

Comparison of H-Reflex Response of Sprinters & Non-Athletes

Kumar¹, Ashok, Soodan², J.S., Kumar³, Rajesh. & Kaur⁴, L.

¹Asst. Prof., Dept. of Sports Science, Punjabi University Patiala (Punjab) India, Email: akashokin@gmail.com

²Scientific Assistant, Department of Sports Physiology, SAI NS NIS Patiala (Punjab) India

³Associate Professor, Department of Physical Education, Osmania University, Hyderabad (Andhra Pradesh) India

⁴Government Medical College, Amritsar, Punjab

Abstract

The aim of this study was to investigate the effects of training type (anaerobic) on Hoffmann reflex (H- reflex) response parameters in sprinters & non-athletes. For this purpose, 10 male Sprinters (Group 1) and 10 male non-athletes (Group 2) were involved in this study in which the amplitude and latency values of H- reflex were measured with the help of an equipment called “Neuroperfect” (Medicaid Systems, India). Statistical analysis was performed by using statistical software ‘SPSS,’ means \pm SD and student’s *t* test was used. The mean age and body height of group 1 & 2 were 23.93 ± 2.65 years & 173.12 ± 6.40 cm and 24.28 ± 2.45 years & 168.80 ± 3.25 cm respectively. The H-reflex amplitude and latency values found in groups 1 & 2 were 3.13 ± 0.22 mV & 22.77 ± 2.82 ms and 6.19 ± 0.44 mV & 26.79 ± 1.85 ms respectively. There was no statistically significant difference between the groups with respect to latencies of H- reflex. In the test group (sprinters), the amplitude of the H-reflex was significantly smaller than the non-athlete group ($p < 0.05$). The results of this study suggest that training of skeletal muscles affect the H- reflex response parameters.

Key words: Sprinters, H- reflex, Amplitude, Latency, Training

Introduction

The H-reflex is an estimate of alpha motoneuron (α MN) excitability when presynaptic inhibition (Zehr, 2002) and intrinsic excitability (Capaday, 1997) of the α MNs remain constant. This measurement can be used to assess the response of the nervous system to different neurologic conditions, (Fisher, 1992) musculoskeletal injuries, (Hopkins & Palmieri, 2004) application of therapeutic modalities, (Krause et al, 2000) pain, (Leroux, 1995) exercise training, (Earles et al, 2002) and performance of motor tasks (Capaday, 1997). It is known that a number of factors affect the normal value of H-reflex amplitude and latency (Simonsen and Dyhre-Poulsen, 1999). While age, body

height and extremity length reveal direct correlation with the latency value of the H-reflex, its amplitude is associated with contraction of muscle, intensity of stimulus, vestibular stimulation, movements of head and neck, and temperature (Oh, 1993). The type and training level of skeletal muscle also affects H-reflex amplitude (Casabona et al, 1990). The aim of this study was to determine the effects of the type of training on H-reflex response parameters like amplitude and latency in sprinters and non trained individuals.

Materials & Methods

All subjects involved in this study were closely matched with respect to their age and height. A total of 20 male