



BCIT researchers help aging dogs regain mobility with dog wheelchair

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There are approximately 5.9 million dogs in Canada with an estimated one in five dogs suffering from osteoarthritis. Aging dogs face many of the same health issues that people face as they get older– arthritis, ligament injuries, hip dysplasia, and degenerative diseases.

As these health issues impact a dog's mobility, it becomes increasingly important for the dog to stay active to avoid worsening of conditions. Light exercise on a daily basis limits further muscle loss and joint stiffness or swelling associated with aging.

The challenge in helping an aging dog regain its mobility

While it's not always easy to keep a mobility-impaired dog active, a dog wheelchair is a convenient and affordable solution. However, the problem with dog wheelchairs on the market is that they are not suitable for senior dogs.

Existing dog wheelchairs are designed with the expectation that the dog has a lot of front strength, which most senior dogs do not. These wheelchairs work well for paralyzed young dogs but for aging dogs, these wheelchairs can't be used to help regain mobility. Some manufactures have attempted to offset this by adding front supports but this only added to the weight of the wheelchair, which makes it even more difficulty for a mobile-impaired dog to navigate. The excess weight placed on the dog also strains and puts the dog at risk of further harm.

A solution for senior dogs with mobility limitations



Ann Marie Fleming worked with BCIT MAKE+ researchers to create the Dog Mobility Device an assistive mobility device for aging dogs

Seeing this, Ann-Marie Fleming, Founder and CEO of [Dog Quality](#), was keen in finding a viable solution to improve the quality of life for senior dogs. Ann-Marie wanted to create a device that will help provide support in addition to providing mobility for senior dogs. The [BCIT MAKE+](#) researchers' reputation in bringing innovative projects to life prompted Ann-Marie to partner with MAKE+ in designing the only assistive mobility device for dogs that is highly maneuverable, incredibly lightweight, and supportive for both front and rear weakness. This will ensure senior dogs continue to have an active, healthy, and comfortable quality of life.

After 10 months of extensive research, input gathered from veterinarians and dog owners of dogs with mobility issues, and multiple iterations of the prototype, the Dog Mobility Device (patent pending) prototype was finally complete.

“Our design team worked with the client to make this project succeed” says Nancy Knaggs, [BCIT MAKE+](#) Project Leader. “The expertise we learned from dog owners and experts in the veterinarian community helped us design a prototype that is one of a kind”.



The Dog Mobility Device helps senior dogs like Lily stay active and healthy

How this dog wheelchair works

The dog is connected to the front support (harness), similar to any dog leash. Then the frame is placed over the dog's head (does not touch the dog) and the front support is attached to the metal frame at the front and at the top side. A support will attach to the frame with straps allowing the tension to be adjusted while the upper arms are adjustable both vertically and horizontally positioning the support to meet the individual mobility issue of the dog. Once the dog is in the frame with the front support the rear support are secured to the dog's hind legs.

This dog wheelchair is suitable for both indoors and outdoors. The versatility of the design lends itself to future versions that can be scaled in size.



Lily is one of the first dogs to enjoy the mobility support from this highly maneuverable and lightweight dog wheelchair

Dog Mobility Device coming soon to market

The next stage of this dog wheelchair prototype device is testing and validation which is being conducted by Ann-Marie.

“Working with the BCIT MAKE+ team has been easy from the start to finish.” says Ann-Marie Fleming. “The team truly understood what we were trying to accomplish with this device and took the time to learn about the needs of senior dogs. We’re still testing and refining—we’ll be developing larger sizes and one petite—to address the needs of dogs big and small. Our goals are also to make this affordable and easy to assemble.”



The expertise gathered from dog owners and experts in the veterinarian community helped BCIT researchers design a dog wheelchair that is suitable for aging dogs Lily has regained her mobility and enjoys going on adventures with Ann Marie

MAKE+ Team Project members:

Nancy Knaggs, Program Head, Thom Bellaire, Research Analyst, Lisa Boulton, Research Associate (Industrial Design), Rory Dougall, Research Analyst, Ernie Janzen, Trade Researcher, Gordon Thiessen, Project Leader (Mechanical), Silvia Raschke, Project Leader (Orthopaedic and Assistive Devices)