

## **Abstract**

Grip strength is increasingly used as a bioindicator of quality of life in both older and younger population. That's why we decided to research methods for increasing grip strength. The first method involves using resistance rings for grip strength training, while the second method involves passive hanging.

The aim of this study was to investigate two methods for training grip strength and compare their effects on the physiological parameters of the human body after a month of systematic involvement in the daily lives of study participants, with the goal of determining their potential for rehabilitation.

Participants were healthy, active, recreational athletes aged 20-60 years. They were stratified and randomly divided into two groups: one trained with resistance rings, and the other was passive hanging. Training sessions lasted 7 minutes each day, and the study duration was 1 month. Input and output measurements included examination of ranges of motion in the shoulders and spine, evaluation of postural functions and grip strength assessment using a dynamometer.

A total of 31 participants completed the study, with an average age of 40.7 years, including 15 women and 16 men. Most participants were right-handed, with only one left-handed and two ambidextrous individuals. Statistical analysis revealed that the increase in grip strength in both groups was not significant, and thus none of the hypotheses could be confirmed. However, compared to the resistance ring group, participants in the hanging group showed a 28% increase in spinal dimensions ( $p = 0.04$ ), a 48% increase in shoulder range ( $p = 0.002$ ), and a 49% improvement in their deep stabilization system ( $p = 0.003$ ). Muscle soreness decreased across the entire study group ( $p = 0.005$ ), with only two participants from the hanging group reporting pain during the hanging exercises.

The study successfully validated the hypothesis regarding the expansion of range of motion in the shoulder joint and spine in the hanging group. Despite the statistically insignificant results regarding grip strength, it can be concluded that resistance rings are overall more effective for training grip strength than passive hanging. However, passive hanging is effective in increasing the range of motion of the shoulder and spine and helps strengthen the body's deep stabilization system.