

# THE FUTURE OF HEALTHCARE IN EXTENDED REALITY

## PROJECT TEAM:

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## PROJECT TYPE:

Interdisciplinary Project

## FUNDED BY:



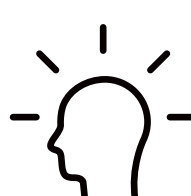
## KEYWORDS



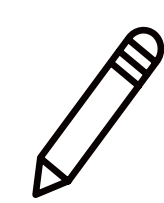
Haptics



Healthcare



Extended Reality



Education  
and Training

## INTERACTIVE TRAINING TOOL FOR INJURY ASSESSMENT OF A HUMAN JOINT

Rehabilitation practitioners identify soft tissue injuries, such as knee ligament sprains, through sight and touch. However, becoming proficient at assessing the health of a patient's joint is difficult given multiple possible joint conditions and limited opportunities for healthcare students to practice on injured clients.

This interdisciplinary collaboration between experts in extended reality (XR), kinesiology, physical therapy, haptics, experimental design, and education led to the creation of a realistic life-sized model of a human knee joint to be used by rehabilitation practitioners.

Traditional training materials, such as lectures and videos, are not tactile or interactive. In comparison, the technology hidden inside the model allows users to compare tactile responses of both a healthy and an injured joint. Therefore, students can practice manual injury assessment in an interactive and repeatable manner.

Novice students training for careers in physiotherapy, kinesiology, and athletic therapy often practice injury assessment in cadaver labs or on their own peers which does not offer adequate comparisons between healthy and injured joints. Even when students have access to an injured client, practicing specific tests on client's joints requires consent and may create logistical and ethical challenges.

This high-fidelity interactive knee prototype is currently going through extensive expert testing by medical professionals, and the team is compiling a business plan and conducting market research for potential commercialization. The long-term goal is to have the joint used as a training tool in XR where students and educators can practice their skills in a low-stakes and highly effective educational environment.

## INTERESTING FACT:

Early iterations of the knee joint included 3D printed bones. The current prototype, which is now a full-length leg from thigh to foot, has plastic bones, cartilage, and ligaments which are covered in a silicon rubber skin that mimics the feeling of real skin and muscle tissue.