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Appraisal

Critically appraised paper: Tailored prescription of digitally enabled rehabilitation may improve mobility, but not physical activity, in geriatric and neurological rehabilitation

Synopsis

Summary of: Hassett L, van den Berg M, Lindley RI, Crotty M, McCluskey A, van der Ploeg HP, et al. Digitally enabled aged care and neurological rehabilitation to enhance outcomes with Activity and MObility UsiNg Technology (AMOUNT) in Australia: A randomised controlled trial. *PLOS Medicine*. 2020;17:e1003029.

Question: Does tailored prescription of digitally enabled rehabilitation using affordable devices improve mobility and physical activity in people with mobility limitations admitted to aged care or neurological rehabilitation? ***Design***: Pragmatic, parallel-group, randomised controlled trial with concealed allocation and blinded outcome assessment. ***Setting***: Three inpatient rehabilitation (aged care, neurological rehabilitation) hospitals in Australia. ***Participants***: Adults with reduced mobility (defined using Short Physical Performance Battery score < 12), clinician-assessed capacity for improvement, life expectancy > 12 months, anticipated length of stay at least 10 days from randomisation, and able to maintain standing position (assistance of one person permitted). Key exclusion criteria were cognitive or visual impairment likely to interfere with device use, inability to communicate in English, medical conditions prohibiting exercise and anticipated discharge to nursing home. Randomisation of 300 participants allocated 149 to usual care plus digitally enabled rehabilitation and 151 to usual care only. ***Interventions***: Both groups received usual multidisciplinary rehabilitation care. In addition, the intervention group was prescribed 30 to 60 minutes of digitally enabled rehabilitation (virtual reality video games, activity monitors, tablet and smartphone exercise applications) 5 days a week in hospital and after discharge (using loaned devices) for 6 months. The digitally enabled rehabilitation was individually tailored and progressed by a physiotherapist. ***Outcome measures***: Co-primary outcomes were mobility (performance-based Short Physical Performance Battery) and upright time as a proxy for physical activity (proportion of day upright measured by activPAL, averaged over 7 days) 6 months after randomisation. Secondary outcomes included performance-based and patient-reported measures of mobility and physical activity. ***Results***: A total of 258 participants (129 control, 129 intervention) completed the 6-month assessments. At the 6-month follow-up, the change in mobility score on the Short Physical Performance Battery was greater for the intervention group than the control group (MD 0.2 points, 95% CI 0.1 to 0.3), but there was no evidence of a between-group difference in upright time (MD −0.2, 95% CI −2.7 to 2.3). Between-group differences favoured the intervention group across most secondary mobility outcomes, but there was no evidence of between-group differences for most other secondary outcomes including steps taken per day. ***Conclusion***: Digitally enabled rehabilitation to promote mobility and physical activity in mobility-limited adults receiving geriatric or neurological inpatient rehabilitation can improve mobility, but does not appear to increase time spent upright.

Provenance: Invited. Not peer reviewed.

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Commentary

Mobility limitations are common among older people, particularly those with neurological impairments. Higher dosages of task-specific practice can lead to better rehabilitation outcomes after stroke;[1] however, various factors make it challenging to deliver increased dosages. Technological advances may provide solutions, but the use of devices must be evaluated in a rigorous way.

An innovative aspect of this trial was the range of commercially available and investigator-developed digital devices that were utilised, allowing therapists to personalise device and exercise selection to individuals. Tailored selection reflects the way that therapists are likely to use digital devices in practice. However, it is unlikely that individual clinicians will have access to all of the devices that were described. Therapists in this trial also used a health-coaching approach, which may have contributed to the positive outcomes in the intervention arm.

This pragmatic trial found that the intervention improved mobility, but not upright time. Although upright time was a proxy for physical activity, it did not measure intensity. There was no difference in steps per day. Change in self-reported walking time from 3 weeks to 6 months was greater in the intervention group. Use of digital devices may have enhanced the task-specific nature of training, which may have contributed to the improvement in mobility.

Of the people who were screened, 14% were eligible. Common reasons for exclusion were anticipated length of stay of < 10 days (37%) and impaired cognition (16%). Furthermore, the results suggest that the intervention was most effective in those with poorer baseline mobility and younger participants. Thus, while the results suggest that digital devices may enhance rehabilitation, clinicians must be mindful that the findings may not be generalisable to all patients admitted for inpatient rehabilitation.

Provenance: Invited. Not peer reviewed.

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https://doi.org/10.1016/j.jphys.2020.08.001

Reference

1. Schneider EJ, et al. *J Physiother*. 2016;62:182–187.

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