

The International 22nd Puijo Symposium
"PHYSICAL EXERCISE IN CLINICAL MEDICINE –
CRITICAL APPRAISAL OF SCIENTIFIC EVIDENCE"
June 24 - 28, 2014 Kuopio, Finland

**EFFECTS OF STRENGTH TRAINING AND INSTABILITY STRENGTH TRAINING
ON NEUROMUSCULAR AND FUNCTIONAL VARIABLES OF PATIENTS WITH
PARKINSON'S DISEASE**

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OBJECTIVE:

To investigate the effects of different training stimuli in some neuromuscular and functional variables of patients with Parkinson's disease (pPD).

METHODS:

Eighteen pPD (67.2±8.3 years, 8.9±0.5 disease duration, and 19.5±5.7 motor severity) in stages 2 and 3 of the disease (tested and trained in the clinically "on" state) were divided into three groups: control group (CG), strength training group (STG), and instability strength training group (ISTG). Experimental groups underwent 12 weeks of strength training (ST) and instability strength training (IST). STG performed strength-hypertrophy training twice week, ISTG performed strength-hypertrophy training with instability devices (i.e., bosu, dyna disk, balance disk, Swiss ball) twice week. Leg press one repetition maximum (1RM), presynaptic inhibition (PI) and disynaptic reciprocal inhibition (DRI) of the soleus muscle, quadriceps cross sectional area (CSA) of the leg most affected, timed up and go (TUG), and balance evaluation systems test (BEST) were obtained and compared before and after the training period. Significance level was set at $p \leq 0.05$.

RESULTS:

1RM and PI were significantly increased after ST (103.8±26.5 kg - 128.7±29.7 kg and 5.2±19.7% - 26.3±19.1%, respectively) and IST (104.7±27.6 kg - 126.3±31.9 kg and 4.4±30.0% - 61.4±33.2%, respectively). DRI was significantly increased only after IST (4.2±6.5% - 35.3±11.1%), while CSA was significantly increased only after ST (5568.2±680.6 mm² - 6215.0±750.0 mm²). TUG and BEST were significantly improved only after ISTG (9.6±2.5 s - 7.8±1.6 s and 80.7±7.6 score - 92.0±9.3 score).

CONCLUSIONS:

ST is more effective than ISTG to cause morphological adaptations in the pPD. However, ISTG seems to be more effective than STG to improve spinal inhibitory mechanisms and functionality of pPD. Thus, ISTG's results may be very important for this population, once changes in the motor control are apparently indicative of an abnormal supraspinal influence on spinal mechanisms due to disease.