Effect of interval training method and repetition training method on the performance of 200 meters sprint

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Abstract
The purpose of the study was to see the effect of different training methods on the performance of 200 meters sprinters. Total 30 students (boys) on the basis of random sampling technique of age 16 ± 2 years were selected as a subject from Saraswati Vidya Mandir School, Jhansi (UP). All the students were divided into three different groups` i.e. Experimental group (A), Experimental group (B) and Control group (C). Group A was given the Interval Training, Group B was given Repetition Training and no treatment was given to control Group C. Before and after eight weeks of Training program, the performance of all three groups were recorded up to higher 1/10th of second. Groups “A” and “B” were given treatment in evening session, Monday to Friday. Saturday & Sunday were used for rest and no treatment was given to control Group C. To see the effect of different training program on the performance of 200 meters sprint Analysis of Covariance (ANCOVA) was employed and found significant difference in initial and final scores of 200 meters sprint performance of all the subjects at 0.05 level of significance.

Keywords: interval training, repetitive training.

Introduction
From the earliest time running has been a natural part of a man’s existence, whether he was catching animal for food or escaping from predators. However, he also began to run for pleasure and then competitively, leading to a desire to improve on his speed or ability to run farther (Encyclopedia of track and field, 1985)

Running is the most natural of athletics movements. Children run, as part of their play and practically every game require reserves of stamina and the ability to run fast. Every track event has running as its essence, sometime alone, sometime with a team and sometimes between obstacles. Every training and conditioning program contains an element of running, and test of fitness or physical ability always include running for speed (Ekta Gonthi, 1997) [5]

Two hundred meters running may the speed like short distance sprinter, but no means all 100 meters sprinters can compete successfully at 200 meters. In addition to extra distance, there is also a bent that must be negotiated at top speed. It is not a long 400 meters or a short 100 meters, but in an event of the 200 meters, it is also control, balance and poise (Ekta Gonthi, 1997) [5]

The 200 meter runner like the 100 meter athlete must train for greater speed points of technique high-quality sprinting, paying special attention to particular points of technique during repetition runs. In addition he must train over distance repetitions. Interval training is a good example of progressive overload. It aims at bettering physical endurance, increasing the capacity to respond well to the maximum load. During the past decade, interval training has become one of the most common methods of conditioning for competition in events requiring physical endurance. It has been used by almost all distance runners during the past 10 years including such great athletes as Switzer, Filbert, Bayi, Martin, Liquoro and Jim Ryum The interval training approach is used universally for the training of swimming, cyclists and rowers performers well as members of soccer, hockey and basketball teams during preseason conditioning program. Many coaches have contributed much of the tremendous improvement in the performance of endurance event in track & field and swimming to the increased use of interval training by athlete of both sex and all ages and abilities (George B)
Interval method is perhaps the most versatile method for improving endurance of various types. In interval method, the exercise is done at relatively higher intensity with intervals of incomplete recovery. Interval method is based on the following principle: work should be done with sufficient speed and duration so that the heart rate goes up to 180 beats/min. After this should be a recovery period and when the heart comes down to 120-130 beats/min, the work should be started again. The training load in interval method, therefore, can be controlled by repeatedly checking the heart rate (Singh Hardyal, 1991) [9].

**Procedure**

**Selection of Subjects**

Thirty male students from saraswati Vidya mandir, Jhansi were selected randomly as the subjects for the present study. Subjects were randomly assigned to each of the three groups. Age of the students was $16 \pm 2$.

**Design of the Study**

Random group was used for the present study. There were three group namely: Experimental group (A), Experimental group (B), control group (C). Each group consists of ten subjects. The group A was given the interval training programme, group B was given repetition training method and Group C was given no training. Pre test scores were collected for each group before the administration of the training programme. After the eight weeks of training programme post test were collected on each group.

**Criterion Measure**

The criterion measure chosen for the study was the performance of 200 meters recorded up to higher $1/10^{th}$ of a second.

**Collection of the Data**

Data were collected on each subject before and after the training programme (pretest & post test) on 200 meters performance. The command and condition of the test was applied as per Track and field ruled and regulations for the race. The timing was recorded by the manually operated electronic watch up to $1/10^{th}$ of each subject separately.

**Administration of Training Programme**

Eight weeks of training programme was administered to know the effect of interval training method and repetition training method on performance of 200 meters sprint. The subjects were divided into three equal groups of 10 each:-

1. Interval group (A) 10
2. Repetition group (B) 10
3. Control Group (C) 10

The training was given 5 days in a week (from Monday to Friday) to both experimental group and no training was given to the control group. Saturday and Sunday were be utilized for rest and relaxation for both the groups. Entire training programme was administered only in the evening session.

**Training Programme for Interval Group (A)**

1. Work was given 5 times in a week for two months.
2. The volume of the work load was less in the preparatory phase and it was increased gradually.
3. The repetition distance was 80mts, 100 mts, 120 mts, 150 mts, 200 mts and 250 mts.
4. For checking the intensity after each load heart rate was considered as a measure of load. The heart rate was kept between 170 to 180 beats/min
5. When heart rate was come down at 120-130 beats/min the next work load was started again.
6. The heart rate was checked at carotid artery for 15 sec. multiplied by 4.

**Training Programme for Repetition Group (B)**

1. Work was given 5 times in a week for two months.
2. The volume of the work load was less in the preparatory phase and it was increased gradually.
3. The repetition distance was 80mts, 100 mts, 120 mts, 150 mts, 200 mts and 250 mts.
4. For checking the intensity, heart rate was kept about 180 beats/min and above
5. Next work load was given after the complete recovery.

The training was given in evening session to both groups where supervision was made by the research scholar himself. Pretest was taken in second week of November and post test was taken in the second week of January.

For both groups, the intensity, recovery and volume were as Shown in table no 01

**Table 1:** Load Parameters of Interval Training Method and Repetition Training Method

<table>
<thead>
<tr>
<th>Method</th>
<th>Intensity</th>
<th>Recovery</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval method</td>
<td>70-80%</td>
<td>incomplete recovery</td>
<td>6-10 repetition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(90-180sec.)</td>
<td></td>
</tr>
<tr>
<td>Repetition method</td>
<td>90-100%</td>
<td>complete recovery</td>
<td>6-10 repetition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3-10 min.)</td>
<td></td>
</tr>
</tbody>
</table>

**Statistical Procedure**

To find out the effects of two training methods on the performance of 200 meters, Statistical Package for Social Science (SPSS) version 20 was used. For testing hypothesis the level of significance was set at 0.05 level.

**Results**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Test</th>
<th>Groups</th>
<th>sum of squares</th>
<th>df</th>
<th>Mean sum of squares</th>
<th>“F”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interval training Group (A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.134</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.126</td>
</tr>
<tr>
<td></td>
<td>mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.784*</td>
</tr>
</tbody>
</table>

*significance at 0.05 level
In the light of conclusion drawn the following Recommendations are made:-

1. Interval training is necessary for all the sports and games according to their nature and need.

2. Interval training and repetition training should be given emphasis for almost all sports and games when different forms of speed are required at the same time.

3. A similar lab study may be conducted by employing sophisticated equipments for measuring various physiological variables.

4. Both training should be given emphasis for the development of speed for every dept. /college of physical education.

5. The present study may be repeated with other subjects then physical education students i.e. students studying in secondary school.

References


5. Ekta Gonthi. Teaching and coaching athletics (Delhi: sports publication), 1997, 3, 10, 11.


Table 3: Paired Adjusted Final Means and Difference between Means of Two Experimental and One Control

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean difference</th>
<th>Critical difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interv. A</td>
<td>0.09</td>
<td>0.71</td>
</tr>
<tr>
<td>Repet. B</td>
<td>30.122</td>
<td>0.71</td>
</tr>
<tr>
<td>Control C</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Repet. A</td>
<td>1.41</td>
<td>0.71</td>
</tr>
<tr>
<td>Interv. B</td>
<td>31.363</td>
<td>0.71</td>
</tr>
<tr>
<td>Control C</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>Interv. A</td>
<td>0.09</td>
<td>0.71</td>
</tr>
<tr>
<td>Repet. B</td>
<td>30.122</td>
<td>0.71</td>
</tr>
<tr>
<td>Control C</td>
<td>0.71</td>
<td></td>
</tr>
</tbody>
</table>

*significant at 0.05 level

Table indicates that groups trained through interval training method and repetition method did not show any significant difference between them (M.D. = 0.09).

Further it was revealed that interval training group is significantly superior to control group (M.d = 1.50) repetition training group was also superior to control group (M.D= 1.41)

The findings of table 03 indicate that both the training programme were equally effective in improving the performance of 200 meters sprint.