Acceptability of auditory rhythmical cueing (ARC) to improve gait and physical activity in community dwelling stroke survivors (ACTIVATE)

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Background and aim

Laboratory studies demonstrate that auditory rhythmical cueing (ARC), using a metronome beat, improves stroke-related gait deficits, but whether the same is true in community settings has not been established

Aim: To determine the acceptability of treatment and research protocols evaluating ARC in a community setting prior to undertaking a pilot randomised controlled trial

Method

Study Design: A before and after study

Participants:

- Adult community dwelling stroke survivors (<2 years post stroke)
- Able to walk 10m with/without a stick indoors
- Not undertaking active physiotherapy

Baseline assessment

Walking:

• Functional Ambulation Category • Rivermead Mobility Assessment • spatiotemporal gait characteristics 4 metre walk test x 5 (stop watch/ accelerometer) • accelerometer measurement of walking activity (7 day data)

Balance:

• Mini Balance Evaluation Systems Test • Activities-Specific Balance Confidence Scale) • 2 minute standing balance test (accelerometer measured)

Participation:

• Stroke Impact Scale • EQ-5D-3L

Treatments

Auditory rhythmical cueing (metronome) + gait and balance exercises (home/community)

3x30 mins per week, 6 weeks
6 supervised 12 self-managed

Gait and balance exercises (home/community)

3x30 mins per week, 6 weeks
6 supervised 12 self-managed

6 week outcome assessments:

As at baseline plus • participant and provider views of treatment (questionnaire) • intervention fidelity (exercise diary) • safety and falls (falls diary)

Results

Participant characteristics

- Participants: n=12 (8 intervention, 4 control)
- 7 female 5 male, Age 70±11 years (mean and SD)
- Months since stroke 13±6
- National Institutes of Health Stroke Scale score 2.7±1.8
- Walking aid use: 2 x stick outdoors, 1 x two Fischer sticks, and 1 x quad stick
- Ankle foot orthosis: 2/12

Treatment protocol

- 12/12 participants completed all supervised and self-managed treatment sessions (reported in exercise diary)
- Participants and providers positively rated the treatments
- Treatment protocol delivery was feasible, with subjective improvement in walking reported after intervention
- Providers reported additional time required for outdoor walking sessions
- Three participant falls occurred and one serious adverse event (all unrelated to the protocol)

Outcome measures

- Assessment processes were acceptable and feasible
- The 6-week outcome assessment was completed in all but one participant who withdrew due to an SAE.
- 11/12 participants were compliant with wearing the accelerometer for the seven day assessment

Conclusion

- Treatment and research protocols were acceptable to participants and providers and delivery feasible
- There was a high level of adherence to the treatment protocol
- No intervention related adverse events were reported

Next steps

These results have informed the design of the ongoing ACTIVATE pilot randomised controlled trial