Editorial

so as to measure and learn from the intended and unintended consequences of change.

So is this move to 100% single-room wards to be welcomed. For most, but not all, the answer is yes. Opinions and attitudes inevitably change over time and with experience of the ‘new way of working’, and we are all capable of adapting to changing working environments. However, I remain sceptical that people with a hyperactive delirium or behavioural and psychological symptoms of dementia can be managed in a ward of all single rooms without the need for additional staff or significant investment in technology to allow for improved monitoring.

If we are to truly deliver patient-centred care, then choice also needs to be part of the equation. A one size fits all approach rarely works when dealing with humans and human behaviour. Let’s not throw the baby out with the bathwater—we should continue to invest in more single rooms for the future as way of delivering patient-centred, safe and effective care, but remember that not everybody wants or will benefit from this approach. Modular designs of ward areas could easily accommodate flexibility in the configuration of the ward layout and allow for patient choice as well as giving staff the ability to provide enhanced supervision as and when required.

Key points

• We should continue to invest in more single rooms in hospitals as a way of delivering patient-centred, safe and effective care, but remember that not everybody wants or will benefit from this approach.

• Some elderly patients—such as those with a hyperactive delirium or behavioural and psychological symptoms of dementia—are likely to require additional staff or significant investment in technology to allow for improved monitoring if they are to be cared for safely in single rooms.

• Alternative approaches include modular design of ward areas that can accommodate flexibility in the configuration of the ward layout and allow for patient choice as well as giving staff the ability to provide enhanced supervision as and when required.

References


Move more and sit less: regular physical activity improves mobility in older age

Older people find it more strenuous than young to transition from sitting to standing, walk slower and negotiate obstacles or steps more cautiously. Progressive declines in physical function such as these lead to frailty and social isolation. Although we are still not entirely clear about the physiological processes causing mobility impairments in older age, there is more evidence that regular physical activity, or exercise, helps to preserve mobility enabling older people to live independently for longer.

Resistance training is recommended to help combat effects of ageing on physical function [1], because the main adaptations lead to bigger and stronger muscles. However, muscle mass and force are not necessarily good predictors of mobility. Instead, leg muscle power (the ability to apply high forces quickly) appears to be more relevant. Low muscle power is associated with poor mobility [2], and it follows that training muscle power through low-load, high-velocity movements improves mobility [3–5].

The work published in this edition of Age and Ageing [4] showed that mobility improved after 20 weeks of resistance training in people aged over 65 years. Interestingly, and probably surprising to some, was the finding that unloaded, high-velocity concentric movements improved chair rising, short walking and muscle power to a similar extent as conventional...
resistance-type training. In simple terms, these results indicate that older people do not need to lift heavy weights or access specialist equipment to achieve neuromuscular adaptations that improve general mobility; similar adaptations occur when just moving the limbs as quickly as possible.

This work [4] raises the interesting question of what adaptations might contribute to the beneficial response to unloaded, high-velocity training? The purpose of the study was not to elucidate the mechanisms, but in the apparent absence of changes to fat mass and lean mass [4], part of the improvement may be attributable to neural adaptations. To move limbs quickly requires a high voluntary drive through motor neural pathways, even when moving against a zero load. This might be key, as greater voluntary drive activates higher threshold motor units innervating the larger and more powerful type 2 muscle fibres [6]. These fibres are recruited to complete powerful and high-velocity movements like sprinting and jumping: activities that are not commonplace for the vast majority of older people. Substantial loss of motor neurons [7], atrophy of type 2 muscle fibres [8] and lower intrinsic force-generating capacity of single muscle fibres [9] resulting from ageing impair neuromuscular function. Exercise that recruits the high-threshold motor units cannot recover lost motor units, but will improve the function of those that remain. The adaptations to motor pathways are probably not only limited to those controlling the agonist muscles. For example, during a knee-extension kicking action, voluntary activation of antagonist muscles (knee flexors) is needed to prevent hyperextension and subsequent injury as the joint approaches maximal range of motion. Improved control by optimising neural activation patterns, in addition to any possible adaptations to muscle fibres, may translate to improved walking and chair rising in previously untrained older people.

A limitation with unloaded training is that it might not provide adequate stimulus to promote bone adaptations that usually require higher impact, and it remains unknown whether unloaded training will improve other tissues, improve body composition or affect risk factors for metabolic or cardiovascular diseases. Furthermore, the study [4] did not include a non-exercising control group; so strictly speaking, learning effects cannot be ruled out as the cause of improved mobility in the training groups.

The work [4] feeds into a larger debate of how best to encourage older people to be physically active. The recommendation is to reduce the amount of sedentary time, complete some moderate intensity activities each day and weekly activities to improve muscular strength and balance [10]. This seems reasonable, giving enough freedom for people to be active in any number of ways and is in line with observations that mixed training modalities are beneficial and well tolerated [11]. Nevertheless, older people remain the least active sector of society, which may be a biological phenomenon [12] but might also be due to older people perceiving more barriers and fewer opportunities within their local communities to be active [13, 14].

For the sake of individuals and the healthcare services, we need to promote strategies that delay, prevent and reverse the impaired mobility in older people. This is not an easy task, because there is great diversity between people and communities. Physical activity should be central to Public Health and government strategies to promote healthy ageing. Yet, it is not one of the eight domains in the World Health Organisation’s definition of Age-Friendly Cities [15].

The message delivered by healthcare specialists to the community needs to be evidence based, simple, consistent and repetitive: everyone should move more and sit less, regardless of personal preferences for indoor activities like dance or low-load, high-velocity training [4], or outdoor activities like gardening, golf, walking or athletics.

**Key points**
- Physical capability decreases progressively in older age.
- Regular physical activity helps to preserve mobility in older age.
- Even unloaded, high-speed muscle contractions are beneficial.

**Conflicts of interest**
None declared.

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**References**
Changes in sedentary behaviours across the retirement transition: a systematic review

In the physical activity literature, ‘sedentary’ was once a term used interchangeably with ‘inactive’ to describe those who did not undertake regular exercise. Since the 1990s, however, there has been increasing research interest in the role of sedentary behaviour (SB) on health, and there is now a recognition that SB is not defined simply as a lack of physical activity but is instead a separate behaviour in its own right [1]. Uninterrupted periods of sedentary time have been shown to be detrimental to health with strong evidence of an association between sedentary behaviour and all-cause and cardiovascular disease mortality and moderate evidence for risk of type 2 diabetes [2]. Moreover, it appears that this effect is independent of physical activity behaviour such that even those who undertake sufficient physical activity to meet public health guidelines but spend large proportions of the their time sitting carry an increased health risk compared with those who are both physically active and spend less time being sedentary. Older adults are the most sedentary group in our society with sedentary time accounting for $\approx 80\%$ of their waking day [3]. Over $70\%$ of older adults spend in excess of 8.5 h per day sitting [4].

Many 21st century occupations require individuals to spend considerable periods of the 7–8 hour working day sitting (working on computers, in meetings, etc.). Intuitively, it would seem that retirement might reduce the time spent sitting by bringing an opportunity for greater self-determination of how time is spent and perhaps lower overall levels of sedentary behaviour. However, many sedentary leisure pursuits, including TV viewing, may increase in retirement replacing sedentary occupational time with sedentary leisure time and indeed could result in higher levels of sedentary behaviour. A recent review suggests employment status is associated sedentary behaviour with those not in full-time employment more likely to be sedentary [5]. These differences are likely to be confounded by the ageing process and associated alterations or limitations in health (e.g. musculoskeletal decline) reducing the amount of standing or physical activity an individual can undertake. Increased life expectancy means that people are likely to be retired for longer. If it is established that sedentary behaviour increases in the transition to retirement, it might be worthwhile using the point of retirement to deliver guidance on sedentary behaviour to older adults. Given that transition points such as retirement may be ‘teachable moments’ or opportunities for changing health behaviours [6], interventions designed to reduce sedentary behaviour, delivered at the point of retirement to deliver guidance on sedentary behaviour may be an effective way of establishing healthy lifestyle habits during older adulthood.

Studies examining the change in physical activity behaviour resulting from the transition to retirement have been systematically reviewed [7] and suggest that physical activity may increase in retirement. In this issue, Sprod and colleagues review the small number of studies that have looked at sedentary behaviour in this transition period. This systematic review synthesises the findings of 12 studies from 6 countries that have attempted to determine the direction and magnitude of changes in sedentary behaviour occurring after...