



SPECIFICS OF MUSCLE ELECTRIC ACTIVITY DURING ARCHERY SHOOTING

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Introduction: The purpose of the research was to study specifics of muscle electric activity when shooting arch.

Methods: Eight highly-qualified archers underwent the study, each doing 10 shooting sessions of 3 shoots. Registering and analysis of shoot electromyography parameters was done with the help of the 16-channel Biomonitor ME6000 and MEGAWIN software.

Results: 12 “leading” muscles were determined out of 32 ones under study, the former had a high electromyographic amplitude and significant activity changes at various shoot stages. It became clear that on the group average (1-6st shots) the first to activate were the upper left dorsal fascicles of the trapezius muscle (46%) (**Fig.1**).

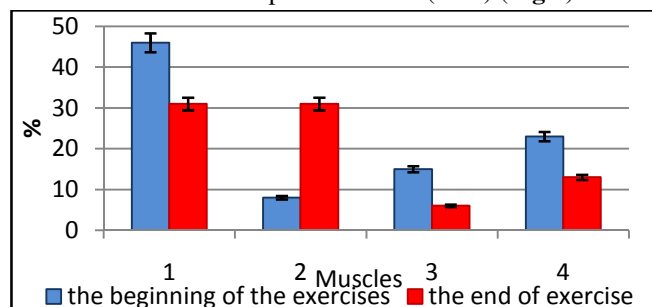


Fig.1 – The recruiting muscles.

Notes: 1 – upper fascicles of the trapezoid left, 2 – upper fascicles of the trapezoid right, 3 – extensoris carpi ulnaris left, 4 – extensoris carpi ulnaris right.

By the end of the exercise (25-30st shots) the upper left dorsal fascicles of the trapezius muscle were the first to activate only in 31 % together with the upper right dorsal fascicles (31%) , which attests to the fatigue process at the end of the shooting session. (**Fig.1**).

Electrical activity of the right extensor carpi ulnaris muscle and the left flexor carpi radialis muscle were at highest at the moment of the arrow release, which attests to a programmed control of the muscles at this particular stage. (**Fig.2**).

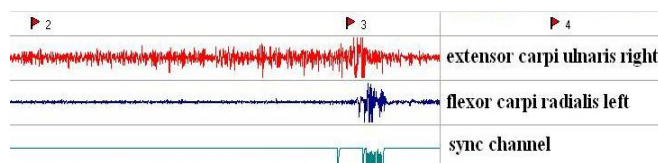


Fig.2 - EMG activity when a software method of control.

The EMG of the upper right dorsal and lower left dorsal fascicles of the trapezius muscle at the stage of “post-strengthen” showed sporadic high amplitude rises combining with low amplitude action potential, the latter fact speaks of the corrective-mechanism principle (**Fig.3**).

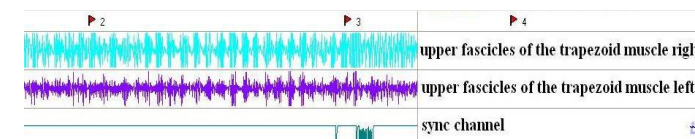


Fig.3 - EMG activity under correctional control method.

A statistically valid direct dependence of the success was determined, based on the increase of average group amplitude values of the EMG of the some muscles. (**Fig.4**).

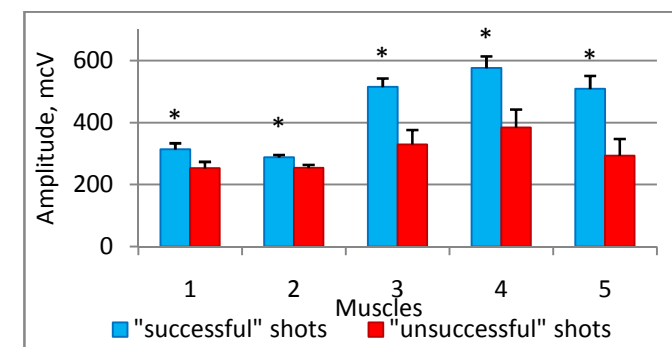


Fig.4 - The amplitude of EMG during the “successful” and the “unsuccessful” shots

Notes: 1 – flexor carpi radialis right, 2 – extensor carpi ulnaris left, 3 – posterior fascicles of the right deltoideus, 4 – front fascicles of the left deltoideus, 5 – lower right fascicles of the trapezius