A New Model of Biomechanical Motion: A Revolution in Stroke Rehabilitation

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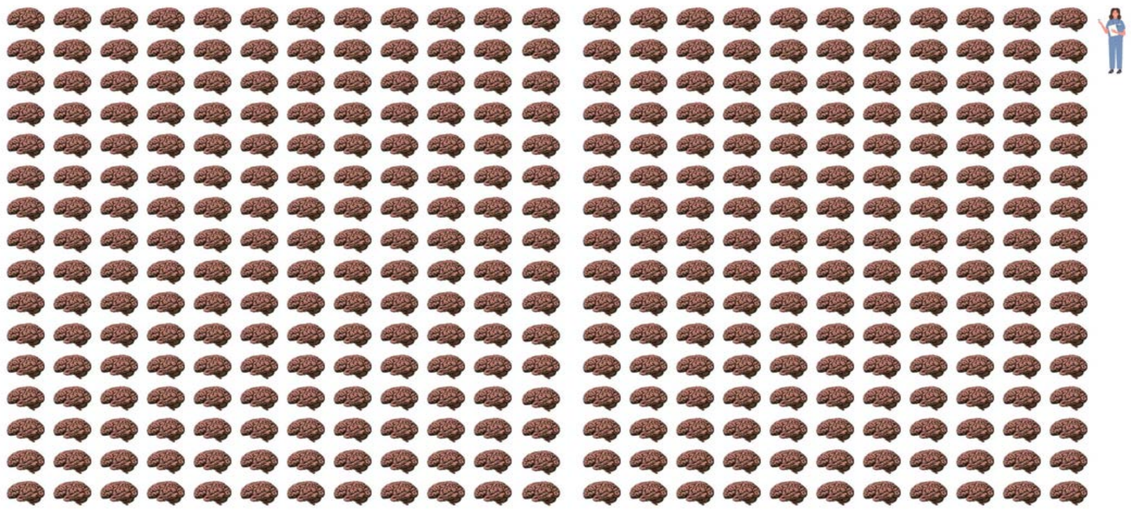
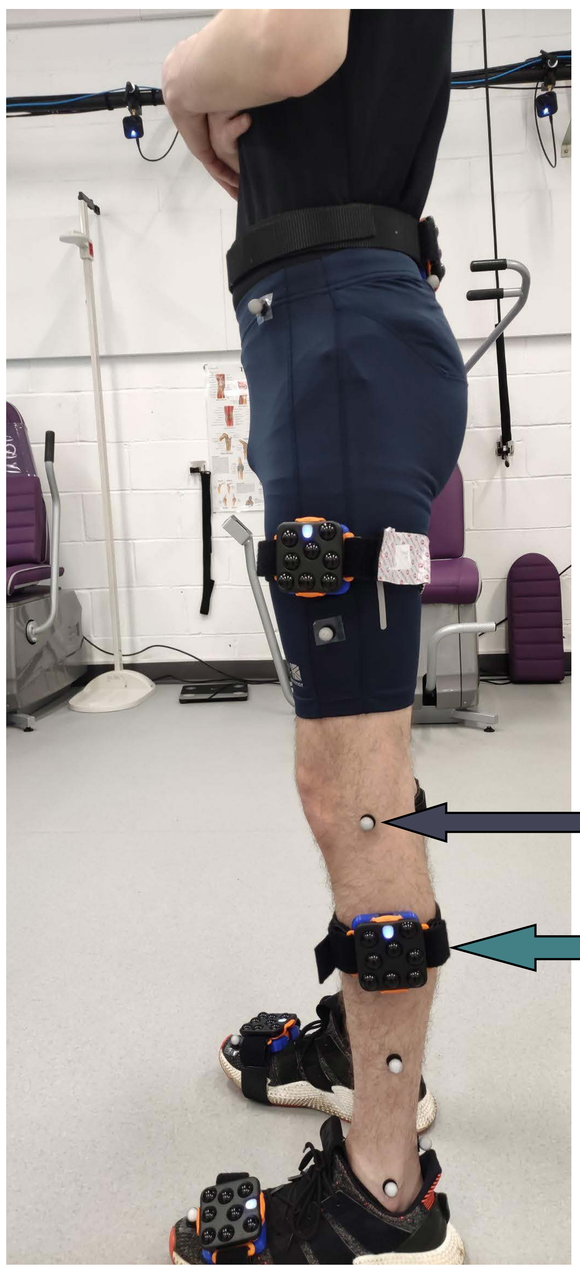


Stroke is the third leading cause of death and disability combined globally. With the financial costs of rehabilitation increasing and currently **one** physiotherapist for every **1,136** people in the UK, **new** and **innovative** methods of stroke rehabilitation are needed.



A **fusion** of active tracking clusters and inertial measurement units provide a more complete **model** of **biomechanical motion** of the lower limbs. This method has been show effective when compared to the gold standard known as Plug-in-Gait. When used in a **rehabilitation gym environment** it allows for **real-time visual feedback** of movement directly to the stroke survivor, thus reducing the reliance on physiotherapist.

Individual reflective markers are detected by cameras allowing for a **traditional model** of motion to be visualised, however this **requires a clinician** to interpret and feedback to the patient.

A fusion of **clusters** and **IMUs** can be attached to segments of the **lower limbs** with motion tracked using alternative cameras. Data from these devices can be streamed through a custom-made **C++ program to Unreal Engine** providing **real-time** visualisation of movement.

Active tracking clusters called **Pulsars** provide **positional data** but are unable to determine how fast your limb is moving. Inertial measurement units (IMUs) provide **velocity data** but cannot tell where you are located in 3D space. By creating a **fusion** of the two technologies we can provide an **enhanced model of motion**.

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