Abstract

Master‘s thesis „Monitoring of the impact of external load on activity of shoulder girdle muscles during abduction in scapular plane.“ is focused on changes of muscle activation pattern in response to increase of strength demands.

Theoretical part begins by review of the prevailing theoretical work regarding the adaptaion of neural and musculoskeletal systems to training and differences in its outcome due to various parameters of exercise. Last chapter discusses the principles of coordiantion-strength functional reserve.

Experimental part consists of an electromyographic study following a pilot study executed in 2012. The subject of this study were changes in onset time and peak activity time of five shoulder girdle muscles in three model situations: A) without external loads, B) with light load (1kg) and C) with excessive load (3-10kg).

The results demosntrate different pattern of muscle activation in situation with excessive load in comparison to situations witout loads and with light load. The difference of the patterns was demonstrated in both parameters (onset time and peak activity time) and reached significant values. Based on these data, we claim, that there is a top borderline of the coordination-strength functional reserve in between the light and excessive loads that we chose, and that exceeding this limit line caused the change of the muscle activation pattern.