

# Helping kids recover from concussions

MUHC scientist conducts pioneering research to improve physical and mental well being

Concussions, also known as mild traumatic brain injuries (mTBIs), are a popular subject in the media these days, yet, few people know children and adolescents take longer to recover than adults. At the Montreal Children's Hospital (MCH) Concussion Clinic, physiotherapist and Research Institute of the McGill University Health Centre (RI-MUHC) clinician researcher Dr. Isabelle Gagnon conducts pioneering research that has a direct impact on the physical and mental well-being of her young patients.

Dr. Gagnon started investigating the effects of concussions on kids 20 years ago. "Concussions were not considered a problem then, even though they represent 70 to 80 per cent of traumatic brain injuries. Kids who felt dazed after a blow to the head were told they were fine," says the researcher, who is a member of the Centre for Outcomes and Research Evaluation (CORE) and assistant professor in the School of Physical and Occupational Therapy at McGill University.

"We were not picking up the more subtle signs that showed their brain wasn't functioning properly, so I decided to collect clinical evidence on the motor aspects of mTBIs in children, such as balance, effort and readiness to return to sports and general activities," she says.

## A STATE-OF-THE-ART CLINIC

In 2007, she helped found the MCH Concussion Clinic with Debbie Friedman, MCH Trauma director and a pioneer in pediatric trauma care in Quebec. The state-of-the-art clinic, the first of its kind in Canada, is an excellent example of research findings being used in clinical care.

"Not only do we treat kids with concussions, but we also recruit participants for studies that will benefit them and other kids immediately or further down the road," she explains. "It's clinical research that doesn't require blood tests or wet labs. The kids run, stop, and take tests on computers."

## WHEN HEALING TAKES TOO LONG

Dr. Gagnon has developed an innovative rehabilitation approach for children who are slow to recover after a concussion. "Most



Dr. Gagnon at the Montreal Children's Hospital Concussion Clinic.



Soccer player Robert Santos, 15, is being followed at the Montreal Children's Hospital Concussion Clinic since last July.

kids recover within a month with complete rest," she explains. "But if after that period there are still lingering symptoms, they can become depressed or anxious to go back to school or to sports. So we give them a controlled, low-intensity physical program to help with recovery."

Robert Santos was one of the kids who benefited from this new treatment. The 15-year old visited the clinic last July, after he suffered a concussion during a soccer game.

"I was dizzy, I felt a lot of pressure in my head and I had headaches," he says. "When they told me to rest, it was very demotivating, I was mad at the fact that I couldn't play and that I had let my team down. But, after I started doing some exercise every day, like light jogging, riding a stationary bike or kicking some balls on a wall, I actually felt a lot better."

The approach developed at the Concussion Clinic will be compared with results from the Children's Hospital in Hamilton, Ontario, where kids are still told to rest and are not as followed as in Montreal.

## OTHER PARTNERSHIPS

In collaboration with Dr. Alain Ptito, neuropsychologist at the Neuro and the RI-MUHC, Dr. Gagnon is investigating structural and functional changes in the brain after a concussion. "We are using neuro-imaging to see where the blood flows while kids perform cognitive activities, like memory tests," she explains.

She recently began leading a pan-Canadian study about pediatric concussions in which collaborating researchers will use the same measures to collect and analyze data so that the results can be compared and combined. Their goal is to characterize the pediatric concussion population in Canada.

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