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## The effect of plyometric training and interval training on motor fitness variables in college male handball players: A comparison of specific skill training methods

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### Abstract

The purpose of this study was to investigate the effects of specific skill training combined with plyometric training and interval training on selected motor fitness variables in college male handball players. Sixty players aged 18-25 years were randomly assigned to four groups: specific skill training with plyometric training (n=15), specific skill training with interval training (n=15), combined training (n=15), and a control group (n=15). The training was conducted five days a week for twelve weeks, with each session lasting one hour. Pre- and post-tests were conducted to assess speed and flexibility. The data were analyzed using analysis of covariance (ANCOVA) and Scheffe's post hoc test. The results showed significant improvements in speed and flexibility among the experimental groups compared to the control group. The adjusted post-test means for speed were 0.08, 0.09, 0.09, and 0.10 for the plyometric, interval, combined, and control groups, respectively ( $F=48.712$ ,  $p<0.05$ ). For flexibility, the adjusted post-test means were 25.9, 27.03, 27.53, and 26.59, respectively ( $F=8.523$ ,  $p<0.05$ ). The findings suggest that specific skill training combined with plyometric or interval training can effectively enhance speed and flexibility in college male handball players. Further research is recommended with larger sample sizes, different age and sex categories, and additional variables to confirm and expand upon these results.

**Keywords:** Speed, flexibility, skill training

### Introduction

Plyometric training is one of the most effective method for improve explosive power. A wide variety of athletes can benefit from power training, particularly if it is followed by a strength training programme. The purpose of plyometrics is to improve the player's capacity to apply more force more rapidly.

### Methodology

The subjects were selected randomly from Aditya College of Physical Education and Aditya College of Engineering, Surampalem, Andhra Pradesh. Sixty college male handball players aged from 18 to 25 years were selected as subjects for the purpose of this study. They were divided into four groups of fifteen each. Group I underwent specific skill training with plyometric training, Group II underwent specific skill training with interval training, Group III underwent combined training, for a period of twelve weeks and Group IV served as the control group.

### Experimental Design

The study primarily aimed to investigate the effect of specific skill training with plyometric training and specific skill training with interval training on selected motor fitness variables of college male handball players. The training was conducted five days per week, with sessions from 4:30 pm to 5:30 pm for twelve weeks. All subjects were assessed on the selected motor fitness variables, namely speed and flexibility. The pre-test was administered before the commencement of specific training, and the post-test was conducted upon completion of the training program.

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### Training Procedure

In this study, sixty (60) subjects were randomly selected from Aditya College of Physical Education and Aditya Engineering College, Surampalem, Andhra Pradesh. They were divided into four groups: three experimental groups and one control group. Specific skill training with interval training, specific skill training with plyometric training, and combined training were administered for 12 weeks, on three alternate days per week, with one-hour sessions per day.

### Statistical Technique

To find out the difference between pre - test of each group, paired' test was used. Analysis of covariance (ANCOVA) was computed because the subjects were selected random, but the groups were not equated in relation to the factors be examined. Hence the difference between means of the four groups in pre - test had to be taken into account during the analysis of the post - test difference between the means. This study was applied by the application of the analysis of covariance, where the post means were adjusted for difference in the initial means, and the adjusted means were tested for significance.

### Conclusion

The four groups in pre-test had to be considered during the analysis of the post-test difference between the means. This study employed the analysis of covariance, wherein the post means were adjusted for differences in the initial means, and the adjusted means were tested for statistical significance.

1. The adjusted post-test means for speed of specific skill training with plyometric training, specific skill training with interval training, combined training, and control group were 0.08, 0.09, 0.09, and 0.10, respectively. The observed 'F' value for the adjusted post-test means on speed was 48.712. This value exceeded the table value of 2.77 for degrees of freedom 3, 55 at the 0.05 level of confidence. As the observed F-value on adjusted post-test means among the groups on speed was highly significant, being higher than the required table value of 2.77, the results obtained demonstrated that the training on speed produced significant improvements among the experimental groups.
2. The adjusted post-test means for flexibility of specific skill training with plyometric training, specific skill training with interval training, combined training, and control group were 25.9, 27.03, 27.53, and 26.59, respectively. The observed 'F' value for the adjusted post-test means on flexibility was 8.523. This value exceeded the table value of 2.77 for degrees of freedom 3, 55 at the 0.05 level of confidence. As the observed F-value on adjusted post-test means among the groups on flexibility was highly significant, being higher than the required table value of 2.77, the results obtained demonstrated that the training on flexibility produced significant improvements among the experimental groups.

### Recommendations

Based on the results obtained, the following recommendations are proposed:

1. The findings of this study may be utilized by fitness trainers and coaches to enhance training programs for youth boys and girls.
2. Further research may be conducted with a larger sample size to examine the selected dependent variables.
3. Similar studies may be undertaken on different age

groups and sexes.

4. Comparable research can be carried out using a larger number of subjects and additional variables.
5. A similar study may be conducted on a larger population.
6. Further investigations may be conducted on other variables and with different training programs.

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