

# STRENGTH TRAINING AND WHEELCHAIR TENNIS: A LONGITUDINAL STUDY

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## AIM

To investigate the variation of isometric maximal voluntary contraction (MVC) without (NR) and with racquets (R) in relation to specific weightlifting training on the trunk and upper limb muscles in a group of wheelchair tennis athletes.

## METHODS

Twelve wheelchair tennis (WT) athletes, with different levels of disability, were studied. The subjects were divided into two groups of six athletes: 1) the experimental group (EG) in addition of tennis training on field, following eight weeks (Wks) of weightlifting training; 2) the control group (CG) do not change their tennis training habits. At the beginning of the research EG performed four Wks of weightlifting training to avoid that the learning effect worsen the technique of exercises used in training protocols. At the end of four weeks of training, the weightlifting training protocol began. All groups were evaluated before and after two months of training to verify the effects of weightlifting and tennis training. The isometric MVC was measured using the TESYS system (Total Evaluation System, Globus, Treviso, Italy) which was connected to a load cell (ESYCC300, Globus Italy, Treviso, Italy).

## RESULTS

Data analysis (Wilcoxon test) showed a significant increase in MVC in EG in the NR ( $p < 0.05$ , +16%) and R conditions ( $p < 0.05$ , +11%). No significant changes were observed in CG (Figure 1).

## CONCLUSION

The weightlifting training increases the isometric MVC of NR and R, while playing only tennis is sufficient to maintain strength performance. The results highlight that training with overloads can significantly contribute to improve physical efficiency on upper body in wheelchair tennis athletes and so facilitate them to become more dangerous to opponents.

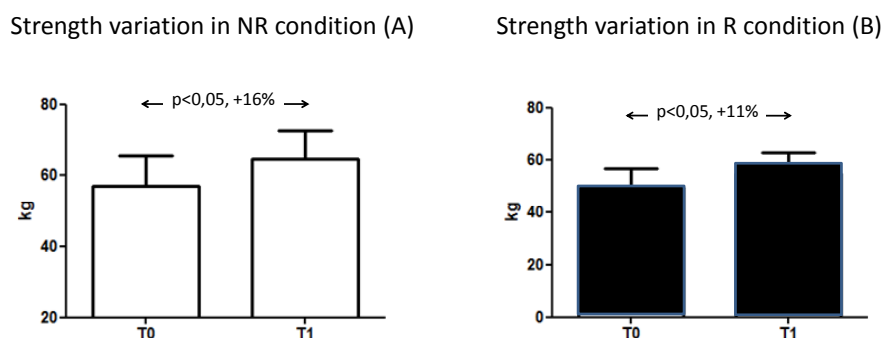


Figure 1 – Isometric MVC in EG: NR (A) and R conditions (B).