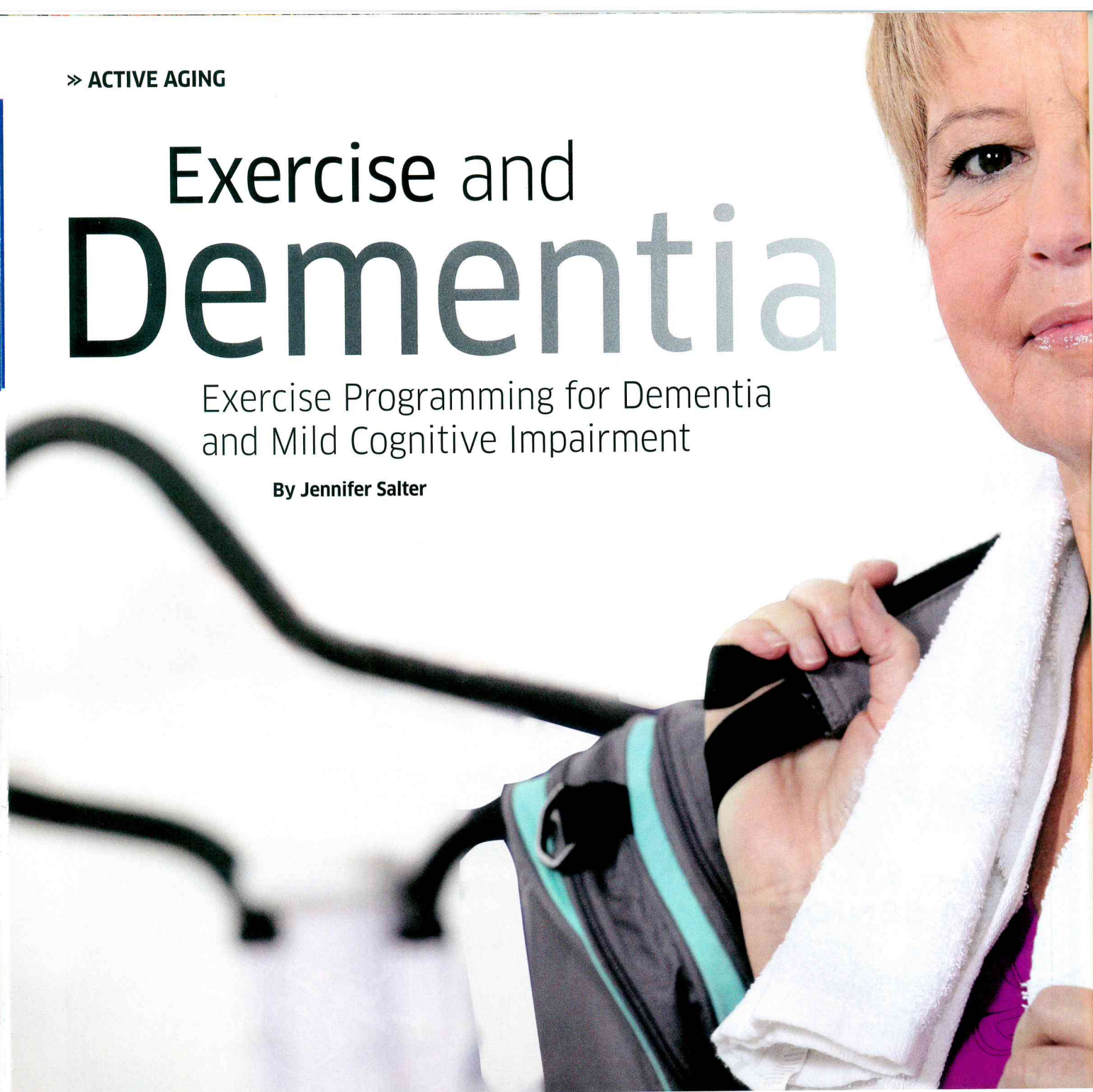


Exercise and Dementia

Exercise Programming for Dementia
and Mild Cognitive Impairment

By Jennifer Salter



The number of people suffering from dementia is set to rise exponentially in the next 20 years as baby boomers reach old age. In 2011, 747,000 Canadians were living with cognitive impairment, including dementia—14.9 percent of Canadians 65 and older. By 2031, this figure will increase to 1.4 million. Dementia, and its precursor, mild cognitive impairment, involve a loss of brain function that affects memory, thinking, language, judgment, and behaviour. Current research is clear about the impact that lifestyle choices have on mental acuity as we age: the same things that kill the body kill the brain. Among those over 65, most suffer from hypertension, more than two-thirds are overweight, and nearly 20 percent have diabetes. It is established that smoking, inactivity, and poor eating habits are the root causes of these physical diseases. People with dementia often share these same risk factors.

The mental and physical diseases we face in old age are both

connected to the cardiovascular and metabolic systems. A failure of these underlying problems explains why people who are obese are twice as likely to suffer from dementia, and why those with heart disease are at far greater risk of developing Alzheimer's Disease—the most common form of dementia. Statistically, having diabetes increases the risk of developing dementia by 65 percent, while high cholesterol increases the risk by 43 percent.

As we age, the cells throughout the body gradually lose their ability to adapt to stress. Scientists are unsure of exactly why this happens, but it is clear that older cells have a lower threshold for addressing the molecular stresses of free radicals, excessive energy demands, and overexcitability. The genes responsible for producing proteins that clean up damaging waste products stop doing their job, which can lead to apoptosis—cellular death. As damage accumulates, the immune system is activated and white blood cells and other factors are recruited to mop up dead cells, creating inflammation.



addition, exercise sparks connections and growth among the cellular network of the brain by increasing blood volume, regulating fuel, and encouraging neuronal activity and neurogenesis (development of new nerve cells). Regular exercise also increases dopamine levels. Dopamine is a neurotransmitter that is the core of the reward and motivation systems—a lack of which causes irritability, depression, and apathy among many older adults.

The landmark Nurses' Health Study, which began surveying the health habits of more than 122,000 nurses every two years in the mid-1970s, began to administer cognitive testing to the participants between the ages of 70 and 81 in 1995. The results, published in the *Journal of the American Medical Association*, were strikingly clear: women with the highest levels of caloric expenditure had a 20 percent lowered chance of being cognitively impaired on tests of memory and general intelligence. The most active group did the equivalent of 12 hours of walking per week, or four hours of running. The least active group did one hour of walking per week. However, beneficial effects started to be seen at modest levels of activity—about 1.5 hours of walking per week.

Exercise Specialist Recommendations

When working with clients who already have cognitive impairment, it is imperative that the following strategies be used:

- **Always be prepared for some degree of cognitive impairment** when working with clients over the age of 65.
- **Speak to the client face-to-face.** Make eye contact.
- **Avoid chatter and omit unnecessary details.** Use short, simple sentences. Even though most fitness professionals pride themselves as educators, do not give long explanations for why you have chosen the exercises on the program. If the client asks, give the simplest answer possible.
- **Do not be alarmed if the client does not remember who you are** from one session to the next. Simply remind him: "I'm Jennifer, I am helping you with your exercises".
- Keeping the above in mind, **never "talk down" to a client** with dementia.
- **Allow the client to tell you the same stories over and over again**, and behave each time as if the story is new.
- **Include a small number of simple exercises that are easy to remember**, and have functional benefit, such as squats, biceps curls, scapular retraction, and one-foot balance.
- **Use verbal, visual, and tactile cues in your instruction.** Clients with dementia may not process verbal information quickly, so always pair verbal cues with a visual demonstration. Tactile cues include, for example, touching the client's knee to delineate the range of motion of a squat.

Honing your skill set to work with clients who have mild cognitive impairment and dementia will prepare you to successfully meet the needs of an aging population.

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If the swelling becomes chronic, damaging proteins are created which are directly linked to Alzheimer's Disease.

In the brain, neurons get worn down from cellular stress—synapses (the linkages between neurons, or nerve cells) erode, eventually severing the connections. With this decrease in neural synapsis activity, dendrites (the branches of neurons that receive electrochemical signals from other neurons) shrink and wither. Blood vessels feeding the brain also shrink, restricting blood flow. Starting at about age 40, we lose on average five percent of our overall brain volume per decade, up until age 70, when a variety of different conditions can accelerate the process.

Exercise is one of the few ways to counter the process of aging because it slows down the natural decline of the stress threshold. It is actually good for cells to periodically be subjected to mild stress—this improves their ability to cope with more severe stress. In

