

Employing physical activity to prevent strokes



Michelle N McDonnell^{*1} & Susan L Hillier¹

“Stroke is preventable, and many people do not know that they can change their risk of stroke by adhering to some healthy lifestyle choices.”

Stroke continues to be the leading cause of disability in developed countries, with incidence on the rise in the developing world. Despite advances in medical care, the cost of stroke to society is increasing, as many more people are surviving stroke and continue to have lifelong disabilities. The cost in the USA alone in 2009 was US\$38.6 billion for direct and indirect costs, with this figure expected to rise substantially in the coming years [1].

The major stroke risk factors have been known for many years, but even armed with this knowledge, control of hypertension and hypercholesterolemia are distressingly low. This is particularly the case with black Americans, where uncontrolled hypertension leads to increased incidence and mortality from stroke [2]. So despite significant resources invested in controlling hypertension, diabetes, obesity and hypercholesterolemia, someone suffers a stroke every 40 s and dies every 4 min in the USA alone [1].

It is widely known that factors such as smoking and high blood pressure are associated with

increased risk of having a stroke. We are now learning more about other lifestyle and medical conditions associated with stroke that, importantly, can be modified to reduce the risk of stroke. For example, a combination of five healthy lifestyle factors can reduce your risk of stroke by around 80% [3]. This research suggests that if you do not smoke, are not obese, have a healthy diet, exercise for 30 min each day and consume modest amounts of alcohol you have a much lower risk of many chronic diseases, including stroke.

What about physical activity?

The role that physical activity has in prevention of many chronic diseases is well known, and researchers are now looking at the costs of physical inactivity on society – and they are alarming [4]. Not only is it underappreciated by many health professionals, but the wider community also has a poor awareness of the risks of physical inactivity. This is particularly evident in stroke, where smoking, high blood



¹School of Health Sciences, University of South Australia, Adelaide, Australia

^{*}Author for correspondence: michelle.mcdonnell@unisa.edu.au

pressure and high cholesterol are likely to be named as risk factors for stroke [5], but not physical inactivity, which is the second biggest risk factor for stroke [6].

As part of our own work we want to understand more about why people are not active prior to their stroke. We have interviewed people recently admitted to hospital with their first stroke and asked them if they knew of a link between stroke and physical activity. These are people with multiple medical conditions, but one in four people thought that stroke and inactivity were completely unrelated and 42% had no idea that there was a link.

A study published recently in the journal *Stroke* confirms that exercising at an intensity to work up a sweat at least four times a week can reduce your risk of having a stroke [7]. This was demonstrated in the USA, with the cooperation of about 30,000 people involved in the long-term study. People were asked how often they were exercising at this intensity and they were followed-up regularly for several years. Those people who were physically inactive were 20% more likely to suffer a stroke than those who exercised four times a week.

In this research, the emphasis was on the frequency of vigorous physical activity rather than the type of activity or for how long. Moderately vigorous exercise might be brisk walking, swimming, cycling or other forms of exercise such as vigorous gardening.

Increasing physical activity is something that individuals have the power to change, and it may be easier to achieve than suddenly giving up smoking or losing weight. Another important, but perhaps not surprising, finding from the *Stroke* study was that the people who exercised regularly were more likely to be normotensive and have a lower BMI (have a healthy weight), and less likely to be diabetic. We know that regular exercise can help reduce blood pressure, obesity, and control or prevent diabetes [8]; if exercise was a pill, one pill would be treating and/or preventing a number of different medical conditions, including stroke.

'Exercise is medicine'

The hazards of inactivity are well known, and low cardio-respiratory fitness levels are associated with increased risk of death and disability [9]. The American College of Sports Medicine launched the Exercise is Medicine™ (American

College of Sports Medicine, IN, USA) initiative in 2007 in an attempt to make physical activity an integral part of healthcare. This can be incorporated into general practice by recording physical activity as a vital sign using two questions: "Over the past month, how often did you engage in moderate physical activity, like a brisk walk?" This is then followed-up with: "On those days, on average, how many minutes did you do this for?" This allows calculation of the average minutes per week of reported moderate intensity exercise, and can be compared with the relevant Physical Activity Guidelines that recommend 150 min of moderately vigorous intensity exercise each week. This can be achieved for older adults in episodes of 10 min regularly throughout the week; for people with other comorbidities or the frail elderly, referral to an appropriate allied health provider such as a physiotherapist may be appropriate to assist them with the best way to perform physical activity suitable to their level of functioning [10].

The difficulty with physical activity

People live busy lives, and often exercise is either not a priority or people are just not interested in regular physical activity. We have surveyed people who recently suffered a stroke and discovered that the leading causes of physical inactivity prior to their stroke were lack of interest, lack of energy and lack of motivation. Similar results are reported by Moschny *et al.*, who studied healthy older adults with a median age of 77 who report poor health (58%), lack of company (43%) and lack of interest (37%) as the most frequent barriers to physical activity [11].

Motivating patients to make significant behavior changes is challenging, and is not likely to be achieved in one brief consultation. However, preliminary work by the The American College of Sports Medicine suggests that 60% of people are likely to commence a physical activity regime if advised to do so by their regular healthcare provider [9]. This initial motivation requires ongoing support, and techniques such as motivational interviewing are being used by general practitioners to counsel patients about their lifestyles [10].

Not more talk about 'exercise'

Why is it that people still need to be convinced about the benefits of exercise? Why is it that 32% of the population do not undertake any aerobic physical activity? [1]. Perhaps it is the

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concept that people feel they must go to a gym or attend regular classes to 'exercise', when the evidence suggests that regular physical activity of any form is beneficial. So while leisure time physical activity is important for maintaining and improving fitness, occupational and household activities contribute to energy expenditure and can be considered as important components of regular physical activity [12].

Another barrier to increasing physical activity may be reluctance from the medical profession to take the 'exercise is medicine' concept seriously enough to encourage it in those with multiple medical conditions. Is it because of the belief that increasing physical activity will not be beneficial, or the fear that it will do harm? In reality, the benefits of exercise far outweigh the risk of adverse events [13]. Or perhaps it is the confusion surrounding the prescription of exercise. For example, if someone has had a stroke the American Heart Association-endorsed guidelines suggest exercising at 40–70% heart rate reserve or 50–80% maximal heart rate or 11–14 on the Borg Rating of Perceived Exertion Scale [14]. Confusing, no? While intensity does not need to be measured constantly with a heart rate monitor, these very large ranges in recommended heart rates may be causing some reluctance in prescribing exercise. Recent research suggests that perhaps a more appropriate recommendation is to exercise at the level of 13 on the Borg Rating of Perceived Exertion scale, or 'somewhat hard' exercise

intensity. This intensity not only improves fitness but also feels good, making it more likely that people will adhere to prescribed exercise programs [15].

Recommendations for clinical practice

Stroke is preventable, and many people do not know that they can change their risk of stroke by adhering to some healthy lifestyle choices. A combination of healthy diet, healthy body weight, regular exercise along with moderate alcohol consumption and not smoking is beneficial to prevent a number of chronic diseases. Patients are more likely to consider undertaking physical activity if their healthcare provider recommends it, so we should be asking patients whether they are physically active four or more times a week at an intensity to work up a sweat. We should also let them know that this level of physical activity is good for their health for many reasons, but particularly to reduce their risk of stroke.

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