ABSTRACT

Author: Bc. Modinat Sanni

Supervisor: Ing. Miroslav Vilímek, PhD

Title: MUSCLES ACTIVATION DURING „SHOULDER MOUNT“ POLE ACROBATIC EXERCISE

Purpose:

This study is an empirical - theoretical study presents the literature review regarding to the topic of the shoulder function anatomy, kinesiology, biomechanics, non-traumatic injuries of the shoulder and their prevention by using the available literatures. Further, the study also compares by surface electromyography the amplitudes, shapes and durations of myoelectric signals of m. latissimus dorsi, m. pectoralis maior, m. biceps brachii, m. infraspinatus and m. supraspinatus of dominant shoulder in two healthy individuals during acrobatic exercise on vertical pole known as "Shoulder Mount". The purpose was monitor the changes in two different conditions; i.e. kinesiotape and elbow brace and compare with the control condition for the reason of finding out their ability to affect the myoelectric activities of selected muscles. Further, the Shoulder Mount exercise had recorded by six Qualisys cameras for motion analyses.

Methods and materials:

The potentially eligible scientific articles perform a search of studies on the topic of kinesiotapes and tennis elbow brace as measured by EMG mainly on myoelectric activity of the shoulder complex were seared from EbscoHost, BMJ, Embase, MEDLINE, PeDro and other databases. Grade stainless steel surface electrodes collected the EMG data. Electrodes with sizes 38mm x 19 mm x 17 mm were applied on the belly of m. pectoralis maior, m. latissimus dorsi, m. biceps brachii, m. supraspinatus and m. infraspinatus on dominant shoulder. Before the measuring of the myoelectric activities during Shoulder Mount exercise were participants performed the maximum voluntary isometric contraction (MVIC) for each muscles. Two healthy subjects (females) with a mean age of 23, 5 years participated in this study. They were informed about the experiment and had signed the agreement to publish
their personal dates in the work. The movement components of selected segments were monitored by six Qualisys cameras recorded into computer. The methods were used for analyze the results included the graphic illustration of the EMG signals, bar charts, table contexts. The numerical results were achieved by calculation of the sample average and total peaks average in all submitted conditions within participants; also, the standard deviation value and two samples paired T tests were done. The materials used were Hg80 tennis elbow brace and kinesiotape from Mueller Sport Care.

**Result:**

Although the results were not statistically significant because there were a few amount of tested samples in experiment. The positive inter results within the subjects were achieved. There was proved the benefits of tennis elbow brace on myoelectric amplitude of m. biceps brachii. The decrease of the amplitude was occurred in both participants and subjectively described the negative feedback on the quality of the movement. The kinesiotape as was applied in the experiment increased the amplitude of m. infraspinatus and vice versa, decreased the activity of m. latissimus dorsi. Subjectively described both participants positive feedback on the movement quality. Generally, the outputs of the results were heterogeneous for other muscles.

**Key Words:**

Surface EMG, Shoulder Mount, shoulder injury, kinesiotape, elbow tennis brace.