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Falls research – stumbling or striding?

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Falls remain a major cause of morbidity in older people, leading to hospitalisation, injury, dependency and death in too many. Several interventions have been shown to reduce fall rates in older people [1], but there is a major gap between what we know from trials and what is often achieved in practice. Strength and balance training for the lower limbs (either via Tai-Chi or tailored programmes) is known to be effective, but is challenging to implement in practice; take-up rates are suboptimal, programmes are expensive and labour-intensive, with high discontinuation rates [2]. Worse still, many existing multifactorial interventions are delivered through costly falls clinics, which employ large numbers of highly-trained healthcare staff but yet can see only a fraction of the 30% of over-65's that fall each year.

These problems argue for a different approach if we are to impact falls rates on a population level; less expensive, less labour-intensive, shorter interventions are required if we are to increase reach. Unfortunately, such approaches have strayed from the existing evidence base, either because of an absence of evidence (e.g. slipper exchange programmes), or evidence of ineffectiveness (e.g. seated exercise [3]). This failure to implement evidence-based falls interventions is likely to at best waste resources for no effect, and at worst might be harmful, either by increasing falls rates or worsening other health outcomes, or by diverting resources away from areas where they would be more effectively deployed.

Continued efforts to test falls interventions and build a better evidence base are therefore important. The trial by xxx et al [4] of walking therapy tests a simple, inexpensive intervention, with the ability to scale to population level. The trial was large by the standards of many falls intervention trials, and used a follow up of nearly a year. A further point of merit is the focus on maintaining activity and independence utilised in this trial; many older people dislike engaging with services labelled as 'falls

services' [5] and hence a focus on positive health messages (activity) rather than negative messages (avoiding falls) is potentially valuable.

The trial did not show a reduction in falls – the primary aim of the trial. Although the trial was likely underpowered due to lower than expected recruitment and low falls rates, the lack of effect is consistent with previous evidence; previous reviews [6] suggest that walking programmes do not reduce the risk of falls. This is unsurprising; walking improves cardiorespiratory function and endurance, but does not improve either lower limb muscle strength or balance – the two key targets of effective physical therapy for falls reduction. Furthermore, falls rates are the product of both falls risk and falls opportunity. The danger is that by failing to reduce falls risk, but increasing falls opportunity, walking programmes might actually increase falls rates. This has been seen in at least one other trial of walking [7], and a signal in this direction was seen in the older subgroup in the current trial.

The key secondary finding from the trial was that self-reported physical activity rates in the intervention group were significantly increased. However, caution is warranted here. This outcome was not blinded (both the investigator and the participants knew the allocation group). Perhaps more importantly, we know that measuring physical activity via subjective measures is notoriously unreliable [8]. Objective Physical Activity (PA) measures, e.g. using triaxial accelerometry, can overcome such limitations of self-report measures and should be regarded as the research standard in this area. Subjective measures including the Incidental and Planned Exercise Questionnaire (IPEQ), whilst easy to administer, are also incapable of capturing the complexity of free-living daily activity patterns as they occur in people's everyday lives.

So what lessons should we draw from the results of this trial? Firstly, to remind ourselves that not all interventions to reduce falls are effective. The evidence is now clear that walking alone as an

intervention is not effective, and might actually be harmful if falls reduction is the aim. Falls programmes need to be evidence based, and that means abandoning ineffective interventions. Secondly, physical activity programmes need to measure falls as a measure of potential harm. Programmes to enhance everyday physical activity levels, especially in the oldest, most frail population, need to incorporate strength and balance training, preferably as an integral part of everyday functional activities that are most meaningful to the person, (i.e. sit to stand transfers instead of isolated, single muscle exercises). We need to motivate older adults to improve strength and balance using everyday activities that are functionally relevant and related to the goal of maintenance of physical independence, rather than attempting to sell such programmes on the goal of reducing falls. Such an approach would mitigate any increase in falls rates driven by increased opportunities to fall as activity levels increase, as well as avoiding the negative connotations of falls reduction. Thirdly, objective measurement of physical activity in intervention trials, both for falls research and activity interventions, should be the norm. The technology now available makes this eminently feasible in trials of up to several hundred participants, and such measures are essential if practitioners are to have confidence in the results.

Finally, there is a need for more innovative thinking in falls research. The current focus on exercise interventions to reduce falls has held centre stage for over 30 years, and too many current investigations aim to simply repackage existing exercise training programmes. Such programmes are unlikely to revolutionise the field, do not reach those who are unwilling or unable to exercise, and only reduce risk by a moderate amount even when implemented successfully. We suggest that to avoid stagnation, much more attention needs to be paid to alternative strategies – particularly to cognitive interventions (for instance dual task training) and to pharmacological interventions. We should be targeting sedentary behaviour by promoting the use of free-living physical activities as ‘exercises’ to improve strength and balance, as opposed to structured exercise programmes which lack popularity. A real opportunity for progress exists here, at the nexus between falls research and sarcopenia

research; only by embracing and evaluating interventions outwith traditional exercise programmes will we convert our current stumbles into strides of progress.

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