New Intensity Exercise in Multiple Sclerosis: Effects on Muscle Contractile Characteristics and Exercise Capacity, a Randomized Controlled Trial. Article Link


INTRODUCTION:
Low-to-moderate intensity exercise improves muscle contractile properties and endurance capacity in multiple sclerosis (MS). The impact of high intensity exercise remains unknown.

METHODS: 34 MS patients were randomized into a sedentary control group (continuing their regular activities) and 2 exercise groups that performed 12 weeks of a high intensity interval or high intensity continuous cardiovascular training, both in combination with resistance training. M. vastus lateralis cross sectional area (CSA), maximal endurance capacity and self-reported activity levels assessed before and after 12 weeks.

RESULTS: Compared to SED, 12 weeks of high intensity exercise increased mean fiber CSA (HITR: +21±7%, HCTR: +23±5%). Fiber type I CSA increased in HCTR (+29±6%), whereas type II (+23±7%) and IIa (+23±6%) CSA increased in HnR. Muscle strength improved in HnR and HCTR (between +13±7% and +45±20%) and body fat percentage tended to decrease (HnR: -3.9±2.0% and HCTR: -2.5±1.2%). Endurance capacity (Wmax +21±4%, time to exhaustion +24±5%, VO2max +17±5%) and lean tissue mass (+1.4±0.5%) only increased in HITR. Finally self-reported physical activity levels increased 73±19% and 86±27% in HCTR and HITR, respectively.

CONCLUSION: High intensity cardiovascular exercise combined with resistance training was safe, well tolerated and improved muscle contractile characteristics and endurance capacity in MS.

CONCLUSIONS and CLINICAL IMPLICATIONS: Many therapists avoid moderate-to-high intensity exercise in individuals with MS. However, this study described no adverse events and short term improvements via high intensity cardiovascular and resistance exercise.