

PUMPING UP

STRONG MUSCLES MAKING STRONG MINDS

BY KIMBERLEY FEHR | PHOTOS TIFFANY BROWN COOPER

SEVENTY-YEAR-OLD JOYCE MAR

didn't like lifting weights. But when an opportunity came up to participate in a free six-week exercise program as part of a UBC pilot study on how weightlifting affects cognitive function, she signed up, partly out of curiosity and partly because it was something she thought she should be doing.

When the six weeks were up, she didn't want to stop. And she didn't have to. Vancouver Foundation gave the UBC project a \$50,000 grant to develop a full-fledged year-long study of 155 Vancouver-area women aged 65 to 75.

Results of the study, led by UBC's Teresa Liu-Ambrose, were published in January 2010 in the *Archives of Internal Medicine* and reviewed by the *British Medicine Journal*—a prestigious accomplishment for the 37-year-old assistant professor in the Department of Physical Therapy at UBC.

“Simple training with weights improved the ability to make accurate decisions quickly for the women who participated,” says Liu-Ambrose, who used a variety of different tests to measure this ability. ►



One example is the Stroop test, which seems designed to confuse. The test culminates with participants looking at 120 names of colours, printed in colours that don't correspond to the names. Instead of reading the word, participants have to say the colour of the letters.

Weight-training improved executive cognitive functions – processes responsible for such skills as planning, abstract thinking and rule-forming – in the women who took part in the study. These are the functions that make a difference in day-to-day decisions that allow elderly people to function independently. For example: paying a bill, planning a meal or even avoiding a fall.

“A key risk factor for falls is cognitive impairment, and if you look at the research in the past, this has been raised for many years now,” says Liu-Ambrose, who conducted her study out of the Centre for Hip Health and Mobility, run by Vancouver Coastal Health and UBC.

The statistics are daunting. Approximately 30 per cent of B.C. seniors experience one fall each year, and the resulting hip fractures cost the health-care system \$75 million, according to numbers provided by the Centre for Hip Health. As baby boomers retire in droves, the number of B.C. seniors is expected to increase 220 per cent by 2031, which means falls and consequent medical costs will only become more of an issue.

The study also lends credence to the possibility that weightlifting could help avoid the onset of Alzheimer's and dementia.

“Exercise to me is a beautiful strategy,” says Liu-Ambrose. “It can be applied at a population level fairly easily and it has so many benefits other than cognitive function, it seems to me to be an easy sell.”

The study was empowering for the women who participated, says Liu-Ambrose.

“Not many older women think of resistance training and, if they do, they typically use very light weights or a Thera-Band,” she says. “We put them on weightlifting machines and progressed them in a very systematic way throughout the trial. They felt that they were really achieving something that's atypical [among] their peers, and they received a lot of positive affirmation from their families because of it. [We heard] comments like, ‘Now I'm the cool granny.’”

Seniors who are unable to participate in other types of exercise



Brains and brawn (left to right): Joyce Mar, Barbara Lever and Millie Hawkins lift weights to strengthen their bodies and sharpen their minds.

can also reap the benefits of weight-training. Some women in the study couldn't walk more than a block, but still benefited.

The idea for the study came out of Liu-Ambrose's PhD research (which was also funded by Vancouver Foundation donors). Previous studies had looked at aerobics and cognitive function, and run for shorter periods of time. Other studies showed cognitive impairment was related to falls, but there was a gap: not much research had been done on how to improve cognitive functions so people don't fall in the first place.

Thanks to the grant from Vancouver Foundation, Liu-Ambrose was able to conduct the study she envisioned: one that ran for a year, and with a large enough sample size to be taken seriously. “No one ever forgets the first grant they get

as a faculty member and it really provided that sense of security that I had something to work with,” she says.

They also captured the subjective experience of the participants through a complementary study conducted by Joanie Sims-Gould at the UBC School of Social Work and Family Studies, which was published in *Qualitative Research in Sport and Exercise*. Sims-Gould asked participants to take photos that expressed how they were feeling, and captured their reflections on the benefits of exercise in video interviews.

Sixty-seven-year-old Sharron Williams says her favourite picture she took was of a statue at Kits Point. “It was a man walking and it was a good day and he was very upright in his stance,” she says. “He looked healthy. That was how the exercise class made me feel.”

The exercise program was very powerful, she adds: “Just because you're 65 doesn't mean you have to stop exercising. If you commit yourself and are willing to work, you can easily become a lot fitter than you think you could be at 65.”

As for Mar, she still doesn't really like weight-training. But when the study ended last year and the women were offered a chance to continue working out at the YMCA on 49th and Cambie, she signed up.

“Once I got used to it, I thought, ‘Why don't I just keep it up?’” she says. It wasn't just because of her improved strength. It was “just an overall feeling – I didn't feel as tired,” says Mar. “I noticed it in my clothes. My clothes didn't feel quite as tight as they normally did, which was a good sign for me. I thought, if I can keep this up, it would really help.” **VF**