

Cardiac rehabilitation for people with sub-acute, mild to moderate stroke: results from a mixed methods feasibility study.

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Introduction

Stroke leads to reduced physical activity and reduced cardiorespiratory fitness¹ which in turn leads to increased cardiovascular risk. The Cardiovascular Disease Outcomes Strategy² suggests the use of *existing* Cardiac rehabilitation (CR) for Transient Ischaemic Attack (TIA) patients and mild disability stroke patients. Typically CR in the UK is a supervised exercise and education programme, twice weekly for 6 weeks, however, previous feasibility studies³⁻⁹ have CR interventions lasting between 10 weeks and 30 weeks. Therefore, the present study had an intervention of 6 weeks to replicate clinical practice. In addition, the study aimed to recruit a more moderately disabled population to determine what level of disability can be included in *existing* CR programmes. As a mixed method study it was also possible to identify patient and staff acceptability of the programme for people with stroke.



Figure 1. Picture of participants taking part in the warmup of a CR programme

Methodology

Subjects attended an adapted CR programme twice weekly for six weeks. Outcome measures (OMs) at baseline and six weeks included: the Incremental Shuttle Walk Test (ISWT), height, weight, body mass index, blood pressure, heart rate, Short Form (36) Health Survey, Hospital Anxiety and Depression Scale, Multidimensional Fatigue Symptom Inventory, Modified Ashworth Scale, Barthel scale, falls, Stroke knowledge and Attitude and accelerometry. All participants were interviewed after the intervention plus five non-participants and five cardiac participants. Five focus groups with CR and stroke staff were also conducted.

Aim

To determine: recruitment strategy, acceptability, adherence, outcome measures and sample size for a definitive study

Results

32 participants were recruited, demographics displayed in Table 1.

Age (years) – mean (SD)	64.4 (14.4)
Sex (male) – no. (%)	21 (66%)
Ethnicity – no. (%)	Caucasian: 27 (84%) Asian: 3 (9%) Afro-Caribbean: 2 (7%)
Ischaemic stroke – no. (%)	24 (75%)
Side of body affected (left) – no. (%)	15 (47%)
Length of time post stroke (days) - mean (SD)	87.97 (30.9)
NIHSS – median (range)	2 (0 – 6)

Table 1: Demographics of participants

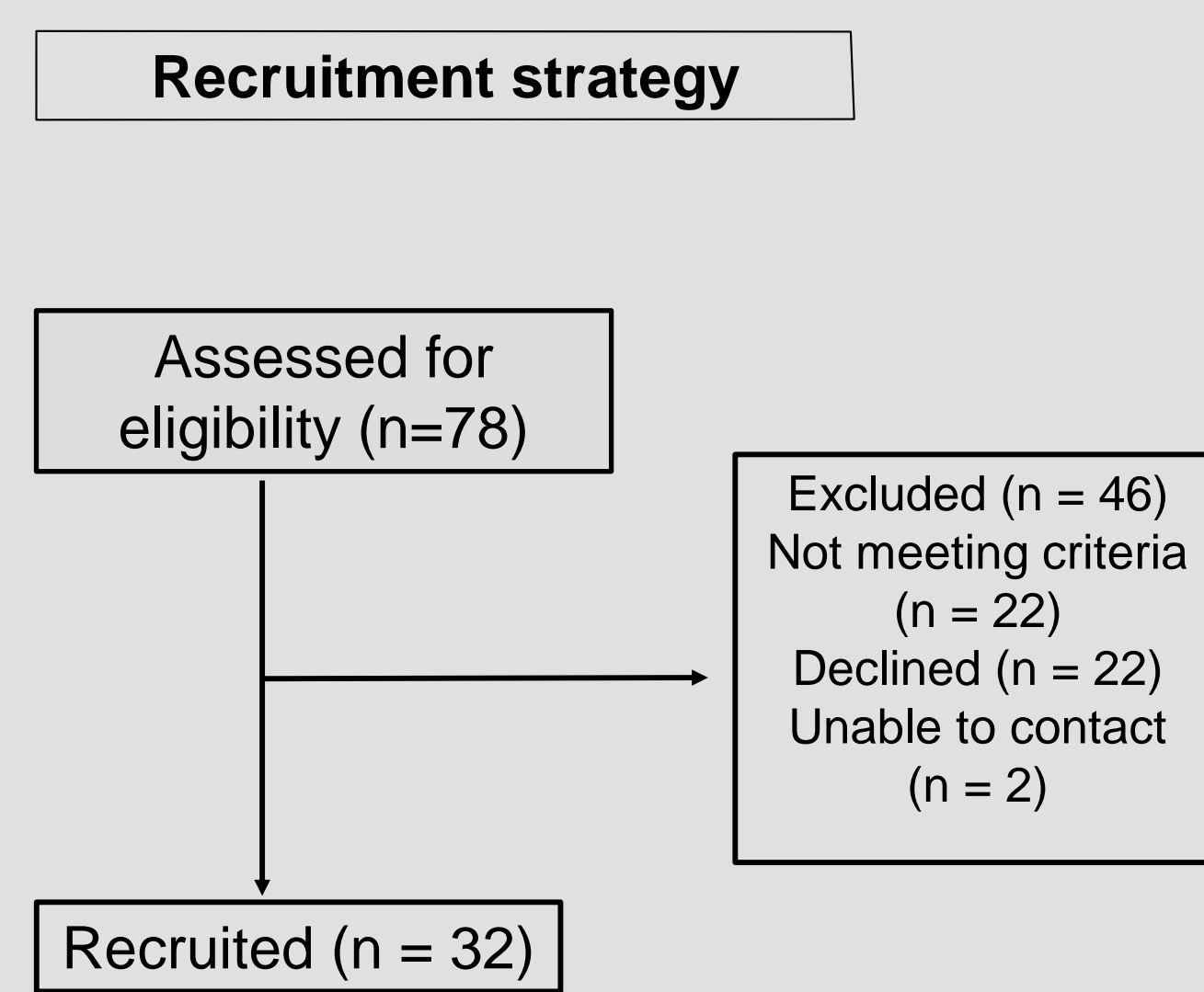


Figure 2: recruitment strategy

Outcome measures

Not powered to show statistical significance. Measures were easy to complete although time-consuming particularly for people with cognitive and speech deficits. No negative changes to participants with CR. Positive changes in a number of measures – Figures 3 and 4 demonstrate some of these changes.

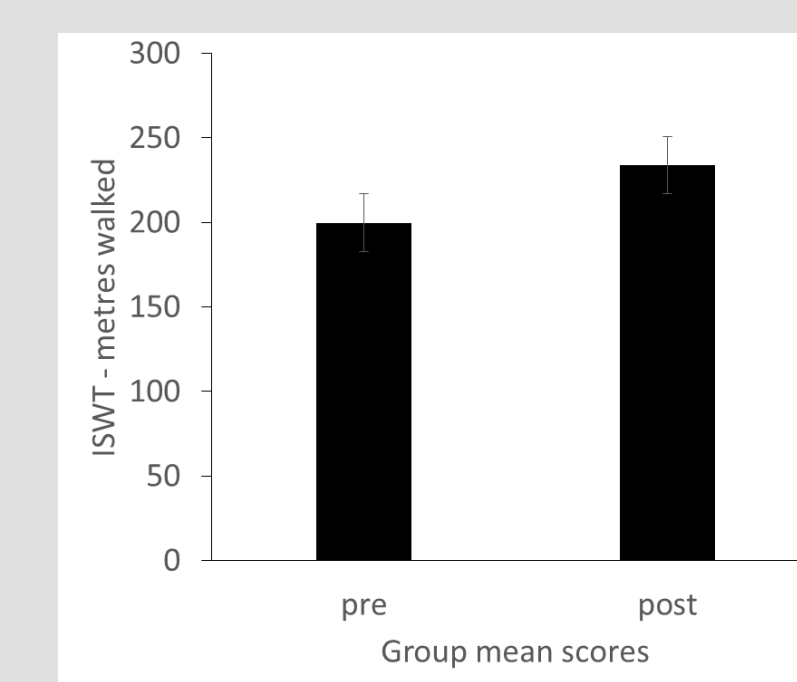


Figure 3: changes in ISWT

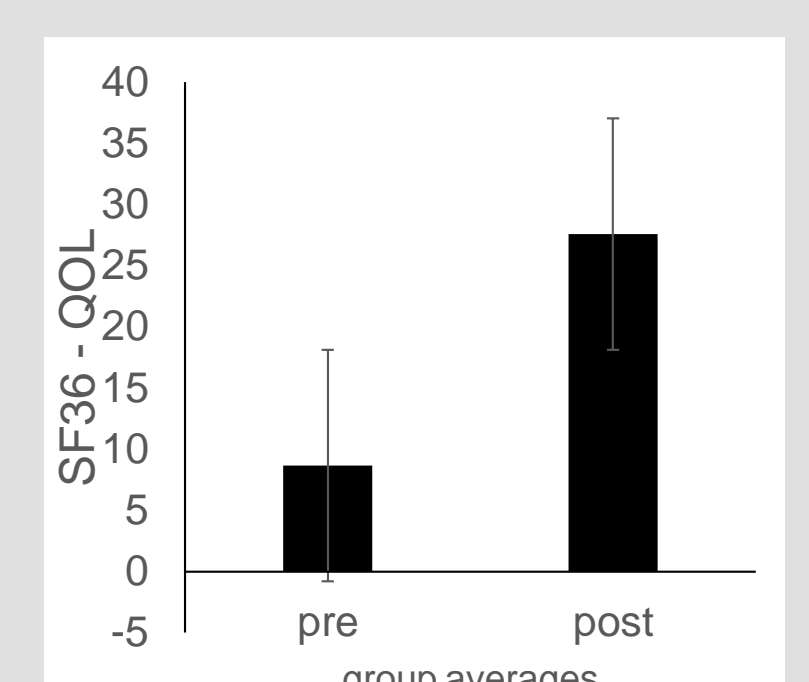


Figure 4: changes in SF-36

Adherence

Target: 12 classes over six weeks.
Average: 9.6 (80%) classes attended
4 only once a week
6 (19%) drop-outs all for medical reasons:
dizziness (1), chest infection(3), heart(2)
1 adverse event

Sample size

Based on ISWT the calculated sample size for a definitive study with people with mild disability post-stroke (NIHSS <3) was 39 in each group with 80% power at the 5% significance level.

Possible to recruit people post-stroke who had an NIHSS score up to six but due to the inclusion criteria requiring the ability of the patients to walk 10 m this excluded people with more stroke severity. It was also difficult to recruit people post-TIA due to the patients wanting to get back to work and not being able to find time to fit the sessions in to their life.

Barriers

Mainly environmental barriers eg. transport and cost. Personal barriers such as motivation and fatigue were not identified but the greater the disability the greater the perceived barrier. Tone was a perceived barrier by the stroke teams.

Acceptability

All stroke participants enjoyed the classes, although the stroke population with persistent neurological deficit (NIHSS >2) commented that they felt embarrassed and self-conscious and would have preferred a stroke only service, this was also observed by the CR staff. The more disabled (NIHSS >2) needed more assistance in class. Cardiac participants had no difficulties with classes involving people with stroke. Stroke non-participants did not want to take part due to time commitments. CR teams lacked confidence and knowledge of stroke but this increased with support. Stroke teams lacked confidence in CR teams. All felt more disabled (NIHSS > 3) need a more specialist service. Specialist stroke physiotherapist needed for tone, balance and gait issues, shoulder subluxation and pain, and specific stroke advice.

References:

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Conclusion

A definitive study to determine the effect of six weeks of CR on CV fitness and other measures in people with *mild* (NIHSS < 3) stroke in the sub-acute phase of recovery is feasible. However, people with more severe (NIHSS >2) stroke may need a more specialist programme.