

World Cup to begin with exoskeleton kick

A person with paralysis is to deliver the ceremonial first kick at the World Cup in Brazil wearing a mind-controlled exoskeleton – a cutting edge technology that could one day transform the lives of millions of people

Cap: Fitted with electrodes, picks up brain signals and relays them to computer in backpack

Computer: Decodes signals into commands for robotic legs

Battery: Carried in backpack, allows for around two hours of use

Sensing legs:

Sensors on foot detect texture, pressure and movement

Signals transmitted to electronic vibrator on patient's arm, stimulating skin

Over time brain starts associating movements of legs with vibration in arm – patient develops sensation that he has legs

Electrodes:

Arrays of flexible plastic conduct electricity, monitor thousands of brain cells

Robotic suit:

Built from lightweight alloys and polymers using 3D printing technology

Motorised metal braces:

Stabilised by gyroscopes, support and bend kicker's legs

If all goes according to plan, youngster will stand up from wheelchair and kick ball in front of 70,000 spectators and global audience of billions of people

