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Research

People with stroke spend more time in active task practice, but similar time in walking practice, when physiotherapy rehabilitation is provided in circuit classes compared to individual therapy sessions: an observational study

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KEY WORDS

Stroke
Rehabilitation
Motor activity
Physical therapy (specialty)

ABSTRACT

Question: Do people with stroke spend more time in active task practice during circuit class therapy sessions versus individual physiotherapy sessions? Do people with stroke practise different tasks during circuit class therapy sessions versus individual physiotherapy sessions? **Design:** Prospective, observational study. **Participants:** Twenty-nine people with stroke in inpatient rehabilitation settings. **Interventions:** Individual therapy sessions and circuit class therapy sessions provided within a larger randomised controlled trial. **Outcome measures:** Seventy-nine therapy sessions were video-recorded and the footage was analysed for time spent engaged in various categories of activity. In a subsample of 28 videos, the number of steps taken by people with stroke per therapy session was counted. **Results:** Circuit class therapy sessions were of a longer duration (mean difference 38.0 minutes, 95% CI 29.9 to 46.1), and participants spent more time engaged in active task practice (mean difference 23.8 minutes, 95% CI 16.1 to 31.4) compared with individual sessions. A greater percentage of time in circuit class therapy sessions was spent practising tasks in sitting (mean difference 5.3%, 95% CI 2.4 to 8.2) and in sit-to-stand practice (mean difference 2.7%, 95% CI 1.4 to 4.1), and a lower percentage of time in walking practice (mean difference 19.1%, 95% CI 10.0 to 28.1) compared with individual sessions. Participants took an average of 371 steps (SD 418) during therapy sessions and this did not differ significantly between group and individual sessions. **Conclusion:** People with stroke spent more time in active task practice, but a similar amount of time in walking practice when physiotherapy was offered in circuit class therapy sessions versus individual therapy sessions. There is a need for effective strategies to increase the amount of walking practice during physiotherapy sessions for people after stroke. [English C, Hillier S, Kaur G, Hundertmark L (2014) People with stroke spend more time in active task practice, but similar time in walking practice, when physiotherapy rehabilitation is provided in circuit classes compared to individual therapy sessions: an observational study. *Journal of Physiotherapy* XX: XX–XX]

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Introduction

The Australian National Clinical Guidelines for Stroke¹ recommend that at least 1 hour of active task practice be offered daily to people with stroke receiving inpatient rehabilitation therapy. This recommendation is based on clinical trials that have demonstrated benefits from a greater amount of therapy time.² However, few studies have examined in detail what people with stroke do during physiotherapy sessions. A recent systematic review identified seven studies that reported on the content of physiotherapy sessions provided to people with stroke in rehabilitation settings.³ On average, participants in those studies spent 60% of physiotherapy sessions in active task practice, and spent 9 minutes in walking practice, 8 minutes in standing activities, and 4.5 minutes

in sitting activities. In all but one of those studies, physiotherapy was provided in individual therapy sessions. There is good evidence that physiotherapy provided in circuit class therapy sessions is effective at improving walking ability of people with stroke,⁴ and is highly effective at increasing the amount of time people with stroke spend in physiotherapy sessions.⁵ However, few studies have examined the content of circuit class therapy sessions in detail. One single-centre study⁶ found that people with stroke spent a lesser percentage of physiotherapy time engaged in walking practice, but more time practising tasks in standing during circuit class therapy versus individual therapy sessions.

A recent multi-centre trial – titled Circuit Class Therapy for Increasing Rehabilitation Intensity of Therapy after Stroke: a Pragmatic Randomised Controlled Trial, with the acronym

<http://dx.doi.org/10.1016/j.jphys.2013.12.006>

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Please cite this article in press as: English C, et al, People with stroke spend more time in active task practice, but similar time in walking practice, when physiotherapy rehabilitation is provided in circuit classes compared to individual therapy sessions: an observational study, *J Physiother* (2014), <http://dx.doi.org/10.1016/j.jphys.2013.12.006>

CIRCIT – investigated two alternative models of increasing the intensity of inpatient stroke physiotherapy.⁷ Participants in this trial received one of three interventions: up to 90 minutes of usual care therapy on 5 days per week; up to 90 minutes of usual care therapy on 7 days per week; or up to 180 minutes of group circuit class therapy on 5 days per week. Usual care therapy included group or individual therapy sessions, as was consistent with usual practice at the recruitment sites. Therefore, participants from any of the groups could have contributed data to this study. As this was a pragmatic trial, the content of therapy sessions provided to participants receiving usual care (provided over 5 or 7 days a week) was not mandated. Broad guidelines were provided for the organisation and content of circuit class therapy sessions via an intervention manual. For example, the manual states that activities should be goal directed, tailored to the individual participant, and progressed; and that the time spent in active task practice should be maximised during therapy sessions. In order to assess adherence to the trial protocol and intervention fidelity, selected therapy sessions, both individual and circuit class therapy sessions were videoed in their entirety.

Data collected during these sessions were used to describe the content of physiotherapy provided in detail. The specific questions to be answered with these data were:

- (1) What is the content of individual therapy sessions and group circuit class sessions provided to people receiving physiotherapy rehabilitation after stroke, in terms of total active and rest time, time spent practising specific tasks, and number of steps taken?
- (2) Does the degree of disability influence the total active time in these sessions?

Method

Design

This observational study was embedded within a randomised trial. Full details of the CIRCIT trial protocol have been published.⁷ Recruitment for the CIRCIT trial commenced in July 2010 and finished in June 2013. Data collection for the current observational study occurred during four time periods throughout the trial (September/October 2010, December 2010 to February 2011, August/September 2012, and December 2012 to January 2013). The time periods and specific days on which therapy sessions were videotaped were based on research assistant staff availability.

Participants

The CIRCIT trial participants were people with a stroke of moderate severity who were admitted to an inpatient rehabilitation facility, and who were able to walk independently (with or without a walking aid) prior to their stroke.⁷ Moderate stroke severity was defined as either a total Functional Independence Measure (FIM) score of between 40 and 80 points, or a motor sub-score of the FIM of 38 to 62 points at the time of recruitment to the trial.

Outcome measures

Physiotherapy sessions were videoed in their entirety. Standard definitions were used to identify the beginning and end of therapy sessions, as presented in **Box 1**. The videos were viewed and data regarding content of therapy extracted. Definitions of physical activity and inactivity were also standardised, as presented in **Box 1**, and categorised, as presented in **Box 2**. This method of video

Box 1. Operational definitions for analysing the content of physiotherapy sessions.

Item	Definition
Therapy sessions	The time that participants spend in interaction with the therapist with the aim of improving functional skills. It also includes any physical activity done under the supervision and direction of the therapist. ¹³
Beginning of a session	When participants get into the therapy area and start performing an active task with the aim of improving functional skills OR when a therapist enters into the therapy session and starts interacting with the participants. This does not include the therapist greeting the participant briefly or the therapist directing the participant to their station during circuit class therapy.
End of a session	When the end of the session is announced by the therapist OR when the patient leaves the therapy area. If the therapist walked with the participant back to their room or lunch, the session was said to finish when the participant reached their room or dining room, respectively.
Physical activity	Engaging in task practice such as walking, standing, sit-to-stand, and using the paretic arm. ¹³
Inactivity	Engaging in unrelated activities, such as solely using the nonparetic arm and periods of rest in sitting or lying ¹³ for greater than 15 s. Passive movements or stretching in lying or sitting were also considered to be inactive.

Box 2. Category definitions for analysing the content of active therapy time.

Category	Definition
Activities in lying	Rolling, bridging, hip/knee control exercises, lie-sit and sit-lie
Active sitting	Weight shift and equilibrium exercises, reaching, turning, leg exercises in sitting
Transfers and sit to stand practice	Transfers bed to chair, chair to bed
Standing	Repeated sit to stand exercises
Walking practice	Facilitation of symmetrical posture, weight shift any direction, turning and reaching, stepping in any direction (without progression) including on and off step, step ups
Treadmill	Any surface, with or without supervision
Upper limb activities	Includes outdoors, obstacles, steps and ramps (not treadmill)
	Time spent walking on treadmill
	Includes facilitation of movement, treatment of stiffness or pain as well as active task practice

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