



## Appraisal

# Critically appraised paper: Long-term, individualised physical activity and exercise coaching does not improve maintenance of motor function after stroke

## Synopsis

Summary of: Askim T, Langhammer B, Ihle-Hansen H, Gunnes M, Lydersen S, Indredavik B, and the LAST Collaboration Group. Efficacy and safety of individualised coaching after stroke: The LAST study (Life After Stroke): A pragmatic randomized controlled trial. *Stroke*. 2018;49:426–432.

**Question:** Does long-term and individualised physical activity and exercise coaching prevent long-term functional decline in adults following stroke? **Design:** Pragmatic, assessor-blinded, parallel-group, randomised, controlled trial. **Setting:** Stroke units and outpatient clinics of Trondheim University Hospital and Bærum Hospital in Norway. **Participants:** Adults with first-ever or recurrent stroke, discharged from hospital or inpatient rehabilitation, community-dwelling, with a modified Rankin Scale (mRS) score < 5, and no serious comorbidities. Exclusion criteria included short life expectancy and score < 21 on Mini Mental State Examination (< 17 if aphasic). Randomisation of 380 participants allocated 186 to individualised coaching and 194 to standard care. **Interventions:** Both groups received standard care, including comprehensive stroke unit treatment in the acute stage and post-discharge rehabilitation (typically 45 minutes of physiotherapy per week for 3 to 6 months). The experimental group received additional monthly individualised coaching (in their home or via telephone) by a physiotherapist for 18 months. Based on individual preferences and goals, participants were coached to perform 45 to 60 minutes of exercise (including 2 to 3 bouts of vigorous activity) per week, as well as 30 minutes of physical activity every day. Participants were instructed to record amount and intensity of exercise and activity each day. The control group received

standard care only. **Outcome measures:** The primary outcome was motor function on the Motor Assessment Scale at 18 months. Secondary outcome measures included Barthel Index, mRS, item 14 of the Berg Balance Scale, Timed Up and Go test, 10-m walk maximum gait speed, 6-minute walk test, and the Stroke Impact Scale. **Results:** A total of 315 participants (n = 153 experimental, n = 162 control) were assessed at 18 months, but all randomised participants were included in the intention-to-treat analysis. Of the experimental participants who completed exercise diaries, 43 to 59% and 50 to 54% complied with the required weekly physical activity and exercise goals, respectively. Compared to baseline, both groups declined on the Motor Assessment Scale at 18 months, with an adjusted between-group mean difference of -0.7 points favouring the control group (95% CI -2.8 to 1.4 points). Of the secondary outcomes, only Timed Up and Go showed a significant between-group difference favouring the control group (7 seconds, 95% CI 3 to 11 seconds). **Conclusion:** Long-term individualised coaching did not improve maintenance of motor function more than standard care. This result may have been influenced by the high level of standard care in Norway, and the moderate compliance with the prescribed exercise and activity doses in the intervention group.

**Provenance:** Invited. Not peer reviewed.

**Prudence Plummer**

Division of Physical Therapy, University of North Carolina at Chapel Hill, USA

<https://doi.org/10.1016/j.jphys.2018.06.001>

## Commentary

This study suggests that additional monthly coaching focusing on physical activity to maintain motor performance, in the 18 months after discharge from rehabilitation, is not warranted. However, the findings should be considered in the context of the Norwegian healthcare system, where 91% of stroke survivors are managed in comprehensive stroke units, which provide intensive, evidence-based rehabilitation.<sup>1</sup> In settings where a high standard of stroke rehabilitation is not available, the impact of monthly coaching on motor performance in the long-term may be significant and warrants further investigation.

In this study, 43 to 64% of coaching group participants completed the prescribed amount of physical activity. This poor compliance may have contributed to the findings. Low compliance with physical activity is common following stroke, with < 50% of survivors completing the recommended 150 minutes of moderate physical activity each week.<sup>2</sup> This raises the question of how physiotherapists might assist stroke survivors to increase and maintain physical activity. While physical activity was not an outcome of this study, 60 to 64% of people in the coaching group were participating in the recommended amount of physical activity. It is possible that coaching stroke survivors about physical activity may improve the amount of physical activity, but may not be specific enough for maintaining motor performance. Motor performance may need to be explicitly

targeted to prevent decline in the years following discharge from rehabilitation. Coaching stroke survivors from early in the rehabilitation journey, with a strong focus on empowerment and less focus on prescription, is also worth investigation.

The decline in motor performance that was evident in these stroke survivors highlights the need to develop effective strategies that extend well beyond rehabilitation and provide long-term benefit to stroke survivors. While it is promising that these stroke survivors were performing high levels of physical activity, optimal interventions for encouraging more physical activity in the long term also need to be determined.

**Provenance:** Invited. Not peer reviewed.

**Elisabeth Preston**

Discipline of Physiotherapy, Faculty of Health, University of Canberra, Australia

## References

- Hokstad A, et al. *J Stroke Cerebrovasc Dis*. 2015;24:1333–1340.
- Rand D, et al. *Stroke*. 2009;40:163–168.

<https://doi.org/10.1016/j.jphys.2018.06.004>