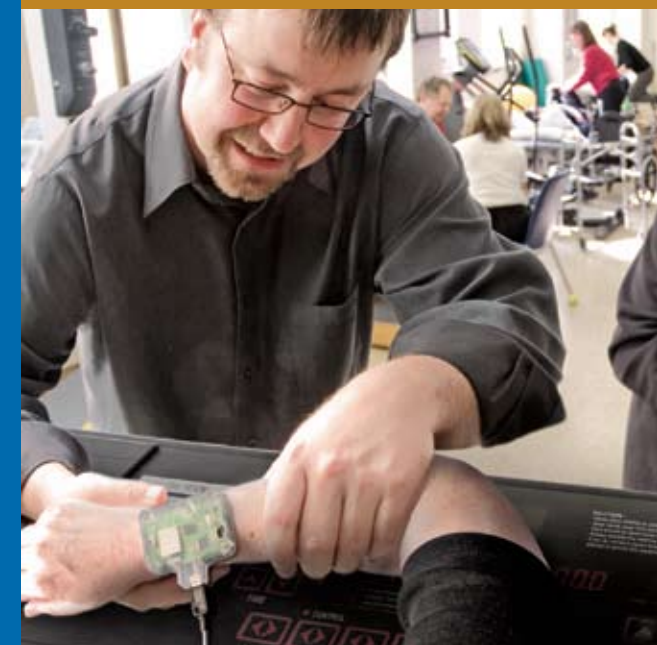




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Communicative  
Function Laboratory,  
Intelligent  
Environment  
Laboratory, and  
Physical Function  
Laboratory



Rehabilitation research improves lives by providing practical solutions to everyday problems faced by people with disabilities and age-related conditions. A group of iDAPT labs based at the Rehabilitation Sciences building of the University of Toronto (U of T) is advancing our understanding of challenges faced by people with disabilities and producing new approaches to improve their independence and quality of life.

Located at 500 University Avenue in the heart of Toronto's Discovery District, the Communicative Function, Intelligent Environment, and Physical Function labs bring together multidisciplinary teams of scientists, students, clinicians, postdoctoral fellows, software developers and others in dynamic environments.

#### **Communicative Function Laboratory**

Communication disorders are common among people with dementia and those who have experienced a stroke, brain injury or other neurological condition. The Communicative Function Laboratory at iDAPT is among the most sophisticated worldwide for understanding communication impairments and developing new and better devices for people with speech and hearing difficulties.

This lab has a sound-insulated room and surround speakers so researchers can accurately reproduce and manipulate the localization and characteristics of environmental noises. Working in partnership with U of T's Department of Speech-Language Pathology, researchers are using the lab to: study the effectiveness of assistive technologies and invent new ones; develop treatments for stroke survivors who cannot produce or understand language; and improve communication between people with Alzheimer's disease and their caregivers.

#### **Intelligent Environment Laboratory**

Research in the Intelligent Environment Laboratory at iDAPT will help older people and those with disabilities stay at home longer and more safely using "intelligent" self-adaptive technologies. In collaboration with the Intelligent Assistive Technologies and Systems Lab, a joint venture between Toronto Rehab and U of T's Department of Occupational Science and Occupational Therapy, this lab is used to develop monitoring and prompting systems to support the aging process as well as people with cognitive, mobility and communication impairments.

The lab is an apartment-like environment with artificial intelligence systems that monitor study participants as they perform daily activities. Researchers are working on supportive technologies such as a system that can detect when the occupant has fallen and verbally interacts with him/her to determine if help is needed. Other projects include development of anti-collision powered wheelchairs, robotics technology to support rehabilitation in the home, and a system that appropriately "prompts" people with dementia and children with autism through the task of hand washing.

#### **Physical Function Laboratory**

Learning how patients go about daily activities in the real world—after they leave hospital—is a key area of study being advanced by the Physical Function Laboratory at iDAPT. Researchers in this lab are devising portable measurement systems that are wireless and wearable. One example is a vest that gathers physiologic and physical activity data on stroke survivors, and will ultimately help clinicians design more specific therapies.

Other equipment being developed includes the iWalker, which uses cameras and sensors to measure a person's balance and mobility during daily activities. The walker will help identify where new interventions are needed, provide therapists with vital information, and assist in the design of mobility aids that help people better navigate the real world. This lab is also used to develop unobtrusive ways to collect behavioural and other data on study participants.

**For more information on these labs and iDAPT at Toronto Rehab, please visit [www.torontorehab.com](http://www.torontorehab.com) or contact Dayle Levine, iDAPT Project Manager, at 416-597-3422, ext. 7602 or by email: [levine.dayle@torontorehab.on.ca](mailto:levine.dayle@torontorehab.on.ca).**

iDAPT is Toronto Rehab's \$36 million rehabilitation research initiative to develop one of the world's most advanced rehabilitation research facilities where new therapies and assistive technologies will be developed for older people and those living with disabling injury or illness.