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Rethink rehabilitation to reverse frailty

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One in four patients with COPD referred for exercise rehabilitation are frail, but nevertheless can respond favourably to rehabilitation and their frailty can be reversed, finds a new study led by King's College London and Royal Brompton & Harefield NHS Foundation Trust. The findings have wider implications for treating frailty, which affects one in ten over-65s, where adapting other rehabilitation programmes could potentially benefit more patients.

The study, funded by the NIHR and Medical Research Council and published in the journal *Thorax*, measured the prevalence of frailty using a range of tests in 816 patients (average age 70 years) with stable COPD (chronic obstructive pulmonary disease) and looked at whether frailty affected the completion and outcome of rehabilitation for their condition.

A quarter of patients (209 out of 816) recruited from the Harefield Hospital Pulmonary Rehabilitation Programme were found to be frail and had double the odds of not being able to complete their rehabilitation, mainly due to exacerbation of their condition and/or hospital admission.

However, the study found that frail patients who completed the eight-week rehabilitation programme (55% of the 209) scored consistently better in measures of breathlessness, exercise performance, physical activity and health status compared to non-frail participants. After rehabilitation, 71 out of 115 (61%) previously frail patients no longer met the criteria for frailty.

Frailty increases your risk of becoming dependent on others. It affects an estimated one in every 10 people aged over 65 years and is consistently associated with a greater risk of falls, disability, hospitalization and death. Although frailty is usually linked to age-related decline, chronic diseases like COPD can accelerate the rate of decline and hasten a frail state.

In COPD, shortness of breath can be accompanied by other health-related problems including muscle weakness, osteoporosis and fatigue, symptoms which are also linked to physical frailty. Identifying frailty early in the course of disease is important, as interventions can then be introduced to try to prevent further decline, hospital admission or death in those at high risk.

Pulmonary rehabilitation targets many components of frailty including slowness, fatigue, weakness and physical inactivity, providing a more holistic approach to improve overall health. It is thus highly effective not only in improving symptoms such as breathlessness, but also in boosting physical function and health status more generally.

Whilst rehabilitation of older people typically focuses on fall prevention strategies through balance training and education, the outcomes of this latest study provide strong grounds to explore how better to support patients who are frail through more comprehensive and tailored programmes akin to those offered for COPD.

The model for pulmonary rehabilitation could potentially be adapted to support a wider group of frail people beyond those with respiratory conditions, conclude the study's authors. Indeed, tailored frailty programmes are being piloted within healthcare services for the elderly, but there is scope to help many more people.

Limitations of the study included the fact that the study did not obtain

outcomes on participants declining or dropping out of rehabilitation; therefore, the findings should not be generalised beyond those completing a programme of rehabilitation. The outcomes were measured immediately following rehabilitation and do not reflect longer term outcomes, although researchers plan to follow up outcomes over several years.

Dr Matthew Maddocks, first author from the Cicely Saunders Institute at King's College London said: "Frailty affects one in ten over-65s, and one in four over-80s. We now have a good understanding of how to measure frailty through various tests, and our latest study shows that a combination of exercise training and education can help to reverse this in many people. Although pulmonary rehabilitation is aimed at people with respiratory problems, it involves working the arms and legs to strengthen the muscles, and uses walking and cycling to improve fitness and balance. This model could be adapted to benefit older adults in other healthcare settings."

Dr William Man, senior author from Royal Brompton & Harefield NHS Foundation Trust, said: "Although COPD is primarily a lung disease, many organ systems can be affected, contributing to the syndrome of frailty. This stresses the importance of a holistic approach and how interventions such as exercise training can bring great benefits to people with lung disease without necessarily treating the lungs."

More information: Matthew Maddocks et al, Physical frailty and pulmonary rehabilitation in COPD: a prospective cohort study, *Thorax* (2016). DOI: 10.1136/thoraxjnl-2016-208460

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