



# Rehabilitation for post-covid-19 condition

## Improves quality of life in people experiencing the condition

Rana S Hinman,<sup>1</sup> Chris G Maher<sup>2</sup>

<sup>1</sup> Centre for Health, Exercise and Sports Medicine, Department of Physiotherapy, School of Health Sciences, Faculty of Medicine Dentistry and Health Sciences, University of Melbourne, Australia

<sup>2</sup> Institute for Musculoskeletal Health, School of Public Health, Faculty of Medicine and Health, University of Sydney, Australia

ranash@unimelb.edu.au

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Around 45% of people who survive covid-19 subsequently experience at least one unresolved symptom.<sup>1,2</sup> Symptoms can be debilitating and may include fatigue, muscle pain, disturbed sleep, breathlessness, and impairments in physical, cognitive, and psychological function.<sup>1,2</sup> Collectively, symptoms may adversely affect quality of life, be prolonged, and impose an economic burden on health systems.<sup>3</sup> Few randomised controlled trials have evaluated non-drug treatments for post-viral syndromes,<sup>4</sup> including after covid-19.<sup>5</sup> Guidelines from the National Institute for Health and Care Excellence for managing long term effects of covid-19 recommend personalised rehabilitation that considers physical, psychological, and psychiatric needs.<sup>6</sup> Recommendations were based on the expertise of panel members, patients' experience, and expert testimony, and the lack of evidence about rehabilitation for post-covid-19 condition meant that specific recommendations for rehabilitation could not be made. Studies investigating rehabilitation for improving patient reported outcomes are a key research priority.<sup>6</sup>

### REGAIN programme

In the linked paper, McGregor and colleagues (doi:10.1136/bmj-2023-076506) report a multicentre superiority randomised controlled trial that evaluated the eight week Rehabilitation Exercise and psycholoGical support After covid-19 InfectioN (REGAIN) intervention, comprising an initial one-to-one advice session followed by eight supervised group exercise sessions and six group psychological support sessions.<sup>7</sup> Sessions were about an hour long and provided online. The pragmatic design compared the intervention with best practice usual care—a 30 minute online one-to-one session of advice and support. Results showed that the intervention was effective for improving health related quality of life at three and 12 months (but not at six months) compared with usual care. At three months, 17% (n=39/237) of the intervention group reported that their overall health was “much better now” compared with 8% (n=20/250) in the usual care group. One serious adverse event (syncope and vomiting after exercise) was deemed possibly related to the intervention, and two adverse events were deemed definitely related (knee pain with exercise, and severe anxiety before exercise).

REGAIN is a large prospectively registered trial with follow-up of outcomes to 12 months post-randomisation and good participant retention (485 of 585 participants (83%) provided primary outcome data). Other strengths include the training of trial clinicians to deliver the intervention, the provision of detailed information on development of

the rehabilitation programme,<sup>8</sup> and consulting people with post-covid-19 condition and clinical experts when developing the programme.<sup>8</sup> Limitations included the inability to mask trial participants or REGAIN practitioners to treatment allocation, which could have biased treatment effect estimates, and some uncertainty about whether patients with post-covid-19 condition would consider the observed treatment effects clinically worthwhile.<sup>9</sup> The latter limitation is hard to avoid when studying a new health condition and new treatment, as research examining the smallest worthwhile treatment effect has not been conducted. Until this occurs, a shared decision making framework may help clinicians and patients make informed decisions about the REGAIN programme.<sup>10</sup>

### Clinical implications

Findings from this trial have important clinical implications. Improvements in quality of life were driven mostly by improved fatigue, pain interference, and depression, suggesting rehabilitation programmes for post-covid-19 condition should target these impairments. Safety data are noteworthy. Post-covid-19 condition affects numerous organ systems and is associated with increased risk of developing myalgic encephalomyelitis.<sup>11</sup> Post-exertional malaise features in both conditions, raising concerns about the safety of exercise for post-covid-19 condition.<sup>12,13</sup> Regular monitoring in the REGAIN trial did not identify any episodes of post-exertional exacerbations of symptoms, providing reassurance that individualised exercise at home in online groups supervised by a trained physiotherapist or exercise physiologist is safe. Online methods to deliver the intervention helped to increase access to care, permitting national recruitment across England and Wales. Consultations and group sessions were delivered by videoconferencing, supported by a patient workbook, and prerecorded on-demand exercise, educational, and mindfulness videos.<sup>8</sup> The planned process evaluation<sup>14</sup> is not yet published; patients' and clinicians' experiences with the REGAIN intervention are therefore unknown. Although research in other health conditions can show that patients and allied health clinicians find videoconferencing convenient and acceptable,<sup>15</sup> people living with post-covid-19 condition do not necessarily view telemedicine favourably and have asked for face-to-face assessments.<sup>16</sup>

Although not limitations of the trial, challenges to rolling out novel complex rehabilitation therapies such as REGAIN exist. Trial inclusion criteria required a history of hospital admission for covid-19, and it is unknown if findings can be generalised to patients with milder infection who do not require admission.

Participants' judgments about the severity and cause of their physical and mental health symptoms were also used to determine eligibility, rather than measurable criteria, which may make identifying appropriate rehabilitation candidates more difficult. Complier average causal effect analysis suggested that full adherence to the intervention improved treatment outcomes. With only 47% (n=141/298) of participants fully adherent, strategies are needed to improve attendance at the initial consultation and subsequent group sessions. Although participants were encouraged to access exercise videos for unsupervised exercise, most participants in the REGAIN intervention group (206 of 258 participants (80%)) did not watch any. From a workforce perspective, scalable methods are needed to train clinicians to competently deliver rehabilitation for post-covid-19 condition.<sup>17</sup> Health service providers also need to consider if they will support delivery of new treatments—the planned REGAIN economic evaluation,<sup>14</sup> which is not yet published, will provide useful data in this regard.

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