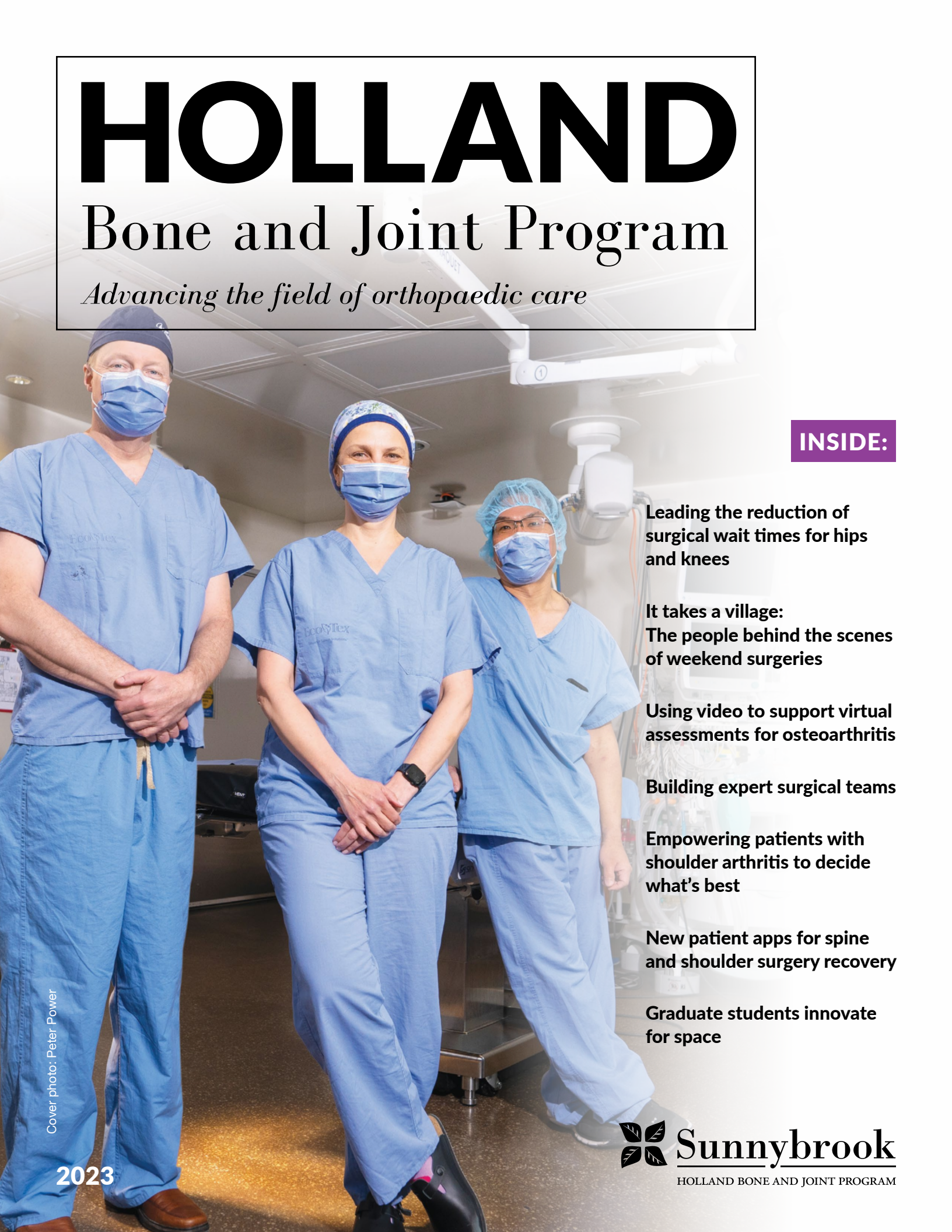
HOLLAND
Bone and Joint Program

Advancing the field of orthopaedic care



INSIDE:

Cover photo: Peter Power

2023

Sunnybrook
HOLLAND BONE AND JOINT PROGRAM

Leading the reduction of surgical wait times for hips and knees

New “weekend surgery” reducing wait times!

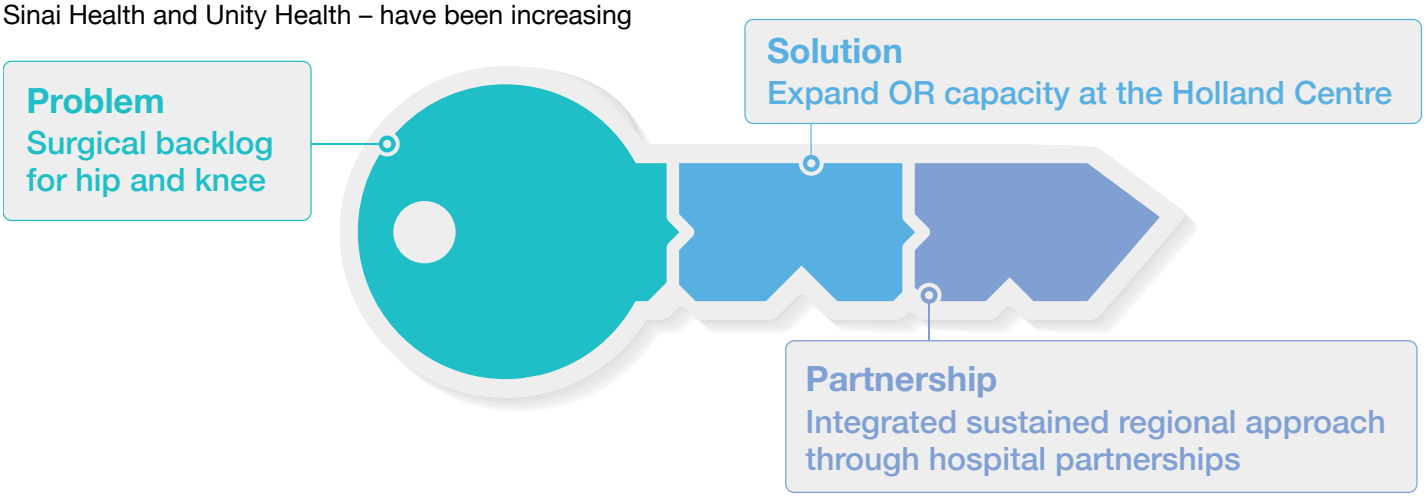
Orthopaedic surgical leads Dr. Paul Wong (Michael Garron Hospital) and Dr. Markku Nousiainen (Sunnybrook) outside the Holland Centre. The site is the centre of their collaboration to tackle orthopaedic surgical backlogs. Photo: Peter Power

Building on the success of the Holland Centre’s Hip and Knee Arthritis Program, this past year saw Sunnybrook partner with Michael Garron Hospital (MGH) to help reduce wait times for hip and knee arthroplasty (joint replacement) surgery in Ontario through the newly-formed Toronto Regional Arthroplasty Collaborative (TRAC).

By opening our operating room at the Holland Centre on weekends as of April 1, 2023, TRAC partnering hospitals – which have since expanded to include Sinai Health and Unity Health – have been increasing the number of patients who can receive hip or knee replacement surgery – 1,335 more patients by March 31, 2024 – and shorten everyone’s wait in the Toronto Region by 25 per cent.

Patients who go through TRAC’s partnership will receive the full spectrum of orthopaedic care – from assessment to surgery, through to recovery.

Visit **ReduceMyHipandKneeWait.ca** for more information.



“ This weekend collaboration is expected to create an additional 1,335 surgical cases a year to reduce the current hip and knee backlog by 25 per cent in the Toronto Region by March 31, 2024”

– Ru Taggar, co-Chair of the TRAC Executive Committee, and Executive Vice President and Chief, Nursing and Health Professions Executive, Sunnybrook Health Sciences Centre

Photo: Kevin Van Paassen

For almost two decades, the Hip and Knee Arthritis Program at Sunnybrook’s Holland Centre has:

- been a designated Centre of Excellence for hip & knee arthroplasty (joint replacement) surgery
- been Canada’s largest provider of hip and knee replacement surgery
- been a North American leader in bone and joint care, education and research
- developed an award-winning interprofessional care model using Advanced Practice Providers to improve access and quality of care for patients with hip and knee arthritis, and
- continued to leverage its high-performing orthopaedic surgical centre model of care and central intake to improve access to hip and knee joint replacement surgery most recently through the Toronto Regional Arthroplasty Collaborative in response to the unprecedented system-wide pressures created by the pandemic.

The Holland Centre’s Hip and Knee Arthritis Program at Sunnybrook offers comprehensive care for patients with hip and knee arthritis through access to assessment services, education, referral to self-management programs and other treatment programs, including consultation with an orthopaedic surgeon, as needed.

e-Referral for our Hip and Knee Arthritis Program now available!

Primary care practitioners (i.e. family doctors or nurse practitioners) can now send their patients’ referrals for our care at the Holland Centre through the Ocean eReferral system*, as part of the Ontario eServices Program.

* Practitioners still have the option of referring via fax as well.

Send referrals by:

- Ocean eReferral (you can search for us on the Ocean Healthmap)

OR

- Fax the referral* to: 416-599-4577/ Toll free fax: 1-877-411-4577

* Our updated referral form is available online at sunnybrook.ca/HipKneeReferral

For earliest access, it is recommended that the referring provider request ***the next available appointment.***

For more information about eReferral or the Ontario eServices Program, please send an email to ereferraltorontoregion@uhn.ca.

It takes a village:
Some of the people behind the scenes of weekend surgeries

Thanks to the extraordinary efforts of a community of dedicated and specialized people and skill coming together within Sunnybrook's Holland Bone and Joint program and other areas of support services, weekend surgeries were made possible through the Toronto Regional Arthroplasty Collaborative.

Dr. Martin van der Vyver

Susan Lau

Anesthesia

As the Anesthesia site chief for the Holland Centre, Dr. Martin Van Der Vyver has been instrumental to the expansion of the Holland Centre's high-quality, high-volume efficient model of care to the weekend model.

Dr. Van der Vyver facilitates all the operational planning and staffing related to anesthesia needs in order for the TRAC model to accommodate the additional 1,335 patient surgical cases it is expected to create by the end of its first year of operation.

With the support of the anesthesia assistants and block room nursing team, anesthesia has been able to maintain their routine practice of using spinal anesthesia for the large majority of patients undergoing surgery over the weekends as well as incorporating nerve blocks in our postoperative pain regime.

Another key member that enables us to expand our tested model for weekday surgery to the weekends is the nurse practitioner working on the acute pain service.

Nurse First Assistant

As a registered nurse first assistant (RNFA) within the operating room, Susan Lau brings a specialized knowledge, judgment and skills specific to this expanded nursing role, working in collaboration with the surgeon and other health care team members.

RNFA practice encompasses the pre-operative, intra-operative, and post-operative phases of the surgical experience.

Photos: Kevin Van Paassen

Shuk Kwan (Sabrina) Tam

Cheryl Denton

Deborah Kinsella

Day Surgery

Day Surgery nurses like Shuk Kwan (Sabrina) Tam, Cheryl Denton and Deborah Kinsella ensure safe and optimal care before and after a patient undergoes surgery, admitting and preparing them for surgery, and providing recovery care.

As with all areas involved to accommodate the TRAC weekend model, Day Surgery staff adjusted their schedules to staff weekends – a first at the Holland Centre as weekends had never previously been open.

This team emphasizes a patient-focused philosophy that encourages independence and the ability to walk in the early stages of the patient's recovery.

Post Anesthesia Care Unit (PACU)

> " We would not be able to do this (TRAC program weekend surgery) without the dedication and hard work of every member of the team here at the Holland Centre," says Nicolette.

Immediately following surgery, patients are taken to the Post Anesthesia Care Unit (PACU) by the OR Team and Anesthesiologist.

The PACU is a highly specialized area in which the collaborative efforts of critical care trained nurses like Nicolette Sheridan, the OR team, surgeons and anesthetists care for patients as they emerge from anesthesia.

The goal is to ensure patients recover from the anesthetic and are comfortable in terms of pain management and nausea.

Nicolette Sheridan

William Rosario

Patient Service Partner (PSP)

Patient service partners William Rosario is a key part of the patient's experience after their surgery, providing a variety of support services to the patient care units.

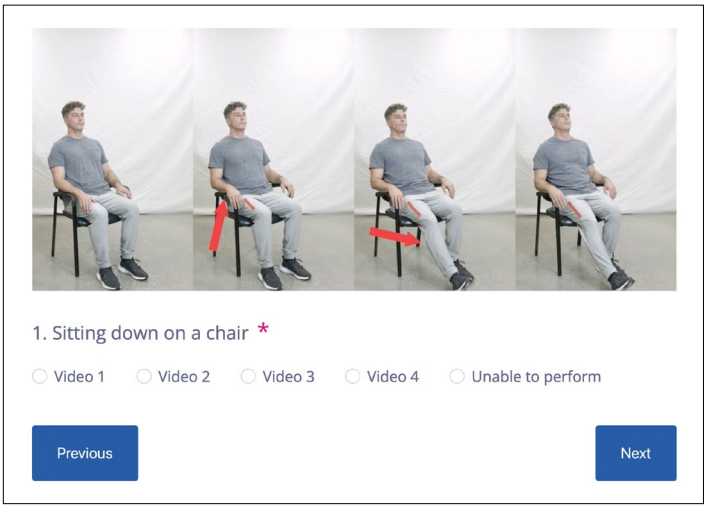
He assists nurses with bedside care, ensuring the units are organized, the patient meals are on schedule for delivery with the correct diets, the medical supplies are ready to go, and the medication room is stocked for both the day and overnight shifts, among other duties.

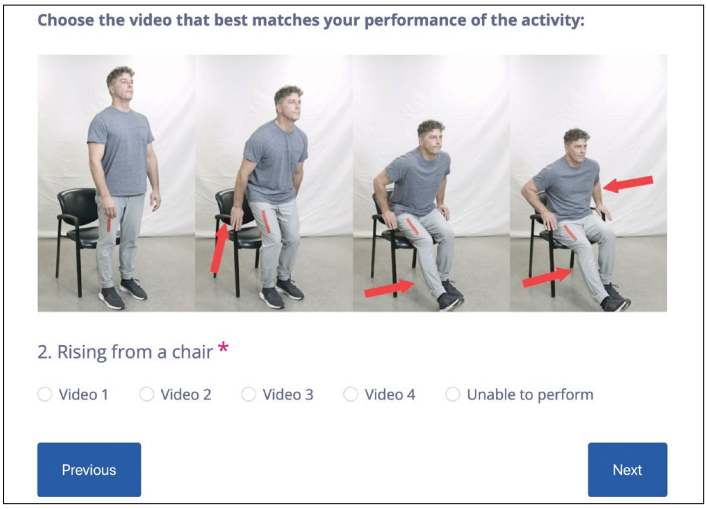
Using video to support virtual assessments for osteoarthritis

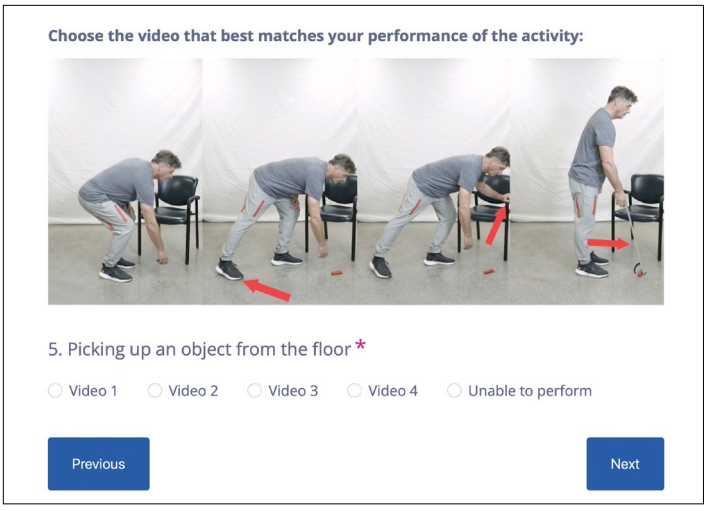
A multi-disciplinary group of rehabilitation researchers at Sunnybrook have developed a video assessment tool to help clinicians during virtual appointments better assess the level of disability a patient with osteoarthritis is experiencing.

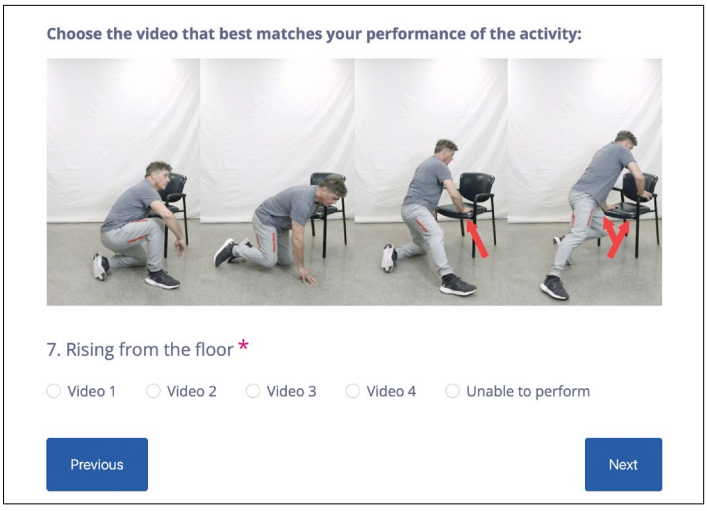
“The purpose of our research was to establish the reliability and validity of a video assessment tool in comparison with the traditionally-used performance-based outcome measures, as the gold standard,” says Dr. Helen Razmjou, principal investigator of the study and an advanced practice physiotherapist at Sunnybrook.

Published in the journal Osteoarthritis and Cartilage Open, their study examined the use of 10 sets of videos in determining a Virtual Performance Measures (VPM) score in patients with osteoarthritis of the knee joint, and the results have shown the tool is a reliable and valid outcome measure with these patients.

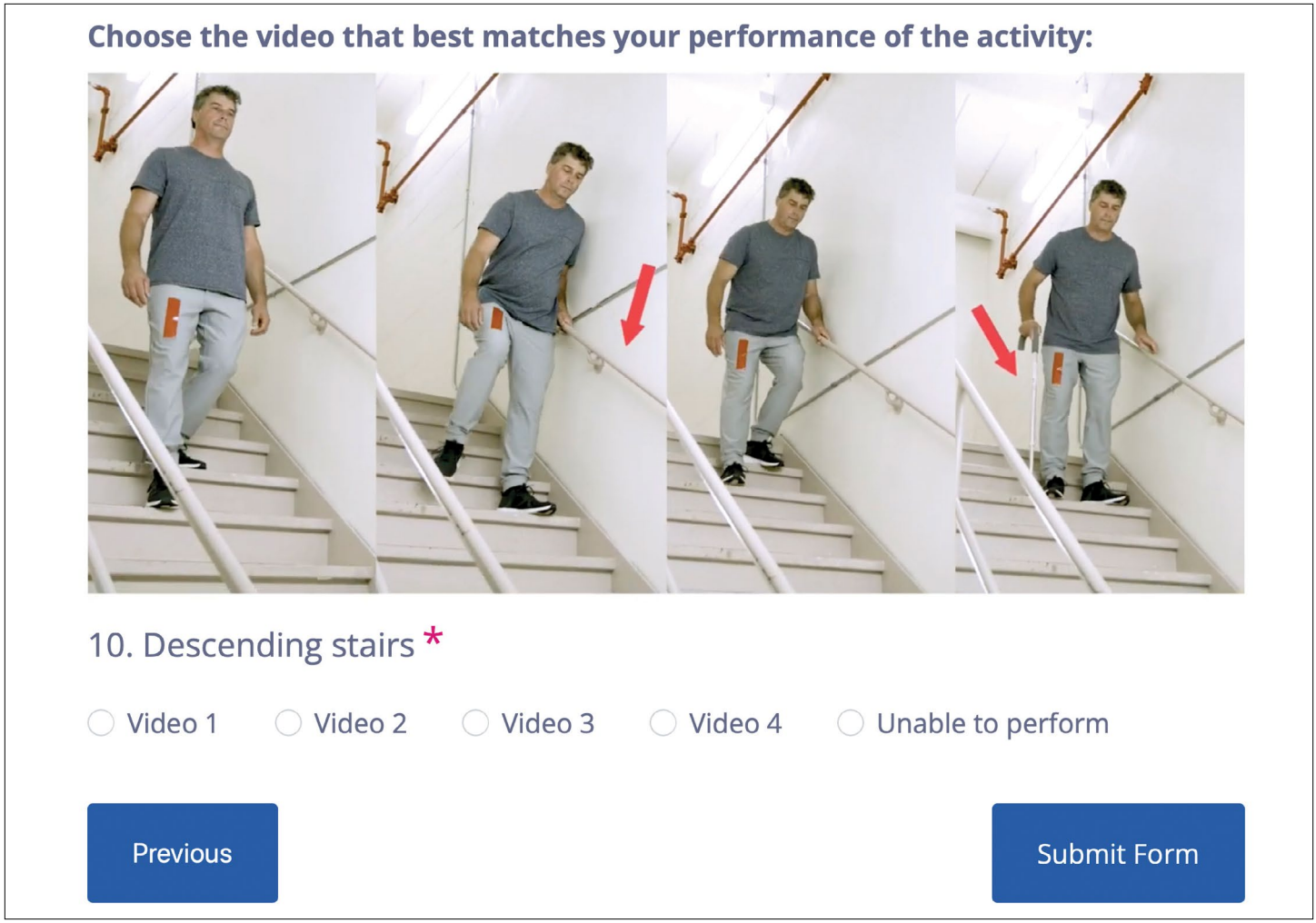








A group of researchers from Sunnybrook’s Holland Bone and Joint Program (including Physiotherapy and Orthopaedic Surgery) and University of Toronto (Department of Physical Therapy and Division of Orthopaedic Surgery; Faculty of Medicine) authored a paper published in the journal Osteoarthritis and Cartilage Open, examining the use of 10 sets of videos as a tool to better assess level of disability in a patient with osteoarthritis.



The videos simulate the limitations in essential activities that patients with osteoarthritis experience. Patients watch the videos on a secure webpage and choose the video that best matches their own limitations in a questionnaire. The total score of the VPM tool is then calculated and is used as a proxy for the patient's level of disability.

"This diagnostic tool does not require any formal training and could facilitate remote assessment of patients with limited access to skilled clinicians and during situations where the presence of the patient in a clinical setting is affected by pandemic, patient distance from the facility, their own disability, or adverse weather conditions," adds Dr. Razmjou, also an Associate Scientist at the Sunnybrook Research Institute.

Traditionally, performance outcome measures for patient candidates for hip and knee arthroplasty (joint replacement) has been done in person. The COVID-19 pandemic fueled the digital transformation of health care in 2020, and while pandemic-related restrictions eased, virtual care remained an important part of health care delivery. Until now, there were no objective tools (using human models) to measure a patient's level of activity limitation remotely.

"Validation of technology-based outcome instruments is critical as they will have an ongoing impact on quality of care in the future," says Dr. John Murnaghan, senior surgical investigator of the study and an orthopaedic surgeon at Sunnybrook's Holland Centre. "This digital tool has the potential to transform osteoarthritis care by providing a valid remote measurement of real-life limitations without requiring a patient to be present for time consuming in-person measurement tests; therefore, improving their access to care."

Building expert surgical teams

Drs. Cari Whyne, Markku Nousiainen, Portia Kalun and Normand Robert in the simulation OR. Photo: Kevin Van Paassen

Just like the airline industry has a black box to learn from, hospitals can now use recordings taken during surgical procedures to help train expert surgical teams.

Developed and commercialized by a team at St. Michael's Hospital, Sunnybrook researchers are bringing similar technology into the world of assessment – using it for the first time to evaluate performance and direct the training of expert teams in an operating room (OR) setting.

"If you measure something, you can improve it," says Dr. Markku Nousiainen, orthopaedic surgeon at Sunnybrook. "Our goal is to measure individual and team performance in the OR and use that information to develop teaching tools to improve performance with the goal to improve patient outcomes."

This initiative focuses on patients having surgery to repair a hip fracture, as these patients can experience variations in outcomes. Research has shown that patient outcomes after surgery depend on more than just the performance of the surgeon – outcomes also depend on the entire surgical team including nurses, anesthesiologists, radiation technologists, and trainees.

"In order to optimize patient outcomes, we must ensure that the entire OR team performs at the highest level of expertise," says Dr. Cari Whyne, research director of Sunnybrook's Holland Bone and Joint Program, and a professor at University of Toronto. "However, we need to understand more about what expertise for a surgical team looks like, so that we can develop teams that perform at this level. This will help us minimize the current variation in surgical quality."

The Sunnybrook pilot project will record videos and dialogue within the operating room, helping researchers measure skill levels and collaboration between team members. This information will be collected during hip fracture surgeries and analyzed to determine which aspects of surgical team performance and workflow can be improved, and to identify connections to patient outcomes.

"The continuous monitoring of the surgical environment and analytics will provide us with an objective data set to look at, allowing us to evaluate how the team members are performing without having to rely on individual recollections," says Dr. Nousiainen, an associate professor at the University of Toronto. "Remembering is subjective and is subject to bias."

Not actually a ‘black box’, the black-box-like technology uses small cameras installed around the OR and buried inside the overhead surgical lights. The equipment records audio, multi-resolution video, patient vitals and intraoperative x-ray imaging. The data is collected onto privacy-safe software and securely transferred to analysts to assess performance. A twin system has also been installed in a non-clinical OR for the purposes of training.

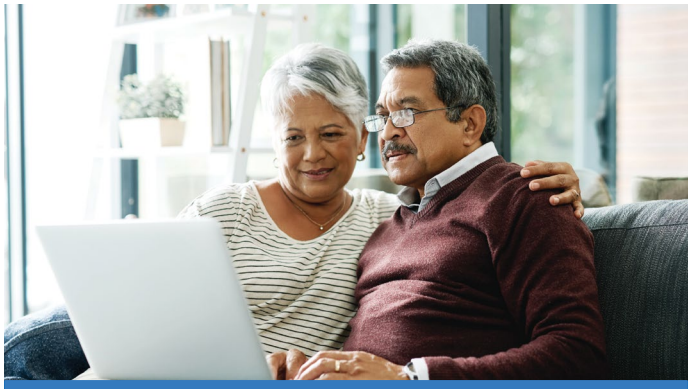
Sunnybrook’s leading team of orthopaedic specialists will determine how to provide expert, team-based surgical training and care in the operative management of hip fractures. “Our anticipated results will help establish best practices for delivering expert care to all orthopaedic patients,” adds Dr. Whyne.

The project is supported by a $3 million investment by the Wyss Medical Foundation.

Photos: Kevin Van Paassen

New patient apps for spine and shoulder surgery recovery

Following in the footsteps of the success of our My hip & knee app, we’re pleased to announce we have launched two new apps to help patients keep on track during their recovery from spine or shoulder surgery!



Having surgery?

Access our recovery tool today!

These mobile and web based apps will:

- Send reminders as you prepare for surgery
- Track your recovery after surgery
- Give feedback on how you are doing after surgery
- Provide links to helpful information

For hip and knee replacement surgery:
sunnybrook.ca/myhip&knee

For shoulder surgery:
sunnybrook.ca/shoulderapp

For spine surgery:
sunnybrook.ca/spineapp

For technical help, contact **support@seamless.md**

Available Online | Google play | Download on the App Store

Sunnybrook HOLLAND CENTRE

Is surgery the right call in my/my patient's case?

Dr. Helen Razmjou is lead author of a study showing that when patients' unique risk factors and views are incorporated into the discussion or assessment of the benefits and complications of a major shoulder surgery, it helps surgical candidates to better understand and assess their need and readiness for joint replacement.

By Dr. Helen Razmjou

Advanced Practice Physiotherapist and Associate Scientist, Sunnybrook's Holland Bone and Joint Program

The rate of shoulder arthroplasty (joint replacement) surgery for osteoarthritis has risen dramatically over the past decade. Although it reduces pain and disability in the majority of patients, there are questions about the timing of arthroplasty surgery and whether all surgeries are the best option.

In addition, patient expectations and perspectives about surgery have direct impacts on the success of surgery, and increasing engagement of patients in their care through shared decision-making should not be underestimated.

As part of a team of researchers from the departments of rehabilitation, radiology, and surgery at Sunnybrook's Holland Centre, we led a study involving eighty candidates for shoulder arthroplasty, and examined the role of a shared decision-making tool between patients and their care providers, in determining whether the patient was "ready" to have shoulder arthroplasty.

This decision aid tool – originally developed to support patients with hip and knee arthritis and their surgeons – was used by the clinician after a discussion with the patients in this study about their priorities, past treatments, results of overall health and clinical examination, importance of achievable expectations, pros and cons of surgery and non-surgical options, and the importance of commitment to a lengthy rehabilitation.

We found that when patients' unique risk factors and views (preferences and expectations) are incorporated into the discussion or assessment of the benefits and complications of a major shoulder surgery, it helps surgical candidates to better understand and assess their need and urgency (or "readiness") for joint replacement.

We learned that patients' gender, overall physical and mental health, pain and disability level, strength, and expectations were all contributing factors to the decision to have surgery. As our team expected, the severity of arthritis did not have a significant role in the final decision of the patient to have surgery.

This study was a solid first step in demonstrating the importance of the patient's involvement in a shared decision-making process on whether to have shoulder arthroplasty surgery, a process whereby clinicians and patients work as a team to make the best decision.

The study, published in the March 29, 2023 issue of the *Journal of Shoulder and Elbow Arthroplasty*, was conducted by a multi-disciplinary group of researchers spanning the fields of rehabilitation, physical therapy, medical imaging, and orthopaedic surgery from Sunnybrook, University of Toronto, St. Joseph's Health Care, and Western University.

Graduate students innovate for space

From L to R: Engineering science undergraduate Sunny Zhang, orthopaedic surgery resident physician and MSc candidate in biomedical engineering Dr. Nicholas Yee, and PhD candidate in biomedical engineering Saleh Tabatabaei, with their awards.

They were a part of a team of SRI and U of T students whose project at the NASA International Space Apps Challenge earned the standing of a Global Nominee advance to the next stage of the hackathon – where their work will be evaluated by an international panel of expert judges for a chance to be nominated for an exclusive opportunity for an award presentation at a NASA facility to showcase their project to NASA leaders.

A team of graduate students from the Holland Bone and Joint Program/Orthopaedic Biomechanics Lab at Sunnybrook Research Institute and undergraduate students from the University of Toronto won second place in the 2023 NASA International Space Apps Challenge with their project Space Biology Digital Twins: Modeling Worms in Space!

Over the course of the two-day event, they developed a machine-learning model that predicts the movement capacity in a spaceflight environment of the roundworm, C. elegans, with the goal of predicting the worm's behaviour in spaceflight in a simulation – which could potentially reduce time and resources needed to study interventions, such as pharmaceuticals, on biological systems in space. As many nations are exploring opportunities to send astronauts back to the moon and towards Mars, this an active area of research critically important for human spaceflight.

Every year, the National Aeronautics and Space Administration (NASA) hosts this international hackathon, the NASA International Space Apps Challenge, conducted through numerous local events.

In partnership with the Canadian Space Agency (CSA), the 2023 challenge was brought to Toronto for the first time. This hackathon unites coders, scientists, designers, storytellers, makers, technologists, and innovators to employ NASA's open data for addressing challenges on earth and in space. Over 250 participants belonging to 51 teams participated in the Toronto event, which was the largest space hackathon in Canadian history.

One of North America's finest programs for musculoskeletal care, education and research, the Holland Bone & Joint Program at Sunnybrook specializes in:

- Traumatic injury management (i.e. pelvic injury, spine care);
- Joint reconstruction and replacement (hip, knee, shoulder);
- Complex upper and lower limb surgery;
- Sports and activity-related injury management;
- Rehabilitation, and
- Rheumatology.

Our activities reflect a strong interdisciplinary approach and focus on function and independence, patient-centred care, aging and quality outcomes. As part of the busiest trauma centre in the country, we focus on complex injuries that cannot be managed elsewhere.

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Holland Centre
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Toronto, Ontario M4Y 1H1
t: 416.967.8500
t: 416.967.8617 (to book appointments)

sunnybrook.ca

Sunnybrook acknowledges our campuses are located on the treaty territory of the Mississaugas of the Credit First Nation and ancestral and traditional lands of the Anishinaabe, Haudenosaunee, Ojibway/ Chippewa and Huron-Wendat Nations.

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HEALTH SCIENCES CENTRE