

## Abstract

**Title:** The effect of maximal strength in bench press on punch force in combat sports

**Objectives:** The aim of the bachelor's thesis is to find out whether the maximum strength in the bench press has an effect on the force of the punch in combat sports and whether it is therefore advantageous to include the bench press in training for the development of the strength of the upper limbs in combat sports. Next, to verify whether there is a connection between the maximum force of the punch and additional variables, which include the speed of lifting the barbell during the bench press, the intercept of the speed axis  $V_0$ , the intercept of the load axis  $L_0$ , the area under the line and the slope of the regression line.

**Methods:** The research was based on testing bench press maximum strength for one repetition maximum and maximum force of the rear cross punch of the dominant upper limb. During tests were used position transducers to measure the lifting speed of the barbell and force plate to measure the impact of punch. The evaluation of the measured data took place using the Shapiro-Wilk test of normality of data distribution and subsequent correlation analysis using the Spearman correlation coefficient.

**Results:** Between the one repetition maximum in bench press and maximum punch force was found no statistically significant difference ( $p = 0,144$ ). However, a statistically significant difference was found while comparing the area under the line and maximum punch force of the rear hand cross punch of the dominant upper limb ( $p = 0,011$ ).

**Keywords:** Upper body strength, punch impact, rear hand cross punch, martial arts