

COMMENTARY

Falls exercise interventions and reduced falls rate: Always in the patient's interest?

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Abstract

Falls are a leading cause of mortality and morbidity in older adults. Physical, psychological and social consequences include injury, fall-related fear and loss of self-efficacy. In turn, these may result in decreased physical activity, reduced functional capacity, and increased risk of institutionalisation. Falls prevention exercise programmes (FPEP) are now widespread within the National Health Service, often part of multifactorial interventions, and are designed to minimise impairments that impact physical function, such as strength and balance. Assessment of the clinical efficacy of FPEPs has therefore focused on the measurement of physical function and rate of falls. Whilst important, this approach may be too narrow to capture the highly variable and multidimensional responses that individuals make to a fall and to a FPEP. We argue that the current focus may miss a paradoxical lack of or even deleterious impact on quality of life, despite a reduction in physical performance-related falls risk. We draw upon the Selective Optimisation and Compensation (SOC) model, developed by Paul and Margret Baltes, to explore how this paradox may be a result of the coping strategies adopted by individuals in response to a fall.

Keywords: falls prevention, activity restriction, quality of life, elderly, selective optimisation and compensation

Introduction

Falls are a leading cause of mortality and morbidity in older adults. Physical, psychological and social consequences include injury, fall-related fear and loss of self-efficacy. Any or all of these may lead to decreased physical activity, reduced functional capacity, and increased risk of institutionalisation [1, 2]. Falls prevention exercise programmes (FPEP) are the mainstay of falls prevention therapy for community dwelling adults. These are now widespread in the NHS, usually as part of multi-factorial interventions, which, according to meta-analysis, can result in up to 20% reduction in the subsequent falls rates [3].

Generally, FPEPs are designed to minimise the underlying impairments impacting physical functions, such as strength, balance and gait. Assessment of their clinical efficacy has therefore focussed on measurement of these physical parameters or rates of future falls. Whilst important, this approach may be too narrow to capture the highly variable and multi-dimensional responses that individuals make to a fall and to a FPEP. Thus, it has been suggested that outcome measures should include quality of life (QOL) and psychosocial functioning [4]. We support this suggestion. In this article, we argue that the prevalent narrower focus used

to assess FPEPs in routine clinical practice and research evaluations may miss a paradoxical lack of impact or even a deleterious impact on QOL, even when the intervention has produced the desired reduction in the magnitude of physical performance-related falls risk. We will draw upon Baltes and Baltes' Selective Optimisation and Compensation (SOC) model [5] to explain how this may result from the strategies adopted by individuals in response to a fall.

Why do falls rates decrease?

The extent to which FPEPs improve physical functioning and reduce falls rates is usually attributed to the former causing a reduction in the latter. While this is likely for many individuals, an alternative explanation for reduced falls could be the behavioural modification of restricting social or physical activities. This could follow the experience of a fall, but might also be a response to participation in a falls prevention programme.

For older people experiencing a fall, there may be many negative associations and perceptions, such as a sense of imminent loss of independence and risk of institutionalisation [6]. Yardley (2002) showed that two main dimensions of feared consequences of a fall are

(i) the expectation of physical harm and (ii) damage to social identity. Moreover, these feared consequences might motivate activity avoidance. Responses such as a partial or even total withdrawal from social and physical activities, even in the face of a potentially poorer QOL, might not seem misplaced in the light of these threats. Indeed, Ward-Griffin (2004) reported participants ‘shrinking their life space’ in an attempt to lower the risk of injury.

In addition, it may be that FPEPs themselves result in a reduction in activity. Interventions provide an increased awareness of falls risk factors and in doing so may force participants to decrease their physical and social activities in an attempt to reduce risk [7, 8]. Health professionals often use a ‘risk discourse’, implying that the older adult is vulnerable and responsible for their risk. For some participants, this may translate into the notion that a fall can be avoided through life activity modification, even though it is common for older adults to report the belief in the chance nature of a fall [9]. Some older adults have indeed reported that falls prevention advice has induced anxiety [10], which has itself been shown to lead to activity restriction (AR). Indeed, some hold the view that reducing activity levels is a sensible approach when trying to avoid falling [11] and many view AR as a falls prevention strategy [10].

It is clear that AR may be beneficial in the short term, by way of a reduction in the *exposure* to risky situations. However, it may ultimately prove to be harmful by leading to functional decline, through disuse, increased dependence and decreased social participation [12]. AR related to fear of falling is indeed a predictor of an increased falls rate in the long term [12]. Furthermore, even if falls risk was mitigated by AR, other benefits of physical activity would be lost. Additionally, reduced physical activity and social participation may result in a poorer overall QOL and hence reduced health of the individual in the broader sense [13].

While we believe that the behavioural pathway described above may be important, we are by no means suggesting that it is universal or acts in isolation. Rather, an individual’s response both to a fall and to participation in a FPEP is likely to be a complex interaction between physical and psychosocial influences. The complexity is illustrated by the findings of a recent study which showed the rather unsurprising result that, among older people with difficulties in physical functioning, ‘not falling’ as well as higher social engagement and higher levels of perceived control were associated with better QOL [14]. We suggest that an important factor in determining the behavioural strategies adopted by individuals in response to the challenge of a fall will be the balance between these potentially conflicting aspirations. A useful framework for considering this issue is provided by the SOC model [5].

The model of selective optimisation and compensation

The SOC is a general lifespan developmental model that suggests that older people use strategies of selection,

optimisation and compensation to enable continuity of identity in daily life. While individuals engage in these strategies throughout their lives, they become amplified in later years in the face of challenges posed by the ageing process. These challenges may be biomedical, manifest as reduced capacity for independent mobility; psychological, such as increased fear of failure; or social, such as reduced available social networks or support.

A fall can be seen as a biological challenge, in the case of physical injury, psychological in the case of a decrease in falls-related self-confidence or social, in the case of a falls-related hospitalisation or institutionalisation. In the face of the challenge, the processes of selection, optimisation and compensation are employed to enable the individual to maintain a personal continuity. We propose that patients who have fallen or are deemed by health professionals to be at risk of falling and therefore entered to a FPEP will engage in these processes to deal with this specific challenge. We will now describe how such patients may be characterised in terms of the SOC model.

‘Selectors’

The process of selection is a reduction of the life world to a narrower range of activities in response to reduced ability to adapt to loss of functional capacity [5]. A ‘selector’ may decide that such a reduction is a good way to cope with their propensity to fall. Their appreciation of this risk may be heightened by attendance at FPEP.

We propose that people who can be predominantly characterised as a ‘selector’ will display a reduced level of physical and social activity, despite participating in a FPEP.

‘Optimisers’

The process of optimisation is to engage in behaviours that enrich and augment existing function and resources. An ‘optimiser’ who has fallen may decide to engage in as many if not more activities in order to maintain or improve upon their current function and therefore their desired lifestyle.

We propose that people who can be predominantly characterised as an ‘optimiser’ will be the patients who display high uptake and adherence to the FPEP, and then maintain or increase physical activity and social participation levels post-rehabilitation.

‘Compensators’

Compensation arises due to a restriction in the range of adaptive potential to levels that are unacceptable [5]. A falls rehabilitation patient may be classed as a ‘compensator’ when steps are taken to make up for deficits in function. This may be the acceptance of previously refused home help, the use of a walking aid or shopping deliveries.

We propose that a ‘compensator’ will be someone whose social participation and physical activity levels may not change but the manner in which they participate may change.

Empirical evidence for the model

The SOC and its underlying themes of plasticity, agency and preparedness for dealing with life-course demands is an attractive one as it does not imply a single outcome, rather it emphasises the ability of a ‘person in context’ to actively meet challenges [15]. So far there has been little empirical research that has examined the processes of the SOC. This may change as a result of the operationalisation of the model in 12- and 48-item questionnaires [16]. The internal reliability for the 12-item questionnaire is low, with higher values demonstrated by the 48-item version. Test-retest reliability scores are acceptable for both [15]. The strategies can be measured and interpreted as an overall score that indicates the use of SOC-related coping mechanisms or applied to assess the individual processes so that it becomes possible to characterise patients as predominantly ‘selectors’, ‘optimisers’ or ‘compensators’ in their chosen response to falls and FPEPs.

SOC strategies are being investigated in a growing number of contexts. As part of the Berlin Ageing Study, the relationship between engagement in SOC strategies and measures of successful ageing were examined, with significant correlations between SOC strategies and subjective well being, positive emotion and absence of loneliness [17]. These associations remained when extraversion, neuroticism, control beliefs and intelligence were controlled.

What place does the SOC have in falls rehabilitation?

It may prove useful in several ways to determine whether a patient responds as a ‘selector’, an ‘optimiser’ or a ‘compensator’. Firstly, SOC profiling could tell us what part of the change in rate of falls outcome might be explained by the choices people make about how to live their life rather than pure intervention effect. ‘Selectors’, for example, who reduce their activity levels are at a greater risk of falling in the long term and are more likely to have a poorer QOL with decreased levels of activity. They may need to be targeted differently so that they do not spiral into functional decline.

SOC profiling may be another way of segmenting people for different interventions. For example, a reasonably healthy, independently living older adult who has had a fall would benefit from a community-based intervention. However, if this person was profiled as being a ‘selector’, this might suggest that more closely supervised interventions such as one-to-one teaching or home-based exercises would be more appropriate. A ‘compensator’ may accept assistive devices or home environmental adaptations more readily than either of the other profiles and so this type of intervention could be made in conjunction with the exercise programme.

Concluding remarks

FPEPs offer a solution to falling for many older people. However, not all may benefit. The SOC, as part of a comprehensive assessment could play a role in identifying

the need for additional targeted interventions to maximise the benefits, in accordance with the adaptive strategies of the individual. Currently, we are gathering SOC data from people who are undertaking a FPEP to investigate the impact of SOC strategies on social participation and habitual physical activity levels, post-intervention. This data has the potential to inform future development of rehabilitative falls interventions.

Key points

- An alternative explanation for reduced falls risk or rate of falling following a falls prevention exercise intervention could be due to a self-imposed restriction in social or physical activities by the participant.
- This may be related to the fall or, perversely to the falls prevention intervention.
- Activity restriction, in the short term, may prove beneficial through a reduction in exposure to risky situations but, paradoxically in the long term may prove harmful and increase the falls risk through inactivity and disuse.
- Current falls prevention strategies may therefore be missing a lack of, or even deleterious impact of falls prevention exercise interventions on the QOL of participants despite improvements in falls risk profile.

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