

Dr. Caroline Quartly Inc.

MD, FRCPC, B.Sc. P.T., Grad. Dip. Manip. Ther., FAANEM

Physical Medicine • Rehabilitation • Electromyography

CPSBC: 24628
MSP# 28361

CI: HPB: Reg.#: MED/196

CPSO: 51717
Billing#: 260059

As a clinician, I cannot express enough how extraordinarily impressed I am with the Side-Stix crutches both as a gait aid (for safe and energy-efficient ambulation) and as a tool (to improve cardiovascular fitness) in individuals who present with neurological or musculoskeletal challenges, or a combination of both. I also see the Side-Stix crutches as invaluable assisting the serious trekker who is passionate about the great outdoors but who may have the common patellofemoral (knee) or other orthopaedic limitations, particularly providing assistance on any kind of descent.

At the Collaborative Spasticity Program of the Queen Alexandra Centre in Victoria B.C., our team is focused on raising the bar of fitness expectations for ambulatory or potentially ambulatory persons with neurological disorders who present with spasticity (from stroke, cerebral palsy, multiple sclerosis, incomplete spinal cord injury or myelopathy, head injury, or hereditary spastic paraparesis). In the clinic we use the clinical examination to direct decisions about potential targeted injection of Botox (botulinum toxin A), foot and ankle-foot orthotics, physiotherapy, circuit training, and, more recently, Side-Stix crutches. We are committed to not only measuring the effectiveness of each intervention, but also to including patients in the decision-making process. We evaluate gait objectively with the use of a Gait-Rite pressure mat, and combine that information with clinical data collection and sagittal and frontal video analysis using Dartfish software (which has otherwise mostly been used in sports analysis).

As such, we are able to produce a depth of detail such as is evident in the videos included below, which reflect one person's remarkable journey. This individual introduced us to the Side-Stix crutches and helped us begin to realize the full potential of these remarkable gait aids.

The gentleman in this video has been a participant in a research study that we are involved in with the University of Victoria. This study evaluates the effectiveness of our multidisciplinary approach to the management of spasticity in ambulatory patients. Mr. A is 57 years of age and has secondary progressive multiple sclerosis. The three videos presented here are selected as representative and illustrative of both Mr. A's journey and the goals of our clinic. The first two videos were recorded on the same day; the lower was recorded nine months later. In the top left video, a single cane is used. In the top right video (the first day the Side-Stix crutches were used), both Side-Stix are advanced at the same time. The lower video shows a reciprocal gait pattern.

History:

Mr. A presented with severe bilateral lower extremity spasticity. He was unable to walk from the parking lot into our waiting room, requiring the use of a wheelchair. He had been in our study for over five months before the top left video was recorded. In the initial video his limitations were so severe that he had actually fallen on camera. After targeted use of Botox, an ankle-foot orthosis, and a stretching program, he had improved to the level of the top left video, which already represented an improvement.

Although comparing a single cane to two crutches is not ideal, it is easy to see that the single cane wobbles on weight transfer, where in the upper right video transfer of weight to the right Side-Stix crutch does not cause wobble. In the corresponding data sheets provided, a functional ambulation profile (FAP) score measured by the Gait-Rite pressure mat (recorded six days later) showed an increase from a score of 57 to a score of 86. The bar graph shows the increase in gait

velocity of 48 cm/s to 74 cm/s, the result of transferring from a single point cane to the more efficient bilateral Side-Stix.

Nine months later, the lower video shows a dramatic increase in velocity to 99 cm/s and an increase in the FAP score to 95. The difference over this period reflects a combination of Botox muscle injections (directed to the spastic psoas by posterior approach using CT guidance, directed to the adductors, and directed to the gastrocnemii), stretching exercise, circuit training, and a now-possible reciprocal gait pattern using the Side-Stix forearm crutches. Mr. A is now able to walk from the parking lot, past the waiting room, and right into the gait lab as effortlessly as shown here. Although we are still using Botox, we are weaning the dose toward an as-needed basis, as limited as may be necessary. The exercise and stretching prescription is both essential and indefinite.

This is a powerful video because it illustrates what so few people understand without visual imagery: the top left video demonstrates an unsafe, energy-expensive gait pattern, while the bottom one demonstrates not only a safe and energy-efficient gait, but also an ability for Mr. A to tap into his cardiovascular fitness.

Whether the Side-Stix crutches are used as a gait aid for safe and energy-efficient ambulation or are realized as a potential training tool to increase cardiovascular fitness, they are an extraordinary addition to health. Kudos to you Sarah and Kerith!

Addendum: As a specialist in Physical Medicine and Rehabilitation, I am astounded at the help these unique gait aids have provided so many of my patients. A spectrum of medical and surgical issues have been ameliorated, not just in the patients in our Queen Alexandra Centre spasticity clinic, but also in an individual presenting with diabetic neuropathy and failed surgical back in the Cayman Islands, and in other individuals with failed surgical back or spinal cord injury with and without severe lower extremity nerve root damage in Victoria B.C. and Hamilton, Ontario.

A new age of safe ambulation and cardiovascular fitness possibility for those with orthopaedic and neurological challenges is upon us. Thank you so much, Sarah and Kerith.

Sincerely,

Caroline Quartly MD FRCPC FAANEM
Physical Medicine & Rehabilitation • Electromyography

Co-founder of the Collaborative Spasticity Program at the Queen Alexandra Centre
Victoria BC

Partner: Cayman_Doctors, West Shore Centre, Cayman Islands