



Case study

The Powerwheel

THE CHALLENGE

The Centre for Defence Enterprise challenged the engineering industry to consider innovative ways to aid the medical rehabilitation of injured service personnel.

OUR SOLUTION

Frazer-Nash Consultancy drew upon the extensive research and development we had previously undertaken to support the training of Paralympics athletes. This involved working closely with UK Sport to develop an instrumented wheel to help elite wheelchair Paralympians improve their performance.

We developed the 'Powerwheel' which uses load sensing elements to capture and measure data which is then transmitted wirelessly to a mini-computer. This data is then interpreted and presented on a small screen in front of the user. It is also stored on the computer, enabling the information to be analysed during the effort and post-event. The Powerwheel instrument was designed to fit retrospectively onto a carbon fibre Olympic racing wheelchair and measure the driving force exerted into the push rim by the user.

The new design incorporates the same principles, but has been adapted to allow use with a standard issue NHS wheelchair used in the rehabilitation of injured service personnel.

BENEFITS

The Powerwheel provides users with immediate feedback on the force they are applying in the in-plane direction, their push frequency and speed. Physiotherapists and clinicians will be able to use the more detailed information to build their knowledge base, which could help to inform on best practice for the users' training regime and techniques to minimise secondary injuries from wheelchair use.

Client

Centre for Defence Enterprise

Business need

Design and manufacture of an instrumented wheelchair to support the rehabilitation of injured service personnel.

Why Frazer-Nash?

We combine expertise in concept design and innovation with a first-class reputation in mechanical and structural design and analysis.



For more information, please contact customercontact@fnc.co.uk or visit www.fnc.co.uk