Researcher develops mobile rehab tool to help patients manage their concussion recovery

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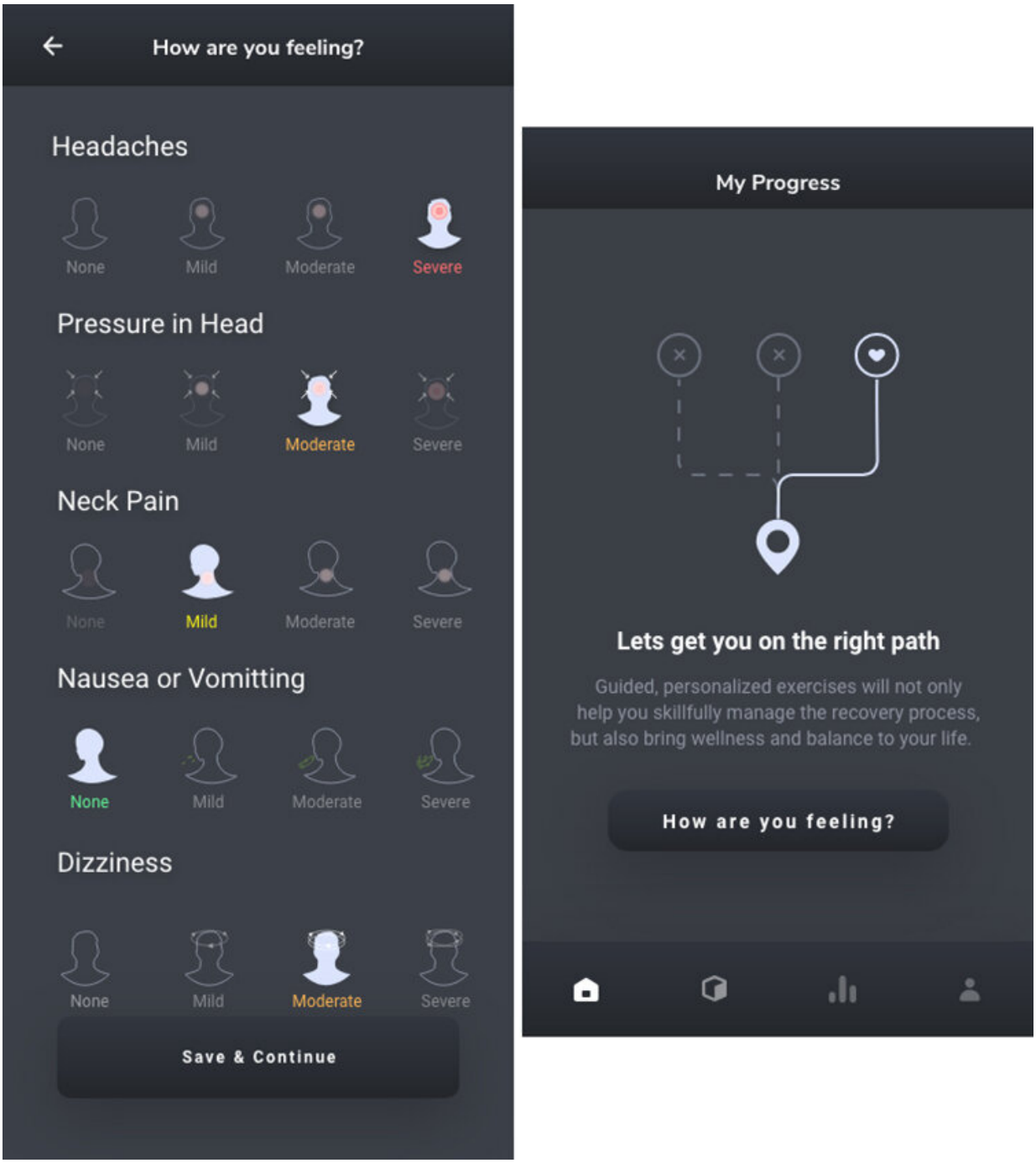

RHEA is an app designed to assist patients with their concussion recovery. Credit: Michael Hutchison

Individuals suffering from a concussion who lack the resources, time or knowledge to handle their condition expertly will soon have access to a low-cost path to recovery.

Michael Hutchison, an assistant professor at the University of Toronto's Faculty of Kinesiology & Physical Education, has developed a mobile rehabilitation tool called RHEA, after the mother of Olympian gods and goddesses.

The mobile tool, developed with support from UTEST, a U of T program that helps to commercialize research, draws on Hutchison's clinical and research experience. He has found that starting graded aerobic exercise early following concussion can speed up recovery and improve functional outcomes—more than just resting.

"Despite such evidence, there still remains a lack of awareness and education regarding the initial medical management of concussion," says Hutchison, who is director of the concussion program at the David L. MacIntosh Sport Medicine Clinic.

"The situation is further complicated by the fact that appointments with physicians and specialists occur approximately every one to two weeks, leaving patients at times to navigate and manage their symptoms without having the required knowledge or skills to do so."

He believes mobile health technologies or apps have the potential to help fill this void, as they are well-suited to serve as platforms for the self-management of various health conditions.

"They are ubiquitous, have great computational capabilities and are commonly carried on the person. RHEA will utilize these benefits through novel machine learning algorithms that will leverage user-reported feedback, as well as data acquired from the wearable

technology, to provide users with recommended, personalized exercise programs over a three- to five-day period to assist with the rehabilitation process."

What is unique about RHEA is that it is not a static system, another implication found in its name, which etymologists say means to ground and flow, much like what patients are required to do when navigating the road to recovery.

"Although RHEA's starting point is grounded in well-established empirical evidence and clinical guidelines, moving forward RHEA will benefit from the environment of Big Data," says Hutchison, "and as the community of people using the app grows, we will leverage that feedback to fine-tune the exercise prescriptions for a wide variety of people and profiles."

Hutchison is looking forward to having the app available on both Apple and Android devices in the new year, following beta testing that is currently underway. Down the road, the plan is for RHEA to be tailored to health conditions beyond concussion, including post-traumatic stress disorder, depression and anxiety.

"The benefit of structured and individualized exercise is a very promising, low-risk and cost-effective intervention," says Hutchison.

Provided by University of Toronto