COMPARATIVE EFFECT OF ISOTONIC TRAINING ON SPEED OF
FEMALE PLAYERS

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ABSTRACT

The aim of this study was to examine the effect of an six week isotonic training program on speed of female players. A total of twenty female players age ranges 17 to 18 years from LNIPE volunteered to participate in this study. They were divided randomly into 1 of 2 groups: Experimental group (EG; N=10) and control group (CG; N=10). A isotonic training program was applied to the subjects 3 days a week for 6 weeks for 30-35 minutes. Testing was conducted before and after 6 weeks of training. Speed as variable was selected for the study. Speed was measured with 50 meter dash and timing was taken by electronic stopwatch. The data was analyzed by applying one way analysis of variance (ANCOVA). After the intervention, there is a significant difference was found among the treatment and the control group.

Key words: Isotonic training, Speed, female athletes.

INTRODUCTION:
Fitness which may be defined as the successful adaptation to the stressors of one’s life style is a desirable human condition and is based on a scientific and systematic training program. Athletes prepare to achieve a specific goal through structured and focused training. The intent of training is to increase the athlete’s skills and work capacity to optimize athletic performance. Regular exercise benefits players of all ages and sexes. Regular physical activity and exercise offer great benefits to players is a good reason to make exercise routine. Regular physical activity maintained body’s physiological and physical fitness.
Running has become the preferred mode for exercise and millions of recreational runners are taking part in such activities. Speed is the rapidity of movement. Speed may be defined as displacement in per unit of time and usually is measured covering a fixed distance as time.

Muscles function by contracting in such a manner that the muscle shorten and the ends brought together, or the muscle lengths and the ends go away from the center as in the beginning of a pull-up is considered as isotonic movement. Speed is the ability to cover the distance between 2 points in the shortest possible time. This is the product of reaction time (time taken to detect and respond to a stimulus) & movement time (time from beginning of a movement to its completion). Movement time can be seen as the product of acceleration and top speed i.e. maximum possible meters per second that a player can run. Speed is important ability which highly affects the performance of players, it is necessary to improve it before to take part in any competition; it is the ability to move the body, or a portion of the body quickly. When undertaking training to improve the speed of players, the fitness advisor should consider the training to improve the elements of reaction time, acceleration, and sprinting technique, all of which should be incorporated into the training programme.

Too often, sport training concentrates on speed. Speed of course, is essential in many competitive sports. The agile athlete uses energy more efficiently. Because you have trained your body to respond, you are less likely to get injured from missteps or falls. The process also increases your mental alertness. You play better because you are more alert to the changes going on around you. If the ball suddenly heads down court, you can quickly react and stay in the game.

METHOD:
A total of twenty female players with age ranges 17 to 18 years from Lakshmibai National Institute of Physical Education, Gwalior, were selected randomly as the subjects for the study. They were volunteered participate in the training.
Pre-test and post-test randomized group design was adopted for this study as all subjects were randomly selected and divided into two groups i.e. one experimental and one control group.
Speed was measured by 50 meter dash test and measured in seconds with the help of electronic stopwatch.

All the subjects were tested for speed variable. After the administration of pre-test the subjects were divided into two-groups randomly i.e. the group undergoing isotonic training as treatment group as well as one group was kept as control. Isotonic training program was applied to the subjects 3 days a week (Monday, Wednesday, and Friday) for 6 weeks, period of 30-35 minutes. Sprint jog, Close out drill and Line z-drill were selected for giving training program. Test on selected variable was administered to the subjects before starting and after the completion of training programme.

### SCHEDULE OF THE TRAINING PROGRAM

<table>
<thead>
<tr>
<th>Training programme</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm up</td>
<td>05 minutes</td>
</tr>
<tr>
<td>Training</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Cooling down</td>
<td>05 minutes</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40 minutes</strong></td>
</tr>
</tbody>
</table>

examine the hypothesis of the study, descriptive statistics such as mean and standard deviation was used. To compare the effects of training on speed, the one way analysis of variance (F- ratio) was employed and the level of significance was set at 0.05. The SPSS statistical package was used for statistical calculations.

**RESULTS:**

For the analysis of data, the following results were drawn. The descriptive statistics of speed variable are shown in table-1.
TABLE 1
Mean and standard deviation of speed variable of female players

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group</td>
<td>8.03</td>
<td>0.623</td>
<td>10</td>
</tr>
<tr>
<td>Control group</td>
<td>8.46</td>
<td>0.823</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>8.24</td>
<td>0.744</td>
<td>20</td>
</tr>
</tbody>
</table>

*significant at 0.05 level of significance

Table 1 shows the mean (adjusted post test mean) and standard deviation of the speed variable of female players between the experimental and control group i.e. mean and standard deviation are 8.03 and 0.623 for experimental group and mean and standard deviation are 8.46 and 0.823 for control group respectively.

TABLE 2
Comparison of two groups by using one way analysis of co-variance (ANCOVA)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type I Sum of Squares</th>
<th>df</th>
<th>Mean</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre speed</td>
<td>5.09</td>
<td>1</td>
<td>5.09</td>
<td>21.99</td>
<td>.000</td>
</tr>
<tr>
<td>Treatment group</td>
<td>1.51</td>
<td>1</td>
<td>1.51</td>
<td>6.54</td>
<td>.020</td>
</tr>
<tr>
<td>Error</td>
<td>3.93</td>
<td>17</td>
<td>0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>10.54</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*significant at 0.05 level of significance

Table 2 shows that there is significant difference between the treatment group and the control group in the speed, as their P-value is 0.02 which is less than the 0.05, thus the null hypothesis of no difference among the adjusted means for the data on criterion variable in the experimental group may be rejected at 5% level.
DISCUSSIONS:

Findings of the present study showed that there is significant difference in the speed after the six weeks of the isotonic training program. A scientific training occupies a salient stand and plays a prominent role in improving speed. This might be attributed due to continuous long duration of vigorous training which increases the speed of the female players.

The hormone affects everything from muscle size and strength to the size of the heart to the amount of oxygen-carrying blood cells in the body to the percentage of fat on an athlete’s body. The sprinter with the best genetics will usually win. But with smart training and a good work ethic, any athlete can run much faster than they ever thought possible.

In conclusion, in speed training, it is important to improve as many fast motor units as possible, which are more suitable for fast movements. The gains in sprint performance occurred in the initial acceleration and speed-maintenance phases. The ability to accelerate quickly from a stationary position will provide a competitive advantage for athletes. Upper body strength and abdominal strength will help the sprinter maintain good sprint mechanics, and the upper body will help counter the torque produced by the lower body.

Similar results were also seen in the study of Sarika Pal (2008) and Gevat C. et al (2012).

References


