

**The influence of a web-based tele-rehabilitation program on the physical fitness of coronary artery disease patients after the acute rehabilitation phase.**

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**Purpose:** The aim of the study was to assess whether the addition of a motion sensor with automated feedback by email or SMS to the conventional in-hospital rehabilitation phase could enhance the physical condition of coronary artery disease patients.

**Methods:** 37 coronary artery disease patients were included in this randomised, controlled trial after admission for PCI or CABG. All patients have been included during phase II of the cardiac rehabilitation program. Patients with a defibrillator, important arrhythmias or severe heart failure (NYHA class III and IV) were excluded from the trial. The patients in the intervention group (n=21) have been requested to wear the motion sensor continuously during the day for 18 weeks. Each week they have received feedback (via SMS or email) that was designed to gradually increase the patients' activity level. In the control group (n=16), the patients wore the motion sensor three times for one week for measurement purposes only (week 1, 6 and 18). They did not receive feedback via SMS or email. All patients performed a maximal cardiopulmonary exercise test at week 1, 6 and 18 to determine their peak oxygen uptake (VO<sub>2</sub> peak). The primary hypothesis of the trial was that the addition of a tele-rehabilitation program to the conventional cardiac rehabilitation program results in a sustained increased physical fitness (VO<sub>2</sub> peak). The one way ANOVA repeated measures test was used to test this hypothesis. In addition the Mann Whithney U test was used to compare the self-reported high-intensity physical activity by the IPAQ-questionnaire, between the intervention group and the control group, at the end of the trial.

**Results:** The one way ANOVA repeated measures test indicates a significantly larger increase in VO<sub>2</sub> peak in the intervention group, compared to the control group after 18 weeks of follow-up (P=0.05).

The Mann Whithney U test revealed further that the self-reported high-intensity physical activity was significantly higher in the intervention group, compared to the control group (P=0.03).

**Conclusions:** The addition of a motion sensor and a web-based tele-rehabilitation program to conventional cardiac rehabilitation resulted in a significant larger increase in VO<sub>2</sub> peak after 18 weeks, as compared to conventional rehabilitation alone. This observation is promising, because it has been proven difficult for coronary artery disease patients to stay physically fit after the conventional, in-hospital cardiac rehabilitation.