

# A socially distanced and digitally enhanced COVID-19 rehabilitation programme

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## Background

Over 11,000 patients have been admitted to intensive care units (ICUs) within the NHS since the start of the COVID-19 pandemic.<sup>1</sup> The protracted period of critical illness and requirement for ventilation, combined with the ongoing need for stringent infection control precautions, meant that an innovative solution was required to both characterise the nature of the rehabilitation period and enable the remote monitoring of individual patient progress.

## Methods

Smartwatches were provided to critical care survivors of COVID-19 at the time of hospital discharge. The smartwatches were used to monitor physical recovery (eg number of daily steps and heart rate), as well as promote physical activity through the development of individualised exercise programmes set by physiotherapists. Monthly multidisciplinary meetings attended by clinicians, physiotherapists and exercise physiologists reviewed smartwatch data and patient progress, and contributed to rehabilitation planning. Face-to-face follow-ups occur at 3 months and at 1 year after hospital discharge, and include the completion of objective outcome measures, such as the incremental shuttle walk test, assessing exercise capacity and allowing correlation with the novel smartwatch activity data.

## Results

To date, 18 patients have been recruited. Of those, 12 (n=7 male; 59±10.9 years old; with an intensive care stay of 15.8±10.4 days) have been reviewed at 3 months post-hospital discharge. On discharge, participants had an average incremental shuttle walk test of 97±69.5 m, which increased to 358.3±187.6 m at 3 months. Of the 12 patients followed up, 10 are using the smartwatch daily, with the average number of daily steps increasing from 3,076±2,493 steps at 1 week post-hospital discharge to 7,160±3,986 steps at 3 months. Resting heart rate

reduced from 82.5±7.3 beats per minute (bpm) on discharge to 73±5.4 bpm at 3 months.

## Conclusion

Survivors of COVID-19 critical illness are discharged from hospital with residual physical deconditioning and functional impairment. This deconditioning is typically highly reversible with significant improvement observed at 3 months post-discharge. Integration of smartwatch technology into a critical care rehabilitation programme has been well tolerated by most survivors and enabled socially distanced monitoring and individualised tailoring of advice and objectives. ■

## Conflicts of interest

None declared.

## Reference

- 1 Intensive Care National Audit and Research Centre. *ICNARC report on COVID-19 in critical care: England, Wales and Northern Ireland*. London: ICNARC, 2020. [www.icnarc.org/Our-Audit/Audits/Cmp/Reports](http://www.icnarc.org/Our-Audit/Audits/Cmp/Reports) [Accessed 04 October 2020].

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