

Fitness, depression, and poststroke fatigue

Worn out or weary?

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Neurology® 2013;81:1566–1567

Each year, around 15 million people worldwide have a stroke. Of these, at least 5 million die, a third remain disabled, and the remainder make a good recovery.¹ Yet more than half of these 10 million survivors will have fatigue, one of the most debilitating, but least studied, poststroke symptoms. Poststroke fatigue (PSF) is a multifaceted phenomenon.² It has been correlated with lowered mood, as well as being influenced by other factors, like age, sex, and cognition. Many researchers have demonstrated that the presence of fatigue negatively influences quality of life, return to work, and perhaps mortality.^{3,4} However, most studies have been conducted cross-sectionally, in the subacute or chronic phase after stroke.^{4–6}

In this issue of *Neurology*®, Lerdal and Gay⁷ evaluate the longitudinal effects of acute PSF on patient perceptions of health. They examine whether PSF predicts self-reported physical and mental health outcomes at 18 months after stroke. Patients were assessed within 2 weeks of stroke, then at 6, 12, and 18 months, with quality of life, fatigue, and depression rating scales. The investigators conclude that acute phase fatigue is an important predictor of physical—but not mental—health at 18 months. The greatest predictor of fatigue at 18 months was its presence acutely. This is of great interest to stroke clinicians, as it helps to unpack the many contributors to an individual patient's perception of fatigue in the poststroke period. It is not without controversy, as the results of prior studies have suggested different associations with depression, fatigue, and fitness.

In a previous review, Duncan et al.⁸ concluded that there was little evidence to support an association of PSF and physical fitness. However, this review included only 3 studies, focused on the amount of physical activity represented by specific activities. More recently, Robinson et al.⁹ performed a multivariable regression analysis on walking-related activities in community-dwelling stroke survivors, and concluded that fatigue was not related to activity. Despite the demonstration of a relationship between fatigue and physical outcomes in other neurologic conditions, this has not been previously verified in stroke patients.

Several novel features add to the study's worth. Lerdal and Gay used a longitudinal design, including an assessment in the acute stroke phase, and used the physical component scale of the SF-36 as an outcome measure. The SF-36 is a patient-reported outcome measure that includes questions about the patients' perceived health and health-related quality of life. The physical component score includes questions about the experienced limitations in physical activities, work, and participation in daily tasks, as well as questions about pain and general health. Fatigue was independently related to this physical component scale, which is in contrast to the results from earlier studies on fatigue and physical outcomes. This suggests, however, that fatigue influences physical outcome on a number of levels, such as level of participation and perceived physical limitations, but perhaps not on more basic physical tasks like walking, or activities of daily living, which is in line with earlier findings.⁵ The authors executed a multivariable analysis, including age, sex, cohabitation, depressive symptoms, and the SF-36 component in the analysis. Future studies on the association between fatigue and physical outcomes should also include physical predictors in the multivariate model, in order to better disentangle the added role of fatigue.

The lack of a relationship between PSF and mental health will be surprising for many clinicians, since mood and PSF have been strongly associated in several prior studies. However, fatigue and mood have also been identified as independent variables.³ It should be noted that in this study, the Beck Depression Inventory was also not related to the mental health component and the total explained variance of the model was low.

There is considerable interest in both pharmacologic (antidepressants, stimulants) and physical (graded exercise programs, cognitive therapy) interventions to reduce and treat PSF.^{8,10} Interventions to minimize fatigue in the acute or subacute poststroke period could translate into less fatigue when people are considering return-to-work planning. For people who are not contemplating a return to the paid workforce, less fatigue may represent greater capacity

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Go to Neurology.org for full disclosures. Funding information and disclosures deemed relevant by the authors, if any, are provided at the end of the editorial.

to spend time with family, drive, care for grandchildren, or participate in other social and physical pursuits important for good quality of life. Lerdal and Gay conclude that the only predictor of later stage fatigue was the presence of fatigue in the acute phase. This finding emphasizes the need to account for, and perhaps eventually treat, acute PSF in those critical first weeks after stroke.

AUTHOR CONTRIBUTIONS

Amy Brodtmann: drafting/revising the manuscript, study concept or design, analysis or interpretation of data. Ingrid Lambert van de Port: drafting/revising the manuscript.

STUDY FUNDING

The authors report no targeted funding.

DISCLOSURE

The authors report no disclosures relevant to the manuscript. Go to Neurology.org for full disclosures.

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