

# A pilot randomized controlled trial to evaluate the benefit of the cardiac rehabilitation paradigm for the non-acute ischaemic stroke population

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**Objective:** To evaluate risk factor reduction and health-related quality of life following a 10-week cardiac rehabilitation programme in non-acute ischaemic stroke subjects.

**Design:** Single-blinded randomized control trial.

**Setting:** Outpatient rehabilitation.

**Subjects:** Forty-eight community-dwelling ischaemic stroke patients (38 independently mobile, 9 requiring assistance, 1 non-ambulatory) were randomly assigned to intervention or control groups by concealed allocation.

**Intervention:** The trial consisted of a 10-week schedule with measures taken at weeks 1 and 10. Both groups continued usual care (excluding aerobic exercise); intervention subjects attended 16 cycle ergometry sessions of aerobic-training intensity and two stress-management classes.

**Main outcome measures:** Cardiac risk score (CRS);  $\dot{V}O_2$  (mL  $O_2$ /kg per minute) and Borg Rate of Perceived Exertion (RPE) assessed during a standardized ergometry test; Hospital Anxiety and Depression Scale (HADS); Frenchay Activity Index; Fasting Lipid Profiles and Resting Blood Pressure.

**Results:** Group comparison with independent *t*-tests showed significantly greater improvement at follow-up by intervention subjects than controls in  $\dot{V}O_2$  (intervention  $10.6 \pm 1.6$  to  $12.0 \pm 2.2$ , control  $11.1 \pm 1.8$  to  $11.1 \pm 1.9$   $t = 4.734$ ,  $P < 0.001$ ) and CRS (intervention  $13.4 \pm 10.1$  to  $12.4 \pm 10.5$ , control  $9.4 \pm 6.7$  to  $15.0 \pm 6.1$   $t = -2.537$ ,  $P < 0.05$ ). RPE rating decreased in intervention subjects ( $13.4 \pm 12.2$  to  $12.4 \pm 2.0$ ) and increased in controls ( $13.8 \pm 1.8$  to  $14.4 \pm 1.6$ ); Mann-Whitney *U* ( $U = 173.5$ ,  $P < 0.05$ ). Within-group comparison showed significant decrease in the HADS depression subscale in the intervention group alone ( $5.1 \pm 3.4$  to  $3.0 \pm 2.8$ ) (Wilcoxon signed ranks test  $Z = -3.278$ ,  $P < 0.001$ ).

**Conclusion:** Preliminary findings suggest non-acute ischaemic stroke patients can improve their cardiovascular fitness and reduce their CRS with a cardiac rehabilitation programme. The intervention was associated with improvement in self-reported depression.

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