as M.P.ED students shows better reduction in sum of triceps and calf skinfolds than B.P.ED students.

**Table 3:** Significance of Difference between the Pre and Post Test Scores of M.P.Ed and B.P.Ed Male Subjects in Lean Body Mass

| Group  | Pre test | Post test | Pre S.D | Post S.D. | t-ratio |
|--------|----------|-----------|---------|-----------|---------|
| M.P.Ed | 45.30    | 46.27     | 1.68    | 1.69      | 1.82    |
| B.P.Ed | 36.90    | 39.05     | 6.10    | 6.32      | 1.09    |

t- 0.05 (38) = 2.01

Table No.3 Indicates significance of difference between the pre and post-test means of M.P.ED and B.P.ED students in

lean body mass. Above table indicates t-ratios of 1.82 and 1.09 respectively, both of which are not significant at 0.05 level. The above finding indicates no significant improvement in lean body mass from pre to post test for both M.P.ED and B.P.ED students. Thus, lean body mass was not increased to the level of significance as a result of participation in two months cross training programme.

**Table 4:** Significance of Difference between the Pre and Post Test Scores of M.P.Ed and B.P.Ed Male Subjects in Fat Weight

| Group  | Pre Test | Post test | Pre S.D | Post S.D | t-ratio |
|--------|----------|-----------|---------|----------|---------|
| M.P.Ed | 9.30     | 7.15      | 2.79    | 2.79     | 2.43    |
| B.P.Ed | 13.10    | 11.4      | 2.49    | 2.72     | 2.06    |

t- 0.05 (38) = 2.01

Table No.4 Indicates significance of difference between the pre and post-test means of M.P.ED and B.P.ED students in fat weight. Above table indicates t-ratios of 2.43 and 2.06 respectively, both of which are significant at 0.05 level. The above finding indicates significant decrease in fat weight from pre to post test for both M.P.ED and B.P.ED students. Thus the hypothesis was rejected in case of fat weight. The two groups also differ with respect to reduction in fat weight from pre to post test, as M.P.ED students reduce more fat weight than B.P.ED students.

**Conclusion**

1. The two months cross training programme showed beneficial effects on the selected body composition variables of male subjects by an improvement in their total body weight and decrease in sum of triceps & calf skinfold and fat weight.
2. The finding of the study indicates significant reduction of body fat, whereas lean body mass was not increased to the level of significance as a result of participation in two months cross training programme.

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