



Abstracts of The XVIII Congress of the International Society of Electrophysiology and Kinesiology

16-19 June 2010
Aalborg, Denmark

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The Program of the **XVIII Congress of the International Society of Electrophysiology and Kinesiology** linked all aspects of movement function in healthy and pathological conditions, as part of an integrated approach which included biomechanics, motor control, neurophysiology of movement, and motor rehabilitation.

With over 500 abstracts, congress delegates networked with – and heard from – hundreds of the world’s leading experts on Electrophysiology and Kinesiology as they shared their thoughts, research, and findings on this topic.

This CD shares with you the abstracts submitted by the Keynote lecturers, Workshop and Summer School presenters and Oral and Poster Session presenters. We hope that you will find this useful as you continue to study and research in the area of Electrophysiology and Kinesiology. To get started, just select the appropriate category on the left side of this page.

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Vila-Chã, C

THE EFFECT OF SHORT-TERM ENDURANCE AND STRENGTH TRAINING ON MOTOR UNIT CONDUCTION VELOCITY
EFFECTS OF ECCENTRIC EXERCISE ON FORCE STEADINESS AND VOLUNTARY ACTIVATION OF THE KNEE EXTENSORS

THE EFFECT OF SHORT-TERM ENDURANCE AND STRENGTH TRAINING ON MOTOR UNIT CONDUCTION VELOCITY

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AIM: The aim of this study was to investigate the effect of strength and endurance training on the conduction velocity of vastus medialis obliquus and lateralis single motor units during voluntary sustained knee extensions.

METHODS: Seventeen sedentary healthy men (age, mean \pm SD, 26.3 \pm 3.9 yr) were randomly assigned to one of 2 groups: strength training (ST, $n=8$) or endurance training (ET, $n=9$). Conventional endurance and strength training was performed three days per week, over a period of 6 weeks. Motor unit conduction velocity (MUCV), maximum voluntary force (MVC) and time-to-task failure at 30% MVC of the knee extensors were measured before and immediately following training. To assess MUCV, multi-channel surface and intramuscular EMG signals were concurrently recorded from the vastus medialis obliquus (VMO) and vastus lateralis (VL) muscles during 60-s isometric knee extensions at 10% and 30% of MVC.

RESULTS: After 6 weeks of training, MVC increased in the ST group (16.7 \pm 7.4 %; $P < 0.05$) whereas time to task failure was prolonged in the ET group (33.3 \pm 14.2 %; $P < 0.05$). Both training programs induced an increase in motor unit conduction velocity at both 10% and 30% MVC (Fig. 1A; $P < 0.01$). Furthermore after both training programs, the reduction in MUCV over time during the sustained contractions occurred at slower rates compared to baseline (Fig. 1B; $P < 0.01$).

CONCLUSION: These results indicate that short-term endurance and strength training induce similar alterations of the electrophysiological membrane properties of the muscle fiber and in their changes during sustained contractions.

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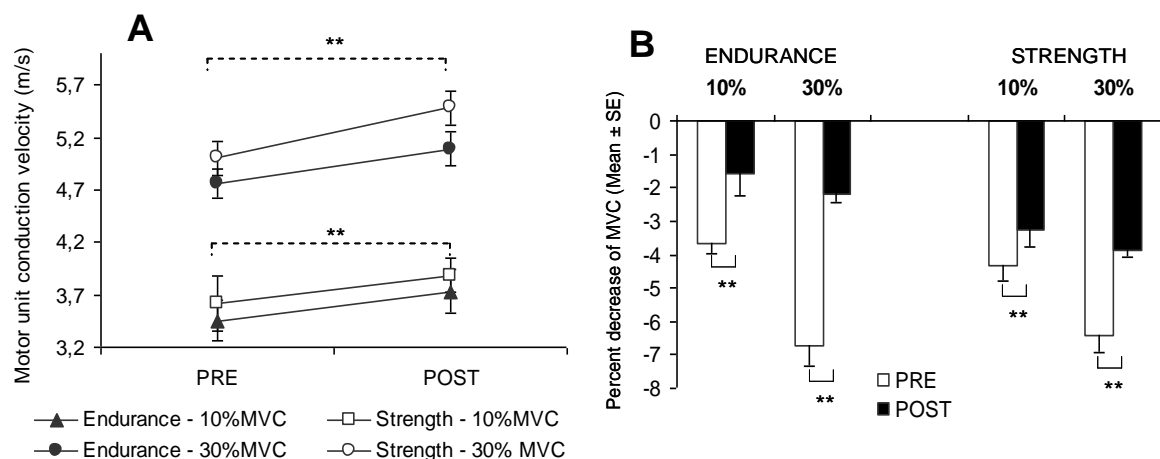


Figure 1 –Initial values of motor unit conduction velocity (**A**) and percent decrease in motor unit conduction velocity (**B**) in the vasti muscles (average of VMO and VL) during sustained knee extensions at 10% and 30% of MVC in the endurance and strength group. ** $P < 0.01$.