An Appetite for Change

The importance of diet in preventing falls

Did you know eating green leafy and cruciferous vegetables (like broccoli, cabbage and cauliflower) helps to keep your bones and muscles strong? Strong muscles and bones reduce the risk of falling which is particularly important for older people.

For elderly, falls can lead to serious injuries which take a long time to recover from. Some people develop a "fear of falling" and so move less in the hope of preventing further injury. Unfortunately, if older people move less, their muscles and bones lose strength. This makes them more susceptible to falls.

As falls often signal the end of independent living of older people, it's important to find ways to prevent them.

ECU's research shows moving regularly and eating vegetables rich in dietary nitrates (such as spinach, lettuce and beetroot) and vitamin K (found in broccoli, asparagus and pumpkin) helps to strengthen muscles and bones.



The Researcher



Dr Marc Sim is a Senior Research Fellow at Edith Cowan University's Nutrition & Health Innovation Research Institute, a Career Advancement Fellow at Royal Perth Hospital Research Foundation, and a recipient of an Emerging Leader Fellowship from the Western Australian Future Health Research and Innovation Fund. His research looks at creating practical diet and exercise programs to help reduce falls and fractures in our ageing population. This will help them to live independently and for longer.

Dr Sim is an accredited Exercise and Sport Scientist (Level 2), a registered Nutritionist and previously worked as a Sports Physiologist at the Western Australian Institute of Sport. His experience working with elite athletes who supplement their diets with foods high in dietary nitrates to improve their performance, inspired his research focus.

"Supplementing diets with nitrate-rich foods to improve athlete's performance is recognised by the International Olympic Committee. I wanted to test whether the same vitamins and nutrients could improve muscle function in older people, as they do in elite athletes," Dr Sim said. "We are seeing strong indications that these foods help increase muscle function which is likely to prevent falls and reduce fractures for older people too."

Pathway to Impact

Research Driver

Do diets rich in vegetables support bone and muscle health in older people?

Current Focus

A clinical trial is needed to determine the amount of Vitamin K and dietary nitrates required to offer the most health benefits (in terms of strong muscles) for older people. Building on this, supplements will be developed to complement dietry intake.

Future Impact

Health practitioners could potentially "prescribe" the identified amounts of green leafy and cruciferous vegetables to the

elderly, as a way to increase their bone and muscle strength and prevent falls and fall-related injuries. Research outcomes will inform policy and dietary guidelines to support strong muscle and bone health in older people and enable longer independent living and improved quality of life.

Progress

Research to date has determined that Vitamin K and nitrates in leafy green and cruciferous vegetables play a crucial role in developing and supporting strong muscles and bones.

Next Step

Research will use body scanning machines to collect data on older people's bone and muscle health to build a database. Researchers will use artificial intelligence to look for patterns in the data to identify a person's risk of falling before it happens.

> Stronger bones and muscles can reduce the likelihood of older people falling. The less they fall, the healthier they are (and stay!) for longer.



Preventing falls and fall-related injuries in an aging population is a key concern for health practitioners around the world. Dr Marc Sim's research into the role of a nitrate-rich diet in strengthening muscles and bones in older people has the potential to support healthy aging, enable independent living for longer, and improve quality of life.

