

Mechanical Power of Leg Extensor Muscles in Male Boxing Players

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Abstract

The present study was conducted on nineteen male boxing players (age: 16.37±1.34 years) comprising of inmates of Sports Training Centre and Centre of Excellence scheme of Sports Authority of India, training at NS NIS Patiala (India). The aim of the study was to find the status of mechanical power variables of leg extensor muscles in male boxing players and to find the relationship between them. The experimental protocol developed by *Bosco et al (1983)*, *Mcguigan et al (2006)* were used to measure the mechanical power variables of leg extensor muscles in male boxing players. Karl Pearson's coefficient of correlation was calculated with the help of SPSS version 9.0 software. The results of this study indicate that there was a highly significant correlation between the squat jump flight time, squat jump height, countermovement jump height, countermovement flight time, Eccentric Utilization Ratio (EUR), Elasticity Index (EI) and peak power (0-15sec), peak power (45-60sec) and Mean Power (0-60sec).

Key words: Mechanical Power, Vertical jump test, Leg Extensor Muscles, Muscular Power.

Introduction

Despite the increasing popularity of boxing, only a few studies have been conducted on the biomechanics of this sport. Compared with athletes engaged in other sport disciplines, boxers had similar explosive power as wrestlers and basketball players (*Fleck, 1983*). Coaches and trainers are greatly interested in developing training techniques designed to improve power performance of the legs and vertical jump ability (*Blattner & Stuart, 1980*). Muscle force and lower extremity strength have a significant influence on executing competitive performance i.e. different technical-tactical demands in many sports (*Ivanovic et al., 2011*). As a result, adequate preparation of leg extensors is highly important especially in sports which involve different jumping techniques, frequent changes of direction in the

frontal and lateral plane, numerous high and long jumps (*Čoh, 2010; Čoh and Babić, 2010*). Many researchers (*Zatsiorsky, 2006; Dopsaj et al., 2010*) claim that diagnostics on physical preparation and athlete selection within the contractile abilities, verified with the basic parameters, i.e. using the level of maximal force development or explosive force, are very important for monitoring the effects of the training process from the aspect of basic indicators of contractile characteristic development. Strength is the ability to produce maximal force, which is considered a basic motor ability and contributes to high performance in most physical activities and sports for prevention of injury (*Coyle et al, 1981, Pangrazi, 1999*). Numerous studies of young athletes indicated that specific training in track and field, gymnastics, swimming, soccer, basketball improve vertical jumping performance, explosive