

# TEXTILE + DESIGN LAB

**Case Study Number:** 07/2017

**Project Title:** Smart Knee Brace

**Researcher/Designer:** Arien Hielkema

**Contact:** arien@mybiomotion.com

**Project Period:** September 2015 - ongoing

## **Project Description:**

The original concept stems from the designer's personal reaction to a ligament injury sustained while competing in an Ironman competition. As a motivated individual, it became apparent that recovering from injury was both a mental and physical challenge regardless of a positive outlook. *Smart Knee Brace* is a project that aims to help athletes and sports enthusiasts recover from injury through exploring the part that motivation plays in this process. Often exercises prescribed by physios are hard to follow accurately at home, slowing the process of recovery. Visualisation through movement allows for the individual to monitor and adjust their approach actively. The key incentive to a healthy recovery lies in motivating the individual through the ability to see progression – a key element of training that is not always present during rehabilitation.

## **Background:**

With a varied background in 3D animation and motion graphics along with a passion for sport, Arien draws from many different areas which all inform his approach to design. Opening channels of communication with people from different talents is highly valued by the designer, as ideas not only come to life but grow through different perspectives. The *Smart Knee Brace* was completed as part of a Master's degree in Creative Technologies at the Auckland University of Technology. The project was facilitated by Colab, The Textile and Design Lab, AUT Ventures and the AUT Millennium Institute for Sports Research.

## **Process:**

The designer approached the Textile and Design Lab to explore how its knitting technology could be applied to create the knee brace. Stretch, weight, comfort and the ability of the knitted textile to move with the body were all advantageous. The possibility of implementing devices or technologies within the knitted structure to measure movement was also appealing as it made the product more user friendly for its intended wearers. This was done by incorporating a pressure switch into the structure of the knitted brace using conductive yarn. The knowledge and skill of Senior Technician, Gordon Fraser, was crucial to the process as it enabled the designer to realise and improve on his ideas whilst adopting the complexities of knitting technology. Throughout the process, technology is considered important, but not as a direct solution. Becoming a 'creative technologist conduit' and applying technology as it meets the demands of the problem was the most effective approach for success.

### **Project Outcomes:**

Arien has recently taken on the role as Founder of soon to be formed start-up *MyBioMotion*. Through developing his own business, he aims to introduce the *MyBioMotion* sensing technology and app to a wider audience. Additional funding for the project has been provided by AUT Ventures, StretchSense and SPRINZ with the aim of commercialising the product. The designer hopes that the project will inspire intuitive responses to the use of technology in the future when solving problems and illustrate the value of communication across several disciplines.

### **Publications:**

- **Website:**

[www.mybiomotion.com](http://www.mybiomotion.com)

- **Thesis:**

Hielkema, A. (2016). Smart Tools for a Smart Recovery (Master's thesis, Auckland University of Technology). See <http://aut.researchgateway.ac.nz/handle/10292/10062>

### **Images:**

