Experimental

Effects of Micronutrient Supplementation on Endurance Running Performance of Adolescent Girls

Jinnatunnesha Khatun, Asoke Banerjee, Asit Tarafdar

Research Scholar Dept. of Physical Education University of Kalyani and F.M. University Orissa

Abstract

In the arena of sport from the very ancient days athletes as well as experts are looking for ways and means for development and enrichment of athletes. Quite often the athletes use some sort of unfair means like doping for enhancing their performance. On the contrary if the athletes are trained technically and supplemented scientifically with respect to their nutritional needs, they can perform better in sport field than technical training only. In most of the third world countries people often suffer from malnutrition and so are the athletes. Many researchers focused towards supplementation and its application in grooming of athletes. Keeping in consideration the above facts the scholar premeditated to conduct a study to analyse the effects of selected micronutrient supplementation on endurance running performance of adolescent girls. Keeping in view the ethical part the scholar had continuous consultation with a medical expert; employed renowned company for assessment of biochemical tests and also used consent form for seeking voluntary willingness of the subjects. As an experimental analysis the scholar prepared a composite prescription of micronutrients composed of the minerals Ca, Mg, Fe, and vitamins B12 and D; based on the initial test and diagnosis of the medical expert. There after the supplementation was administered. From data analysis it is revealed that the endurance running performance of the girls developed significantly due to the supplementation. Based on findings of other researchers and other literary materials it is quite evident that the vitamins and minerals used for supplementation in the study are performance boosters and played a significant role in development of performance of the untrained girls.

Introduction

In our country India from the very ancient age athletes had to face lots of hardship during their sports career. They had to face challenges with respect to infrastructure, facilities, financial support, equipment and tools, as well as nutrition. Still now there is a huge number of athletes from the rural areas who face adversities with respect to food and nutrition; which is considered to be one of the prime factors determining performance of sports person. Good level of nutrition augments the performance of an athlete and vice versa.

Sometimes the athletes also use some sort of unfair means like doping for enhancing their performance. Unlikely, the process of supplementation which is legal and effective can be an enormous benefit especially for athletes of a country like India, where a number of athletes are economically below poverty line, and inevitably face several nutritional deficiencies. At this juncture it is worth...
mentioning that if the athletes are trained technically and supplemented scientifically with respect to their nutritional needs they can perform better in sport field than technical training only.

**Purpose**

The purpose of the study was to determine the composite effect of vitamin D, B12, Calcium, magnesium and iron supplementation on endurance running performance of adolescent girls.

**Significance**

The scholar feels that the findings of the present study will help athletes and coaches in tactically and strategically.

**Some literature**

The foundations of sport performance are training and nutrition/diet of the athlete, with nutritional strategies providing a supportive role in enhancing training adaption (Stellingwerff et al., 2019).

Micronutrients are essential for life and include; vitamins which are organic compounds that support health, growth and reproduction and are needed in small amounts to prevent clinical deficiencies and declines in health (Fogelholm, 2015).

A key feature of most vitamins is that the human body is unable to synthesise them (Fogelholm, 2015), therefore they must be obtained from dietary intake.

Micronutrient supplementation is common among athletes, with a meta-analysis finding approximately 50% of athletes were using vitamin or mineral supplements (Knapik et al., 2016).

Alternatively, supplementation may be considered by athletes in order to support adaptation to training, for example, iron supplementation may be required to support adaptation to altitude training (Garvican-Lewis et al., 2016).

Some micronutrients are more likely to be of concern in particular sports. For example, vitamin D concentrations may be low in athletes training and competing in Winter sports or predominantly indoors (von Hurst and Beck, 2014), while iron stores may be more compromised in athletes/or physically active individuals undertaking high intensity and endurance based exercise (Martin et al., 2019). While sufficient intake of vitamins and minerals is considered paramount for individual health, the role of supplementation on exercise performance, either directly or indirectly, requires an updated review.

**Methodology**

The study was experimental in nature. The scholar randomly selected 30 adolescent girls as subjects of the study. With due consultation with a medical expert and after thorough tests of the selected micronutrients a prescription with the required nutrients was administered to the girls for a period 12 weeks. The scholar tried to analyse the change with respect endurance running performance followed by the treatment.

**Result and Discussion**

<table>
<thead>
<tr>
<th>Table No. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Showing the mean and SD of age height and weight of the subjects</strong></td>
</tr>
<tr>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Valid N (Listwise)</td>
</tr>
</tbody>
</table>

In table No. 1 mean age, height and weight of the subjects are 17.40, 161.13 and 53.63 and their SD are 1.653, 6.548 and 5.852 respectively.
From paired samples t test result presented in table No.4 it is clear that performance of the girls improved significantly due to the supplementation. From the findings it may be deduced that the composite micronutrient supplementation had positive impact on the subjects.

**Conclusion**

From the data analysis presented above it is evident the supplementation process played a role in development of endurance running performance of the adolescent girls. From the literature cited above it is clear that since human body cannot synthesize most of the micronutrients and many of the girls face deficiencies with respect to micronutrients such type of supplementation may be beneficial not only for development athletic abilities, they will also play a role in maintenance of good sustainable health.
References