EFFECT OF ENDURANCE TRAINING ON SELECTED PHYSICAL FITNESS VARIABLES OF POLYTECHNIC MIDDLE DISTANCE RUNNERS

1S.Naresh Kumar, Ph.D Research Scholar, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India.

2Dr.K.Vaithiananthan, Research Supervisor, Department of Physical Education and Sports Sciences, College of Science and Humanities, SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India.

Abstract:

Background: Endurance training is a famous form of therapeutic and purposeful exercise. Despite their popularity, few empirical research have investigated the advantages of Endurance training in relation to sports activities performance. Method: Therefore the purpose of the study was to investigate the effect of endurance training on Speed, Muscular Endurance, and Flexibility of Polyechnic Middle Distance Runners. In this study thirty (30) subjects, of Polytechnic Middle Distance Runners were randomly selected in Endurance training group and in non Endurance group, fifteen (15) in each group. (n=30; age 14 ± 3.04; height 1.68 ± 6.64 cm; weight=58 ± 7.36 kg). Timeline: The Endurance training consisted of twelve weeks. Physical fitness variables completed of the both groups at zero time and after twelve weeks of Endurance training in experimental group and except Endurance training intervention in non Endurance group. Results: In present study, Speed (10.22), Muscular endurance (11.17) and Flexibility (18.71) were changed significantly. Conclusion: Middle distance running is a event that entails multidirectional motion patterns that challenge the capacity to keep dynamic stability. Polytechnic Middle Distance Runners want a stable core to efficaciously perform upper and lower extremity movements. The Endurance training program introduced in this report accommodates the physical fitness speed, muscular endurance and flexibility vital for effective middle distance runners performance. Research findings shows that the Endurance training has a positive effect on physical fitness of the school Polytechnic Middle Distance Runners. Therefore Endurance training covered in this study are beneficial for the Polytechnic Middle Distance Runners.
Keywords: Middle Distance Runners, Paired ‘t’ test, Physical Fitness, Endurance Training.

Introduction:

Detraining, defined as a partial or complete loss of training-related adaptations as a consequence of training load reduction or training cessation [1], represents a crucial factor to consider both from a sports performance perspective but also for the athletes’ overall health and well-being [2]. The effects of short-term training cessation (4 weeks or less) are associated with declines in numerous fitness outcomes. For instance, 3 to 4 weeks of strength training cessation could lead to significant reductions in force endurance, maximal power and maximal force [3]. In addition to neuromuscular losses, training cessation could lead to declines in cardiovascular adaptations [1]. Twelve days of training interruption led to VO2 max declines of more than 5% in well-trained cyclists [4], and aerobic endurance could be similarly affected [5]. Intriguingly, the energy cost of running (Cr) does not seem to be modified after short-term (2 weeks) training cessation in distance runners [6]. Cr, a crucial performance determinant in middle- and long-distance events, could be improved after strength training interventions concurrently implemented with a running program [7], provided that training variables are manipulated appropriately [8]. While a recent review reported that 2 to 4 weeks of concurrent training interruption leads to reductions in 1RM (7–10%), VO2 max (5–15%), vertical jump (3–5%) as well as agility and repeated sprint ability (1–5%) [9], much less is known about the effects of concurrent training cessation on Cr. Thus far, one study including six elite male runners showed that the improvements in Cr attained after 12 weeks of concurrent training were maintained after 5 weeks of resistance training cessation [10]. Intense endurance exercise in young athletes improves pulmonary vascular function and (B) increases in DM and Vc at rest and during exercise are likely due to greater recruitment of lung capillaries [11]. In order to add information to this very limited but nevertheless important area of research, the purpose of this aim of the present study was to scientific investigation into the effect of Endurance training on physical fitness performance of Middle Distance Runners.

Methodology: A sample of male junior Polytechnic Middle Distance Runners (n=30; age 14 ± 3.04; height 1.68 ± 6.64 cm; weight=58 ± 7.36 kg) was evaluated. For the purpose of the present study, the players age ranged on 14-16 years categories Polytechnic Middle Distance Runners.
Randomized controlled pre and posttest design was used for the study. Subjects divided two groups as Endurance training group (n=15), and control group (n=15). Subjects separated two groups randomly method. A sample of the 30 best male Polytechnic Middle Distance Runners was evaluated using a physical fitness variables speed was measured by 50 meters run test unit of measurement in seconds, muscular endurance was measured by sit-ups test unit of measurement in points and flexibility was measured by sit and reach test unit of measurement in centimeters. The Endurance training consisted twelve weeks. Physical fitness variables completed of the both groups at zero time and after twelve weeks of Endurance training in experimental group and except Endurance training intervention in non Endurance group.

**Statistical analysis:**

The data were analysed using statistical package for social sciences (SPSS) for windows version 16.1. Paired t-test was carried out between Endurance training and control groups. To find out significance difference between the means of pre and post test of the groups and are presented in Table I & II.

**Table-I**

**TABLE SHOWING COMPARISON OF DIFFERENCE IN PRE TREATMENT AND POST TREATMENT SCORES AMONG ENDURANCE TRAINING.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>Std. Error of the mean</th>
<th>DF</th>
<th>‘t’</th>
<th>Table value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Fitness Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>Pre test</td>
<td>7.05</td>
<td>0.96</td>
<td>0.96</td>
<td>14</td>
<td></td>
<td>10.22*</td>
</tr>
<tr>
<td></td>
<td>Post test</td>
<td>6.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscular Endurance</td>
<td>Pre test</td>
<td>31.20</td>
<td>10.66</td>
<td>0.77</td>
<td>14</td>
<td></td>
<td>11.17*</td>
</tr>
<tr>
<td></td>
<td>Post test</td>
<td>41.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td>Pre test</td>
<td>20.33</td>
<td>9.47</td>
<td>0.81</td>
<td>14</td>
<td></td>
<td>18.71*</td>
</tr>
<tr>
<td></td>
<td>Post test</td>
<td>29.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 0.05 level for the degrees of freedom 1 and 14, 2.145
Table I suggests the obtained ‘t’ values of the Endurance training group on criterion measure of 10.22 (speed), 11.17 (muscular endurance), 18.71 (flexibility). The obtained ‘t’ values to be significant at 0.05 level for degree of freedom 1, 14 the required critical value was once 2.145. Hence the obtained ‘t’ values on the selected criterion variables greater than the required critical value, it was concluded that the Endurance training programme produced enormous improvement mean difference.

**Figure 1:**
Bar diagram showing the pre, post means values of Endurance training group (SB TG) on Speed, Muscular endurance and Flexibility.

**Table-II**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test</th>
<th>Mean</th>
<th>Mean Difference</th>
<th>Std. Error of the mean</th>
<th>DF</th>
<th>‘t’</th>
<th>Table value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table I suggests the obtained ‘t’ values of the control group on criterion measure of 2.02 (speed), 1.87 (muscular endurance), 0.45 (flexibility). The obtained ‘t’ values to be significant at 0.05 level for degree of freedom 1, 14 the required critical value was once 2.145. Hence the obtained ‘t’ values on the selected criterion variables less than the required critical value, it was concluded that the control group no differences.

**Figure 2:**

**Bar diagram** showing the pre, post means values of control group (CG) on Speed, Muscular endurance and Flexibility.
Discussion:

The Endurance training protocol used in this study aimed at providing the co-activation of global and local muscles of the core. The results of the 12-week Endurance training exercise protocol showed significant improvements in speed, strength endurance and flexibility of the upper back, lower back and abdominals. Based on the studies in the literature that suggest that exercises such as sit ups, double leg lowering, and push-ups performed on a stable surface increase the level of muscular activity of the abdominals and obliques more than curl-ups, double leg lowering, and push-up performed on a stable surface [12], these findings seem congruent. Despite the used in these studies merely assessed the activity of the superficial global muscle groups, the authors suggested that the motor control system required the activation of the global and local muscles to stabilize the spine to maintain balance and prevent the threat of falling off the Endurance.

Conclusion:

Endurance training has significant effect on physical fitness Variables such as speed, muscular endurance and flexibility. It means that Endurance training increase speed and muscular endurance also increase flexibility therefore increase the Endurance training to given the Polytechnic Middle Distance Runners.

Reference:


