FORWARD

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MY DESIGN JOURNEY

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In 2019 I suffered my first **serious** injury. I quickly learned how difficult and **lonely** the journey back to fitness can be for athletes. I decided to base my final year project on this problem. By coupling my **motivation** to help athletes through their **journey** with my research and design skills, I felt that I could create something meaningful. **91%** of athletes are conscious of the same injury occuring again, and say it affects their **mental state** while playing. This is not just a process that takes time and money, but it can have serious effects on an athletes **mental health**. With the average athlete spending **8** hours a week on injury prevention in the gym, I felt that there was a real need to provide athletes with a product to aid the **process**. By giving athletes a tangible way to **monitor** their health I feel that I can have a positive effect on not only athletes **physical** well-being, but their **mental** health too.

HOW CAN WE HAVE A POSITIVE EFFECT ON INJURIES AND REHABILITATION IN THE GAA?

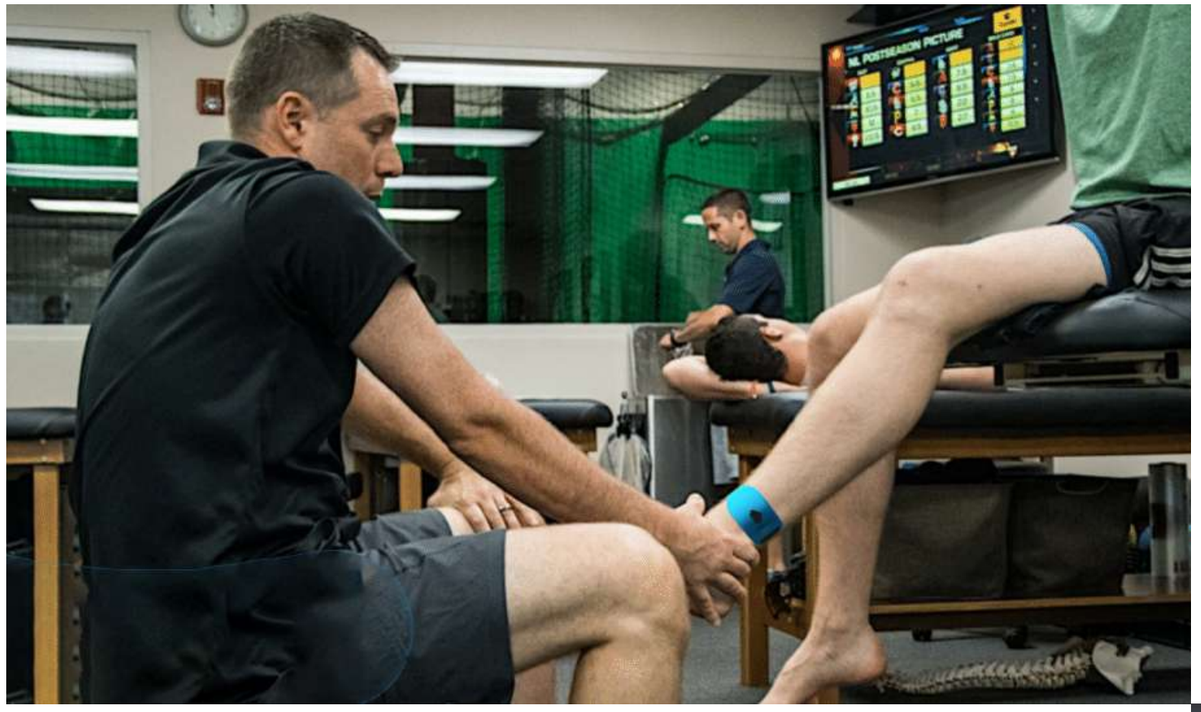
"The fear is the worst, I always thought I was in great shape before the injuries, but clearly there was something wrong"

- Kieran Gillespie, Donegal GAA

FORWARD Personal Physio uses innovative technology as well as quality materials to accompany athletes on their journey to success. Tangible numbers and consistent results, giving you peace of mind.

FORWARD

How It Works



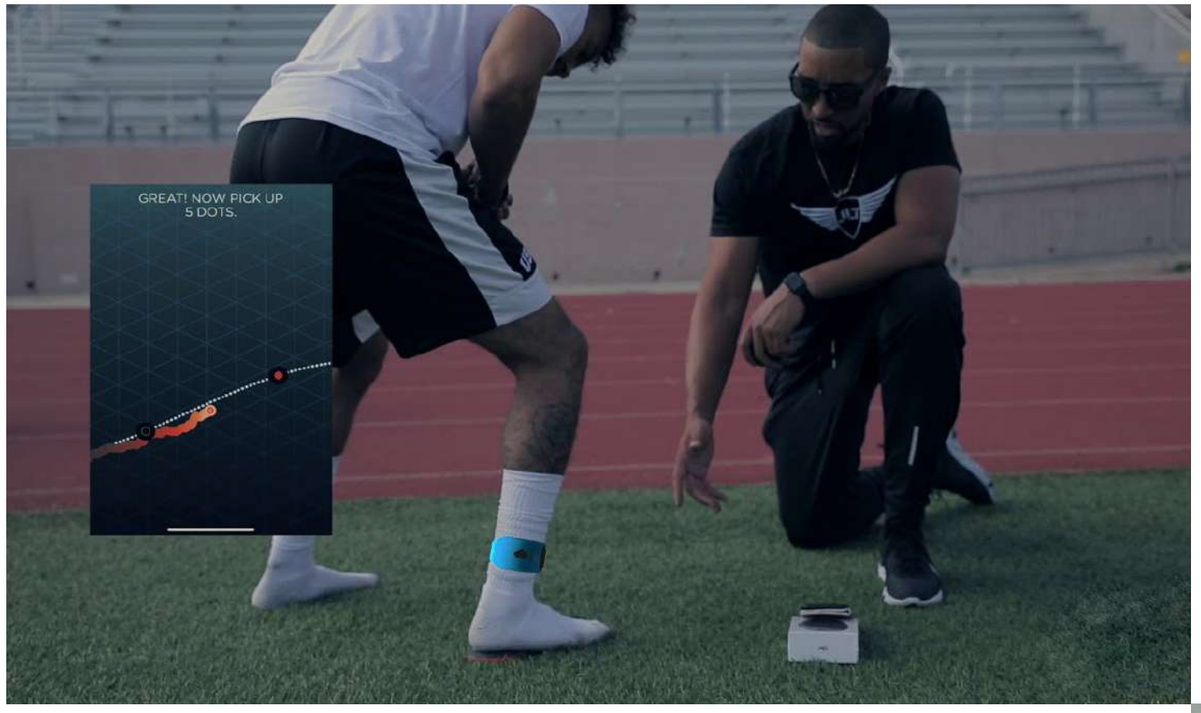
Isokinetic Testing

By isolating the muscle groups and testing how much they can handle, therapists and personal trainers can identify where you have weaknesses

Injury Prevention

By finding weak muscles, we can focus on strengthening those specific areas in the gym which will lead to less risk of injuries on the field

How It Works



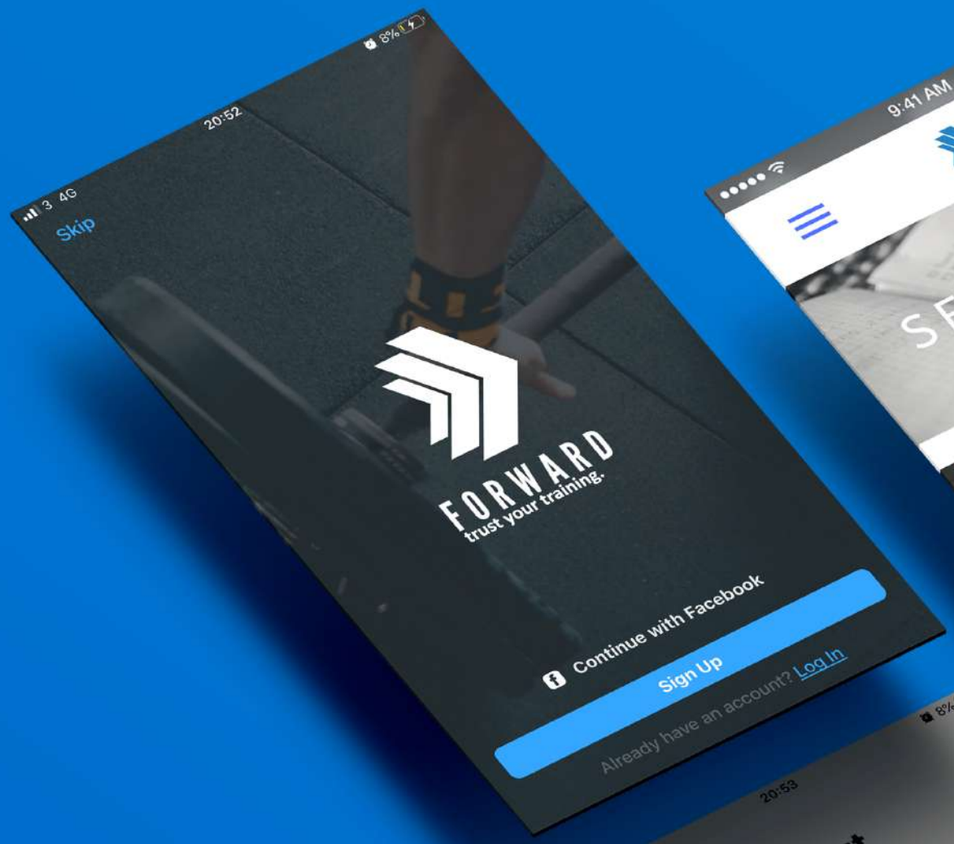
Strength Tracking

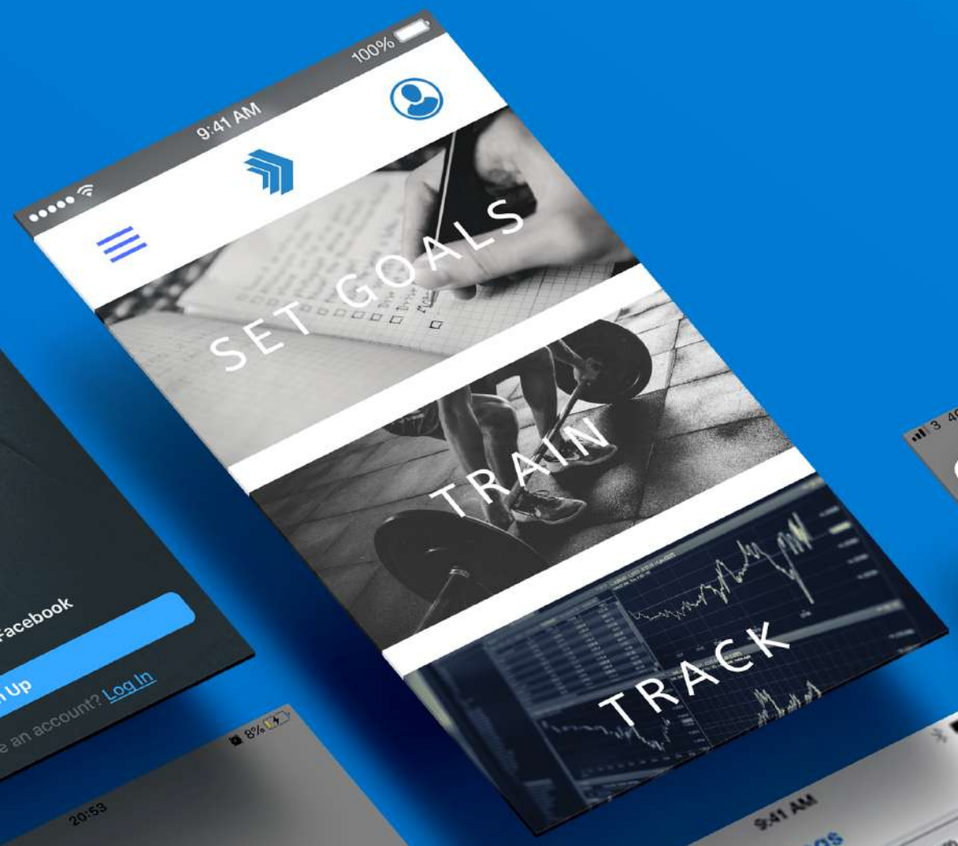
Rehab is a long process, and sometimes athletes don't feel like they are progressing. By providing visual numbers for them, they can see exactly how well they are doing.

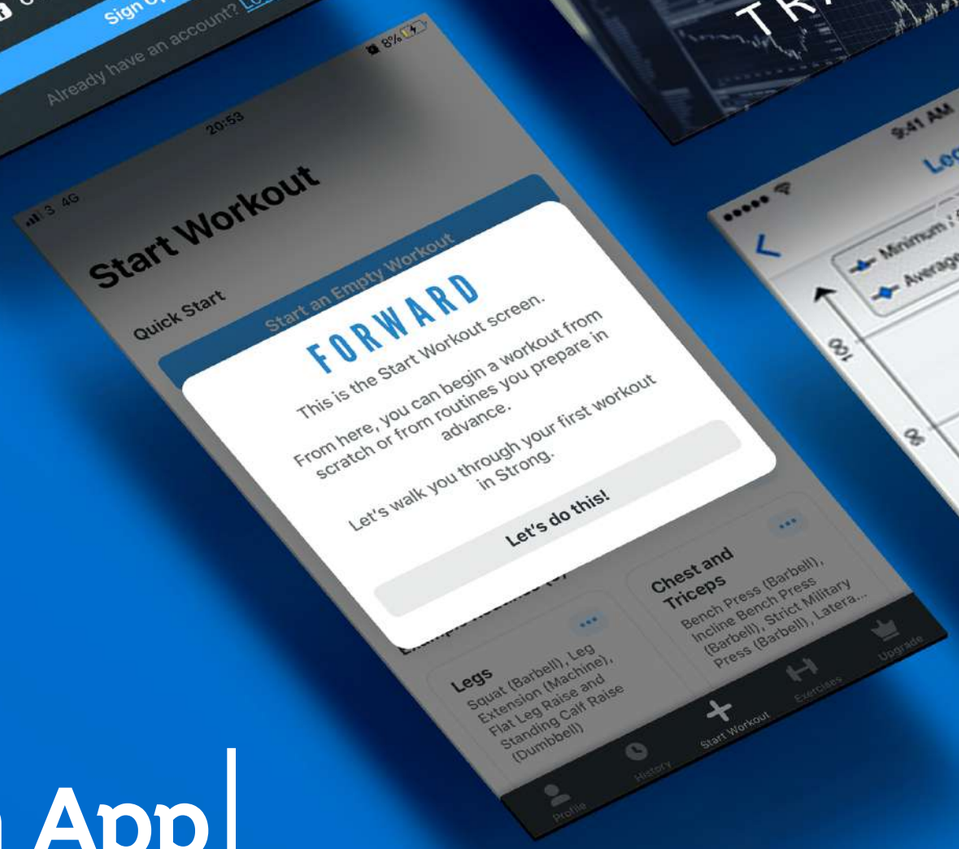
Trusted Results

Athletes can be sure that their body's are prepared to return to the field, giving them the confidence and peace of mind to perform at their highest level

Companion App



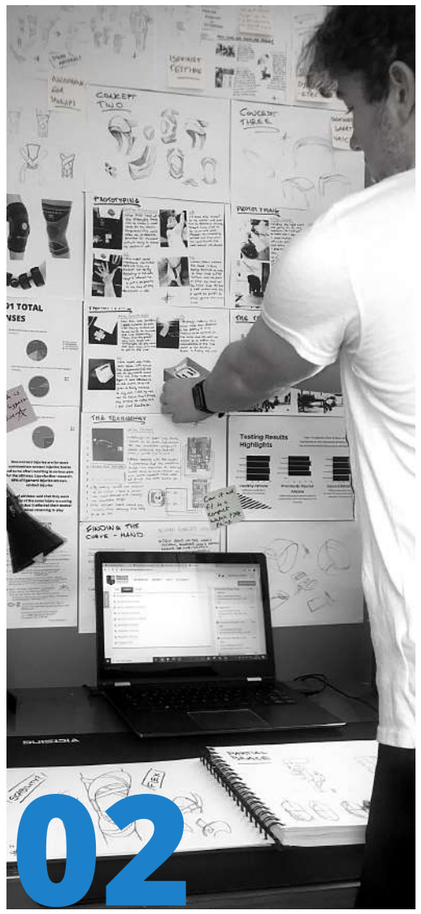




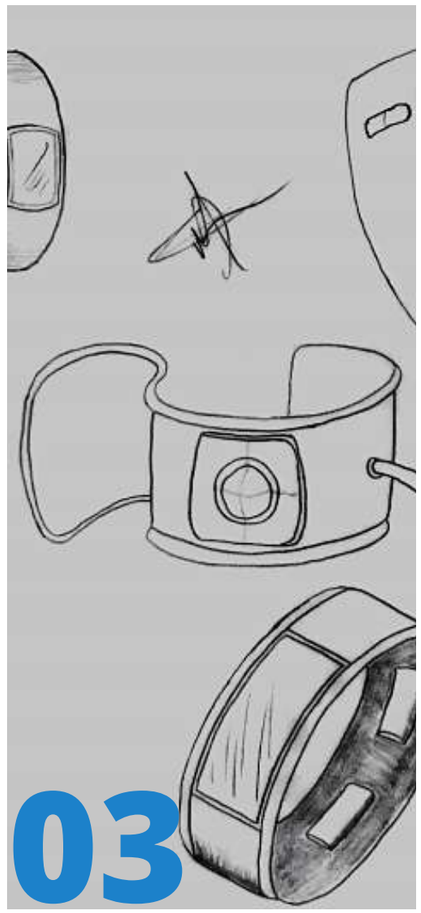
My Design Process

EMPATHISE

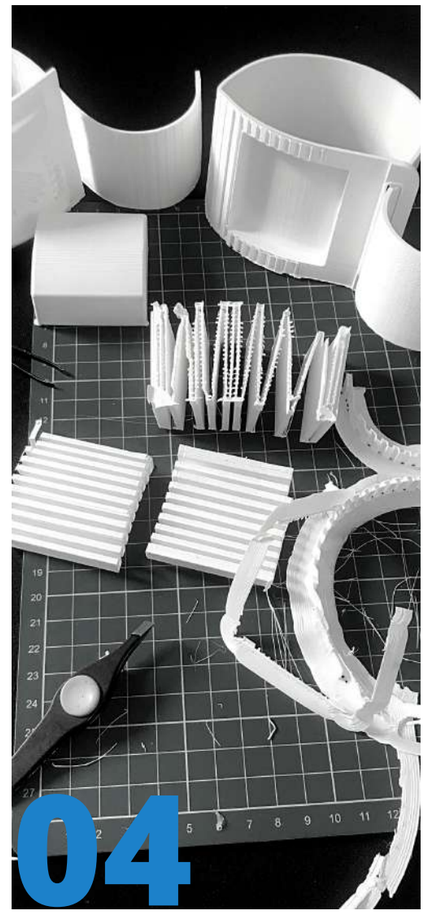
DEFINE



IDEATE



PROTOTYPE



TEST

Working from Home

Covid-19

With Product Design being so practical and hands-on, Covid-19 without a doubt created the biggest hurdles for us as design students. Losing access to our labs, workshops and all other facilities was extremely tough.

However, its important to look at the whole picture, and in the grand scheme of things, we are still blessed to be in the position to complete our final year studies while remaining safe and healthy.

Although its not ideal, lockdown presented us with the oppotunity to be creative and use the limited facilities we have at home to create an industry standard product.

Using the Stanford D-School **Process** for Design Thinking, I wanted to get a better **understanding** of each and every problem within an athletes **journey**. My aim was to create and develop a solution that met the **needs** of the user. It was important that I didn't let my own previous **experiences** be the only factor deciding the design.

Research

Ideation

Testing

User Investigation

Studying individual players and their movements both on the field and in the gym.Interviews with teammates, local physios and parents of kids who have had major injuries. Pain points from my own journey back to health, and things I wish I knew about at the time.

Key Findings

It was clear that athletes could manage the pain of an injury. However, the setback was the devestating part. From my research it was clear that the process after the injury was the biggest problem for athletes.

Observations

Interviews

Experiences

The Market

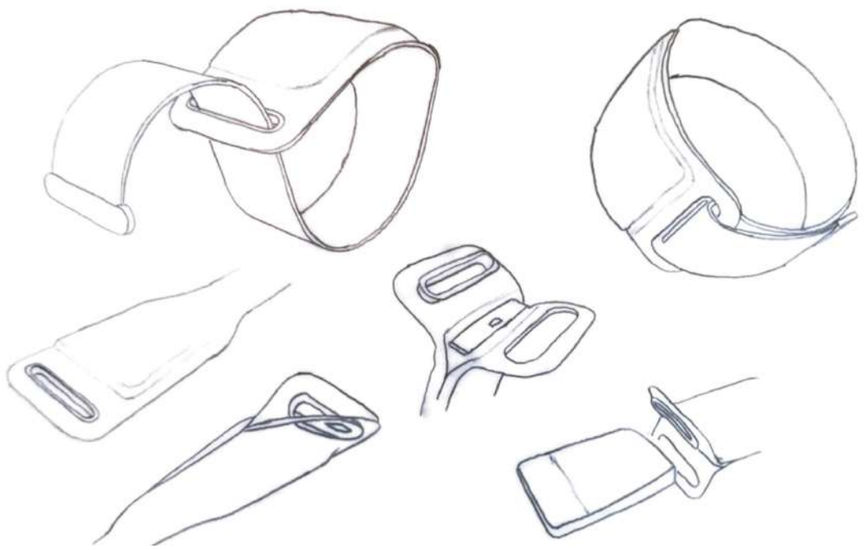
The player injury fund has increased by **12.75%** since 2015. Over **6,000** players benefited from the GAA injury fund in 2018, totaling a value of **€9 million.**

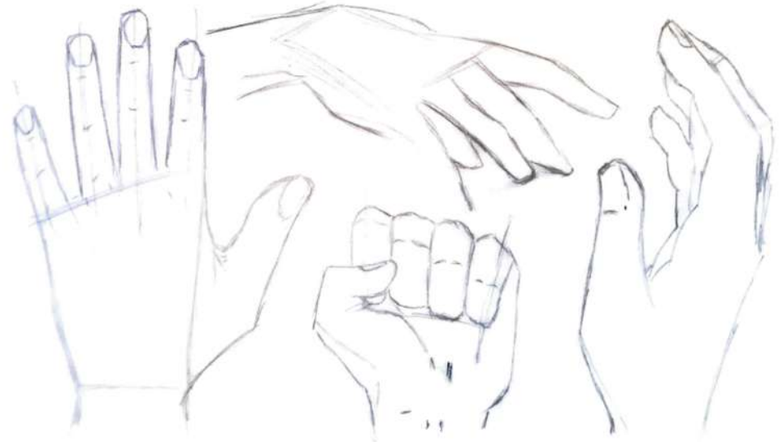
There are approximately **104,540** adult athletes in the GAA today. **84%** of athletes have suffered a serious injury in their career. **76%** of injured athletes require rehabilitation after their injury.

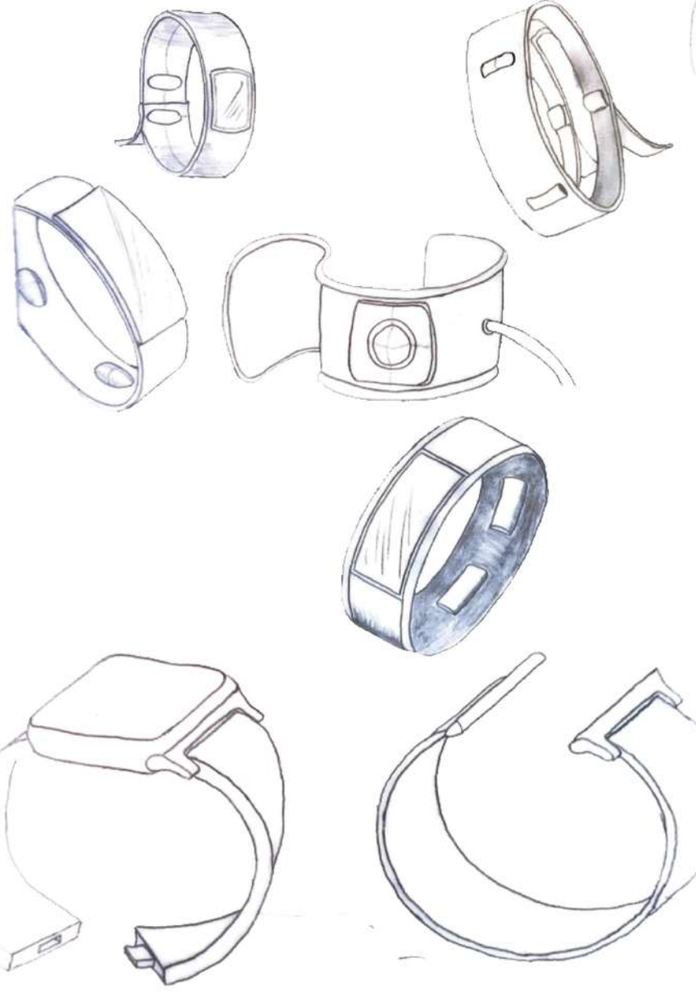
1 in 3 injuries in athletes are knee injuries

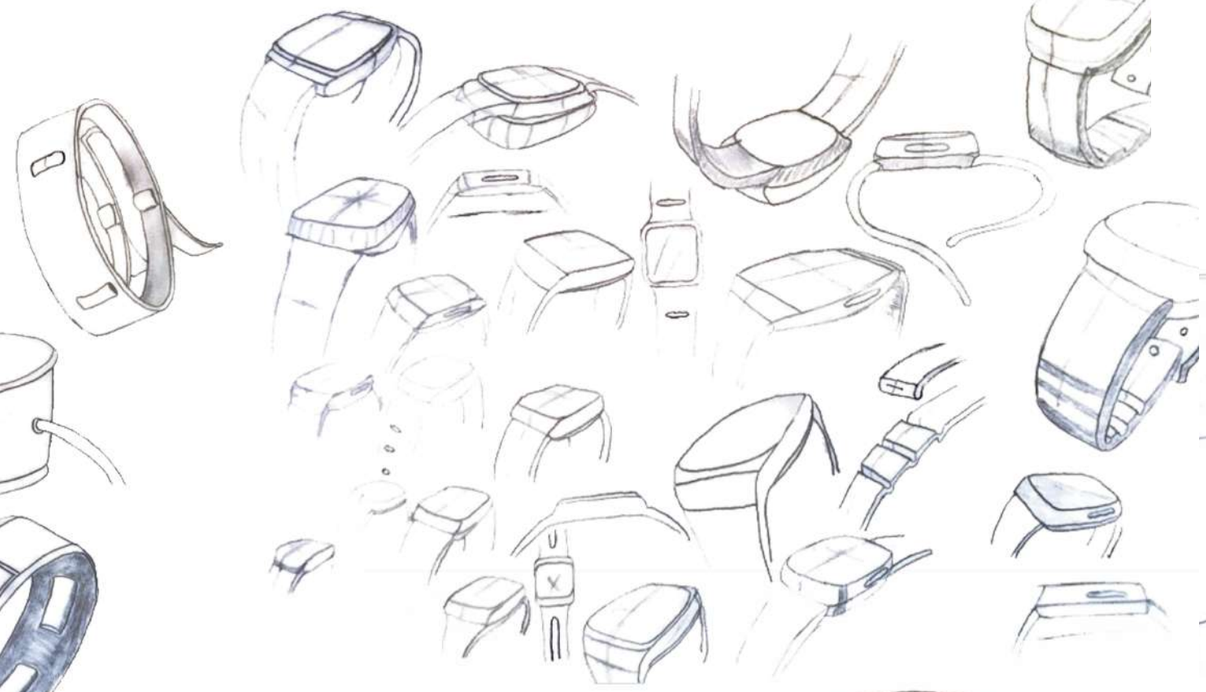
There are over **400** GAA clubs registered **internationally**, and that number is expected see a **100%** increase in the next decade. Athletes spend **8** hours of their time every week focusing on injury **prevention** exercises

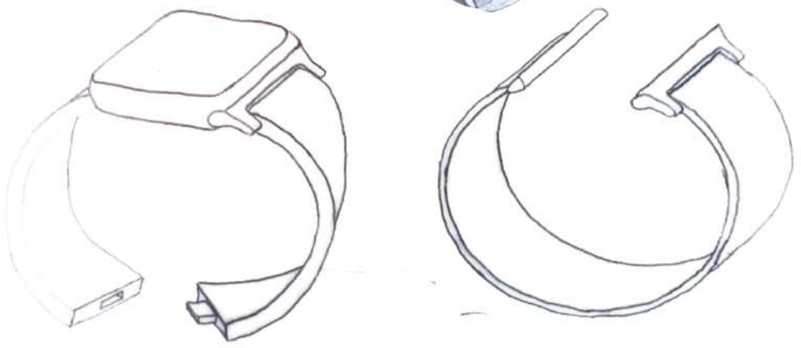
Ideation

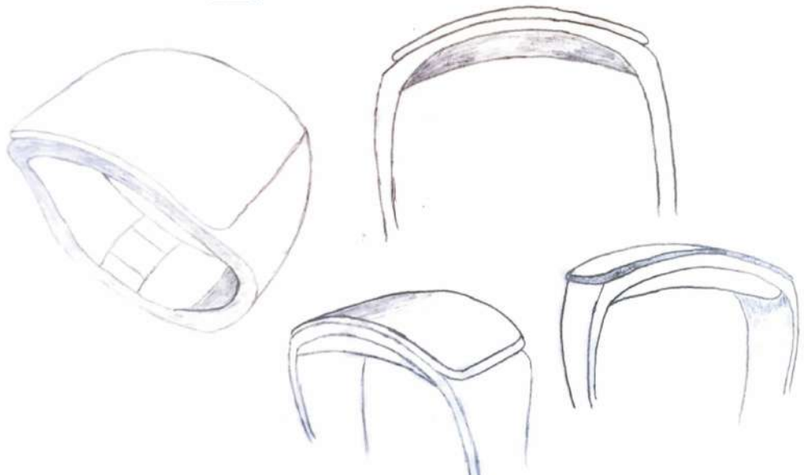


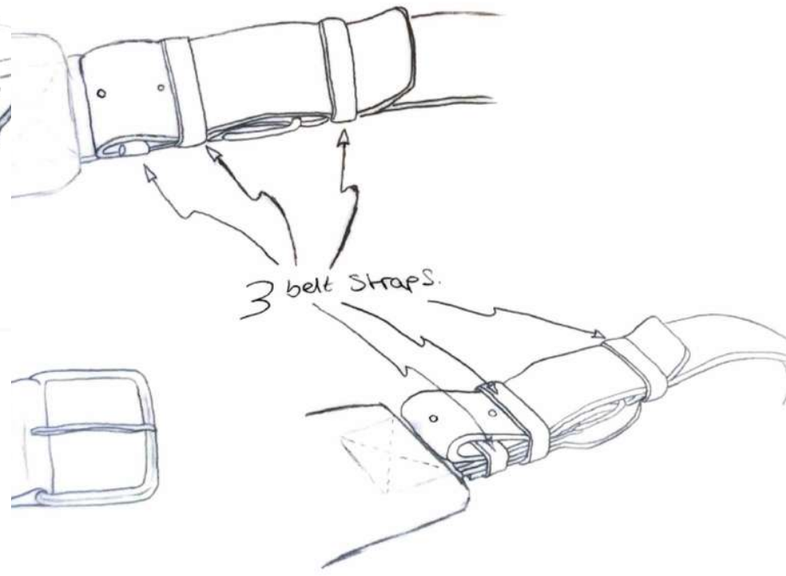












Ideation

Testing and Validation

The technolgy used in this project was the key to its success. I aimed to ensure from the very beginning that the concept behind the project was accurate and correct

Using force measurement, Kinovea software and science, I could back up the statement my product was making.

Speaking to engineering experts and testing other similar technologies allowed me to ensure I was using the best possible technology for my project.

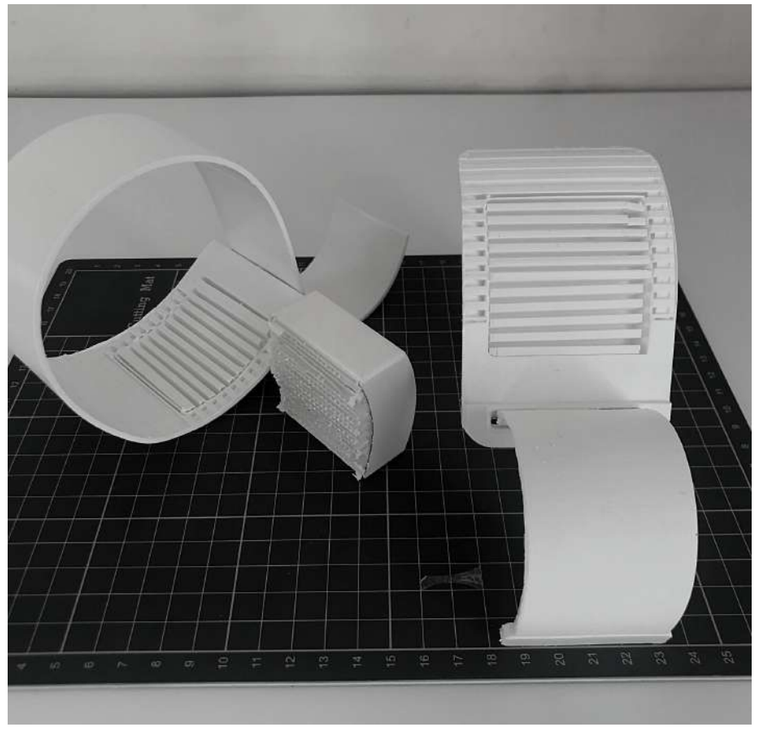
Prototyping

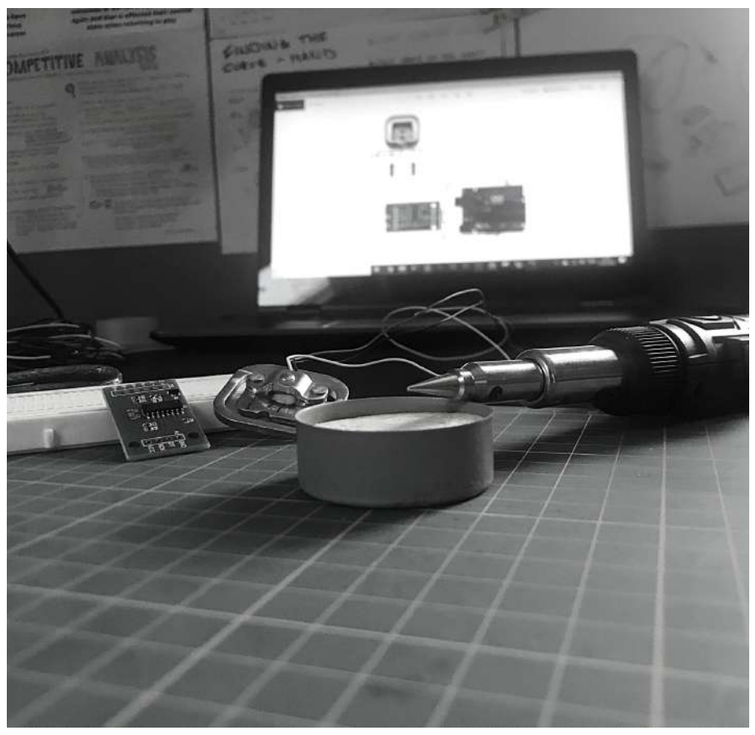
Prototyping

The final model was created using a variety of tools. Creating the model on solidworks allowed me to 3D print the base for the prototype.

The electronics were soldered and programming was done using the arduino software

The model was sanded until smooth and spray painted to achieve the desired aesthetic finish





User Testing

During the modelling phase of this project I strived to test as many prototypes as possibe with the users available to me.

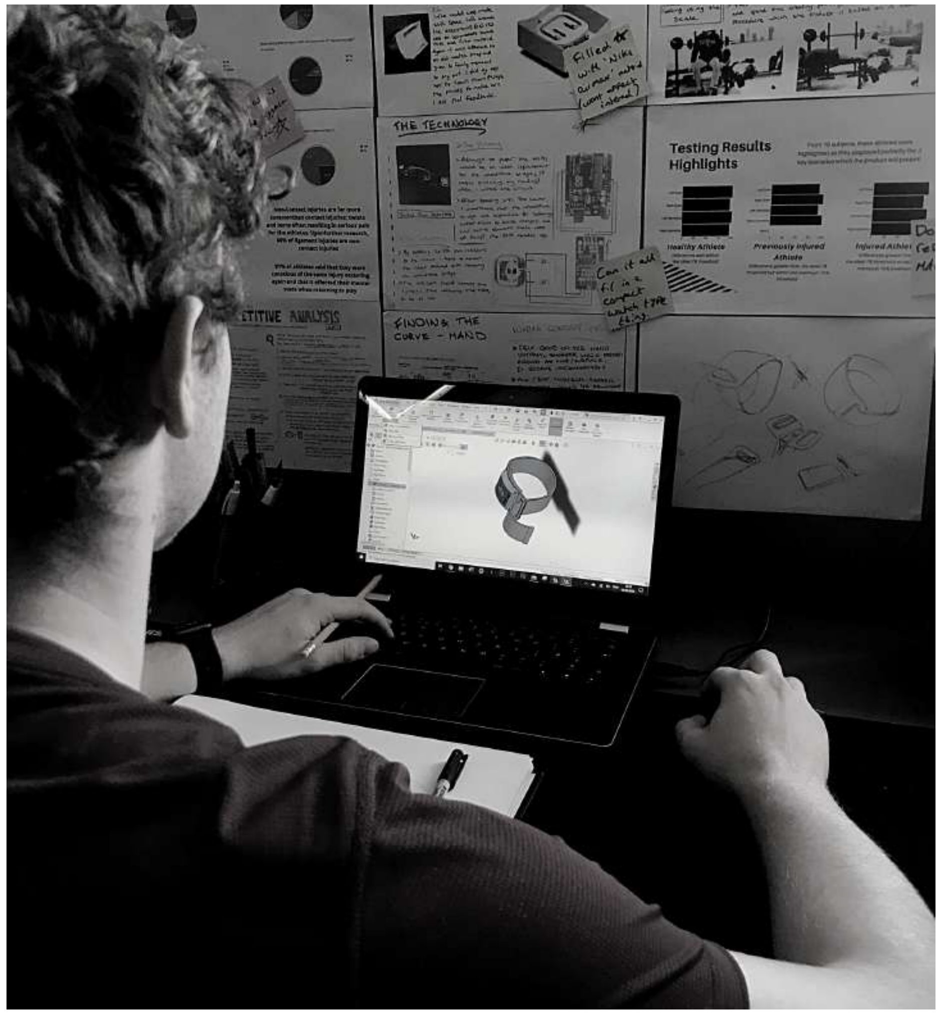
Throughout prototyping, it was clear that the form of the shell was the main problem. I needed to find the right balance of ergonomics and comfort.

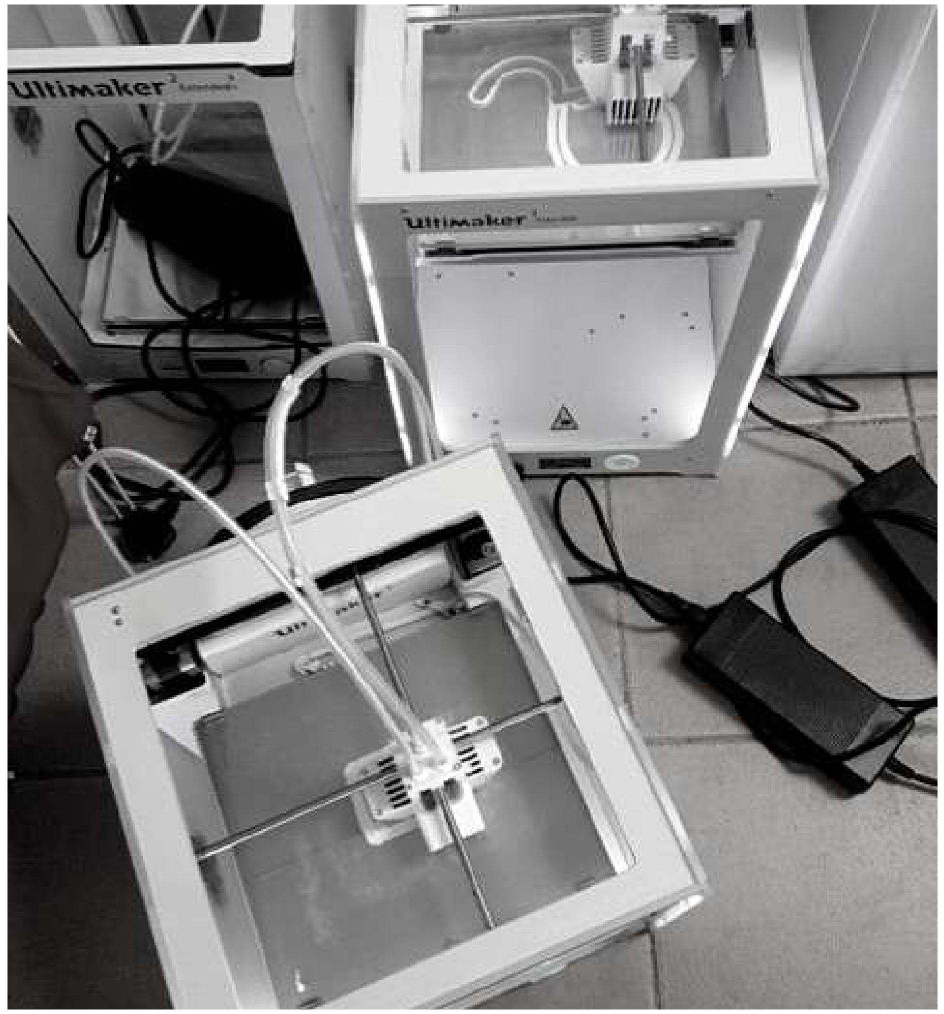
When I had decided on the final curves for the housing, I noticed that there was still discomfort for the user.

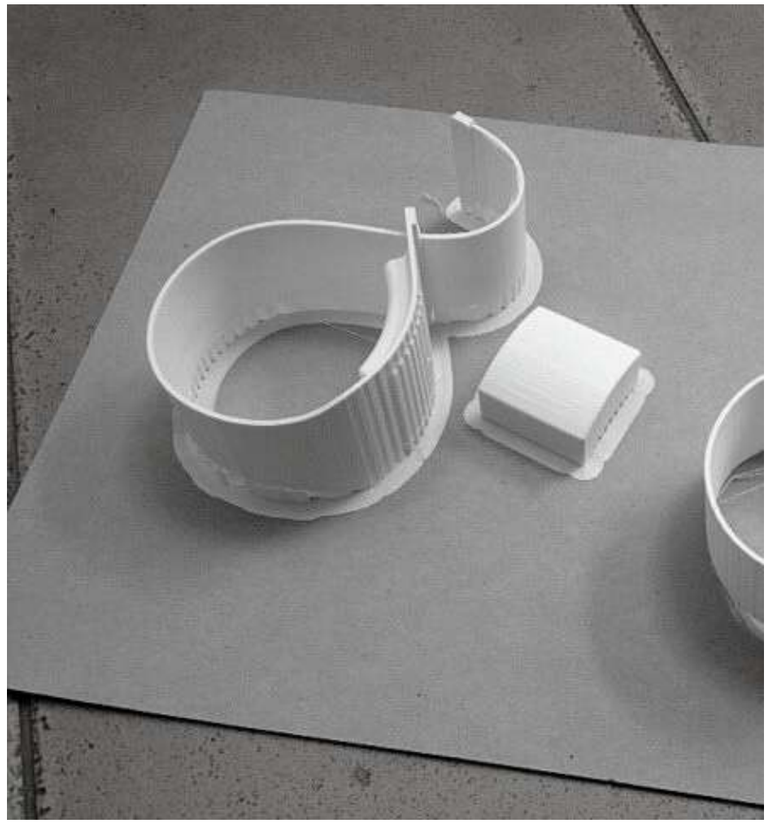
It was obvious that the strap being on the hand interfered with the comfort, so I decided that the product would be strapped to the constant curve of the leg rather than the varying curve of the hand.

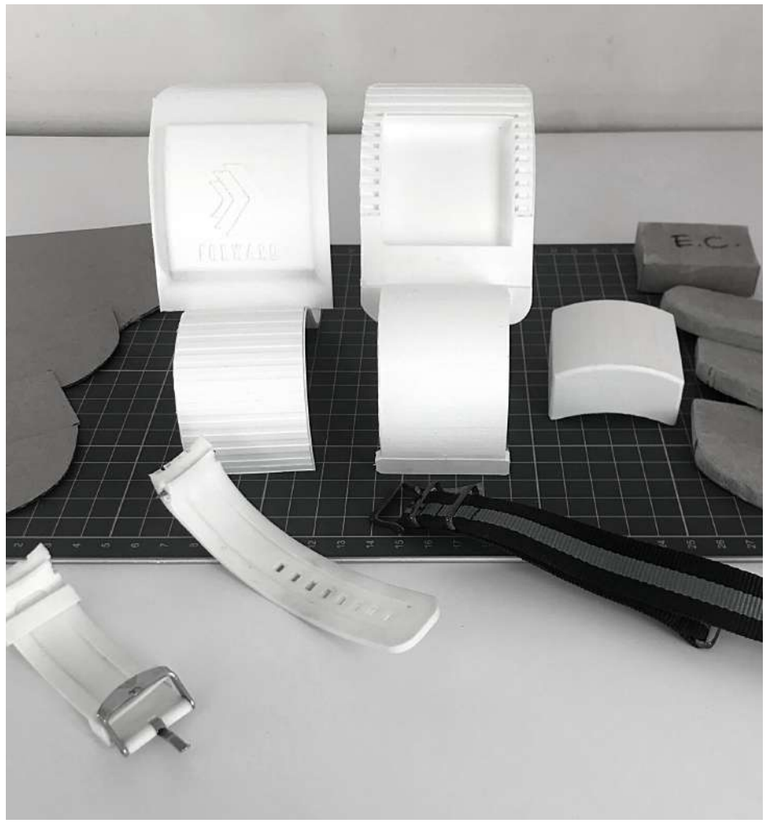

LIMB CURVE
HAND CURVE
COMFORT vs TECHNICAL
HOW DO THEY GRIP?
DOES IT NEED CUSHION
TYPE OF STRAP?


LIMB CURVE
HAND CURVE
COMFORT vs TECHNICAL


THE TECHNOLOGY
Testing Results Highlights
FINDING THE CURVE - HAND


Ultimaker
Ultimaker




E.C.

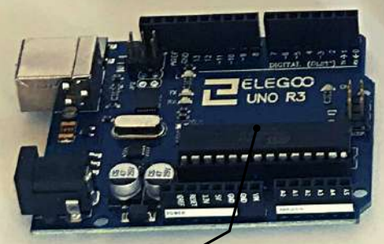

ARDUINO
1/3 of of
SPACE.

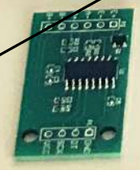

DOES IT NEED CUSHION
SPRING LOAD-ED?
ARDUINO
1/3 of of
SPACE.

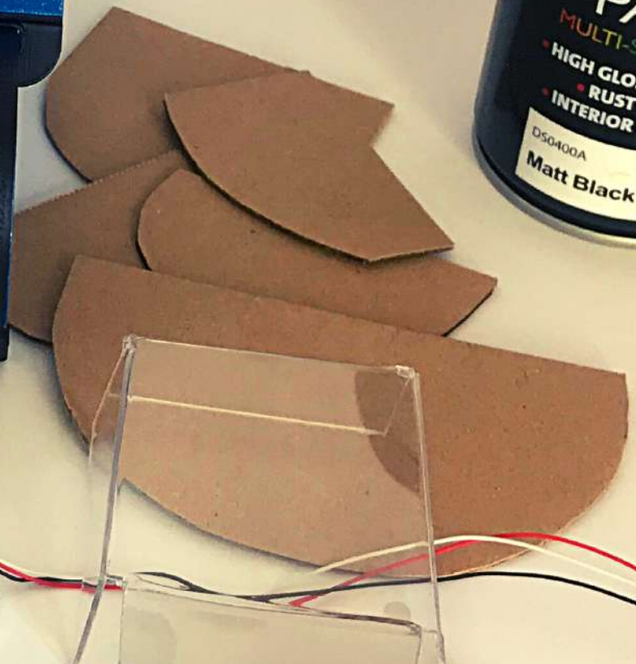
Final prototype

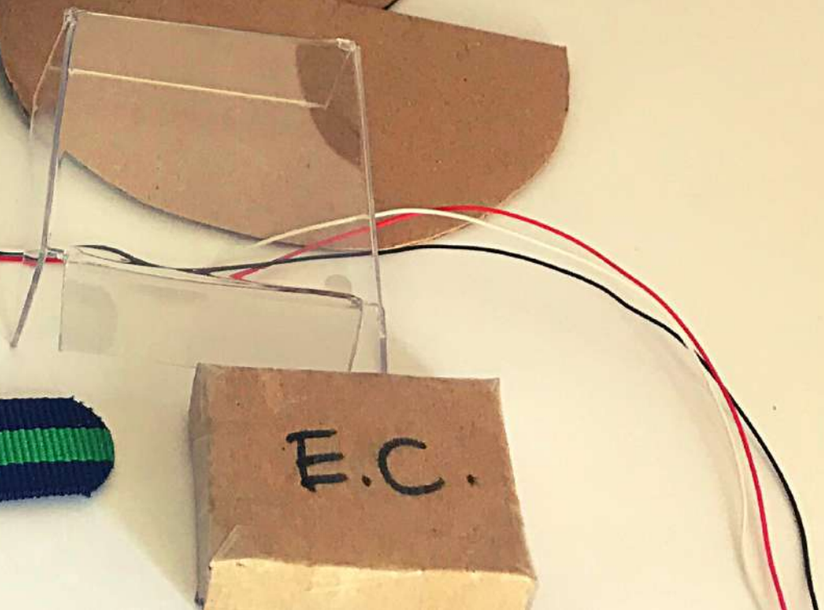
Early prototypes

Internal electronics







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Thank You.