The Relationship between Creatine Kinase and Cortisol Level of Young Indian Male Athletes

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Abstract

Serum concentration of creatine kinase is used widely as an index of skeletal muscle fibre damage in athletes. Cortisol is a steroid hormone, often called the "stress hormone" because its level rises following emotional and physical stress. Forty five (45) male athletes of three different sports disciplines namely Hockey, Wushu and Fencing having age between 14 to 17 yrs, were divided equally into three groups. The results show that no correlation exists between the creatine kinase and cortisol level of male Indian athletes of three different sports discipline.

Key words: Creatine kinase, Cortisol, Muscle fibre damage, Stress hormone

Introduction

Competitive sports impose substantial energy, mechanical, mental and emotional burdens on the athletes. This reflects, among other things, on a number of biochemical and hematological properties in blood sample collected at rest *(Lang & Wurzburg, 1982; Clarkson et al, 1992; Malczewska et al, 2000; Mayr et al, 2006).* Creatine kinase is an enzyme and present in almost all tissues but is highest in the muscle and in the brain. Creatine kinase exists in three different isoenzymes. Each Isoenzyme is a dimer composed of two protomer 'M' for muscle and 'B' for brain *(Nanji, 1983; Noakes, 1987; Nikolaidis et al, 2003).* The serum concentration of creatine kinase is used widely as an index of skeletal muscle fibre damage in sport and exercise. The serum Creatine Kinase concentration rises when an organ that contains the enzyme is damaged. The serum Creatine Kinase concentration is probably the best biochemical marker of muscle fibre damage. Creatine Kinase involved in muscle metabolism and it is believed to leak into the plasma from skeletal muscle fibers when these are damaged because of repeated and intense contraction of muscles *(Wevers et al, 1977; Tolfrey et al, 2000).* The serum concentration of Creatine Kinase peaks 1–4 days after exercise and remains elevated for several days. Thus, athletes participating in daily training have higher resting values than non-athletes, although this response to training is mitigated by the so-called repeated-bout effect. That is, the repetition of an exercise after several days or even weeks causes less muscle fibre damage than that caused by the previous exercise. Cortisol is a steroid hormone, often called the "stress hormone" because its level rises following emotional and physical stress. Its primary functions are to increase blood

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