Low-intensity exercise improves efficiency of dialysis, study finds

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Clinical kinesiologist Kristen Parker and University of Calgary master's student Paul Brown worked with renal patient Jim Hutton in their study. Credit: Riley Brandt, University of Calgary

Exercise isn't very appealing when you have extreme fatigue and nausea from a chronic illness such as kidney failure. So, when you find out lower-intensity exercise can make a difference, it can be a big relief, says Paul Brown, who graduated from the Master of Kinesiology

program at the University of Calgary in 2017. As a student, Brown led a study to find out just how much exercise is needed during hemodialysis, a treatment that uses a machine to filter the body's blood and remove toxins when the kidneys are not functioning.

Previous research suggests exercise is beneficial during hemodialysis, as it helps the body expel toxins such as urea more efficiently. However, Brown says this is the first time a study looked at how intense the exercise must be to make a difference. Results showed that exercise at even a lower intensity imparted a benefit.

"This is great news for those who have to undergo dialysis," says Brown. "Lower-intensity exercise is less intimidating and patients are more likely to enjoy and take part in lighter exercise."

The study required each subject to complete three differing protocols—one dialysis treatment with no exercise, one with lower-intensity exercise, and one with higher-intensity exercise. While exercise made the dialysis procedure more efficient, Brown found no difference between lower- and higher-intensity exercises in terms of dialysis efficiency.

Brown says research shows that patients who exercise during dialysis also have improved aerobic capacity, leg muscle strength and quality of life, and they have lower markers for inflammation and make fewer visits to the hospital.

Kidney disease increasing

Kidney failure rates have tripled in the past 20 years, resulting in an estimated 41,931 Canadians being treated for the disease. Brown says poor diet, lack of exercise and an aging population contribute to this disease. Yet, only a few North American dialysis programs use exercise

as a therapy during dialysis.

"You would be surprised at what some of our most complicated patients are able to do if we start them with something small and attainable," says UCalgary alumna Kristen Parker, MKin'04, who co-authored the study with Brown and Kylie Rowed, MKin'16.

Jim Hutton has been exercising during dialysis since 2010 and says he has noticed improvement.

"I feel stronger, have more stamina and am able to walk further each year. I am so passionate about exercising while at dialysis that I get very annoyed if I am prevented from doing so," says Hutton. "It also frees my mind as I spend an hour and a half on the bike and listen to audio books at the same time. I really enjoy that experience."

Parker, who helps Hutton with his exercise regime, says renal rehabilitation research and exercise programming for those on hemodialysis is a rare and poorly funded initiative in both Canada and around the world.

"I hope to see more awareness about the benefits of exercise during dialysis and see more renal programs across Canada incorporate exercise as a standard of care," adds Parker, a clinical kinesiologist with the Southern Alberta Renal Program.

Provided by University of Calgary

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