

## MRT - HIGH INTENSITY AEROBIC EXERCISE IN AMBULATORY SUBJECTS WITH INCOMPLETE SPINAL CORD INJURY

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**Introduction:** Aerobic weight-bearing exercise at high intensity is most beneficial to increase physical capacity in healthy subjects. The exercise guidelines for spinal cord injured might not be sufficient for ambulatory persons with incomplete spinal cord injury (SCI). The prevalent physically inactive lifestyle and the low levels of physical capacity in persons with incomplete SCI, call for effective exercise programs in this subpopulation.

**Purpose** To investigate the feasibility and efficacy of high intensity weight-bearing exercise in ambulatory persons with incomplete SCI.

**Method:**

- Comparative study in which the differences in maximal oxygen uptake (VO<sub>2</sub>peak) between stationary cycling and treadmill were compared in ambulatory subjects with incomplete SCI.
- Comparative study of two exercise testing protocols, comparing VO<sub>2</sub>peak and achieved criteria for maximal exercise testing between a newly designed treadmill exercise test protocol, the Sunnaas Protocol, and the Modified Bruce Protocol.
- RCT investigating the effects of a 12-week high intensity aerobic exercise intervention on physical capacity and physical activity levels, early after discharge from rehabilitation.

**Results:** Most ambulatory subjects with incomplete SCI were able to exercise at a higher intensity by uphill walking, compared to (stationary) cycling. By using the Sunnaas protocol, subjects achieved a higher VO<sub>2</sub>peak and fulfilled more of the criteria for maximal exercise testing. A 12-weeks high intensity interval training (HIIT) program exhibited increased physical capacity and induced a positive effect on physical activity levels.

**Conclusions:** Despite a reduced walking ability, ambulatory persons with incomplete SCI seem to be capable of uphill walking at high intensity. Exercise testing on a treadmill is an important fundament for prescribing effective training programs. A HIIT program by walking or running seems to be effective and feasible in this SCI subpopulation and should be considered incorporated in their training programs.