

ABSTRACT

Title: Difference in muscle activity during 1RM and 4RM bench press.

Objectives: The aim of this thesis is to compare the muscle activity of triceps brachii (TB), latissimus dorsi (LD), anterior deltoideus (AD), posterior deltoideus (PD), pectoralis major pars sternalis (PMS) and pectoralis major pars clavicularis (PMC) during the bench press with the maximal load (1 repetition) and the submaximal load of 4RM (4th out of 4 repetitions) and to determine the differences in the muscle activity between three different phases of the concentric part of the movement.

Methods: This thesis utilizes the method of randomized experiment and the method of analysis. The data of muscular activity during the bench press with the maximal and submaximal load and different phases of the concentric part of the movement were obtained in the biomechanical laboratory using the randomized experimental approach. The subjects of this study were 19 men (20-28 years old). The method of analysis was used for evaluation of the data with utilization of the basic descriptive statistics and analysis of hypothesis with the T-test.

Results: The results of this study are significant ($p < 0,05$) differences in the activity between muscles involved in the bench press exercise with the maximal load (1st repetition) and the submaximal load of 4RM (4th repetition). Furthermore, significant differences in the muscle activity were observed during different phases of the movement. The activity of all observed muscles was significantly higher during the exercise with the load of 4RM in the presticking phase, in the sticking region the activity was significantly higher with the load of 4RM in the following muscles: TB, LD and PMS. In the poststicking phase the activity was higher with the load of 4RM in TB, PMS and PMC. Significant changes in the activity of a muscle between presticking and sticking phase was found in TB, PD, PMS (1RM) and TB, AD and PMS (4RM). The differences between sticking and poststicking phase was found in all observed muscles (1RM) and AD, LD, PMS and PMC (4RM).

Keywords: bench press, muscle activity, electromyography