

# Your life is in

## The neurones that keep you on your feet are in decline. The earlier you do these exercises, the better. By Petra Bee

Professor Anne Tiedemann, a researcher in musculoskeletal health at the University of Sydney and one of the contributors to the Cochrane report, says that "dance, walking or resistance training performed on their own are not effective in preventing falls". Activities incorporating standing and functional balancing moves, such as tai chi and some yoga postures, are far more beneficial.

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our muscles and mind are tended to at the gym, and your cardiovascular fitness ramped up with running and spinning. Yet when was the last time you worked at bettering your balance?

Of all the perils of ageing, falling is among the most prevalent. Figures from the NHS show that a third of people over 60 have falls, and about half of those over 80 do so at least once a year. Falls in the home are estimated to cost the NHS close to £450 million a year. Yet many could be avoided and, according to a recent review by the Cochrane Bone, Joint and Muscle Trauma Group, exercise plays a significant part in prevention. What type of exercise you do makes a big difference. Researchers from the University of Sydney, Manchester University and the University of Oxford looked at 108 randomised controlled trials from 25 countries and found that some activities are better than others in protecting your body against this downside of ageing.

Don't think that just because you are supple for your age you will be immune to deteriorating balance. It affects us all. In research funded by the European Union and the UK Medical Research Council (MRC), researchers at Manchester Metropolitan University looked at balance in leading older athletes, all representatives of the British Masters Athletics Federation, to find out whether their supreme fitness levels help to offset the decline seen in less athletic people of a similar age.

Jamie McPhee, a professor of musculoskeletal physiology and the study leader, says that these athletes, whose ages ranged from 40 to 90-plus, displayed superior cardiovascular health, muscle strength, bone mineral density and metabolic health. "Some of these athletes are training 12 to 14 hours a week," McPhee says. "In their sixties and seventies they are displaying many parameters of physical function that are the same as someone 30 years younger."

However, none of this translated to better balance. Despite their physical prowess, the masters athletes were not much better at balancing than couch potatoes of the same age. "It seems that a reduction in muscle mass and

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strength that occurs with age is not the only reason why people fall as they get older. Diminishing balance is partly down to poor control of the muscles we have as our brains control of movement deteriorates."

In our younger years we each have about 70,000 specialised nerve cells — motor neurones — in the lower part of the spinal cord that connect with our leg muscles to control balance and movement. McPhee and his team have shown that, by the age of 75, 40 per cent of these motor neurones have been lost, resulting in lower levels of co-ordination and balance in people with all levels of physical fitness. "It's as much a part of ageing as greying hair," McPhee says. "And there's no evidence at all that staying fit with regular forms of exercise prevents it."

He says that the only way to hold on to balance is to do specific training. And, according to Tiedemann, the best time to start is now. "If we consider that there is an age-related decline in muscle strength from about age 40 and that this is one factor that is important for balance, then ideally people should be thinking about exercise to maintain their ability to balance as early as possible," she says. "We do know that risk of falling

increases by around age 65, but it's better to not wait until you fall to pay attention to prevention strategies. So what should we be doing to prevent a fall?

**Tai chi**  
The martial art tai chi uses a series of flowing motions that involve moving from one pose to another by gently shifting your bodyweight to challenge your balance. Don't be put off by the low intensity — it really is something we should all consider trying and the Cochrane reviewers found it to be among the most effective ways of preventing falls; their evidence suggested a reduction of 19 per cent in the rate of falls.

There's evidence that tai chi can help to lower blood pressure, heart rate and levels of the stress hormone cortisol, all of which can affect balance. Two years ago the *Journal of the American Geriatrics Society* reported that in a study of people who regularly did tai chi for up to a year, their risk of falling fell by 43 per cent. One study showed that those attending tai chi classes performed better in balance tests than those who had spent the same number of weeks learning ballroom dancing. "Joining a tai chi class is an excellent prevention strategy," McPhee says. "Most of the moves involve balance and are performed standing up."

**Yoga**  
In the Cochrane review, results suggested that standing yoga poses may be helpful in preventing falls. "Since a lot of yoga postures involve balance, it can be us-ful," McPhee

**There is an age-related decline in muscle strength from about 40**

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