

## Health & Well-being

RoodlaneMedical  
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### Dr Gill's Blog

I don't know if any of you will remember reading about an exoskeleton designed to allow a paralysed person to walk which was featured at the 2014 World Cup opening ceremony. Juan Pinto, a 29 year old with complete paralysis, took the first kick at the ceremony in São Paulo using a robotic suit.

Research has continued and eight paraplegic (completely paralysed below the level of the arms) individuals who have been paralysed for 3 to 13 years have been working with scientists using the exoskeleton system. If a patient is diagnosed with a complete lesion, (meaning there is no feeling or movement below the level of injury, and they are no better after 18 months) then there is basically absolutely no chance of improvement at all. For these individuals walking with an exoskeleton was the only hope that they had of independent mobility.



The system works with a skull cap that allows the user to operate an avatar using their



actually feel and move their legs again.

It is a relatively small effect but enough for some of them to be reclassified from "complete" to "partial" paralysis which is unheard of.

Does it matter? Yes, absolutely it does - this is about further proof of neuroplasticity or the ability of our brain to change. Our understanding of this is improving all the time.

There is a lot of evidence showing that physical exercise improves your mental state and neurological function and reduces the risk of dementia. Using the body has a direct impact on the plasticity of the brain. What this work appears to show is that using the brain to operate the lower limbs apparently passively through an exoskeleton created a

brain activity. Once they can do that, they move on to operating the exoskeleton. All good and simple so far. This is where it gets even more interesting: these individuals have begun to regain sensation and movement in their legs as well as improved bowel and bladder control. This seems to be a result of using the exoskeleton. In other words, there is something happening to them as a direct result of using their brain to operate their legs. The exoskeleton changes the brain in a way that allows it to find new pathways or activate a few remaining pathways to start to

feedback loop that changes the brain. It would appear that these individuals are "rekindling" the few remaining nerve connections that they have in their damaged spines. It is possible that they may be generating pathways.

On a day to day level for healthy individuals, this is yet more compelling evidence that the way we use the interface between our bodies and our brains can change our brain substantially. For people that are paralysed this is nothing short of an astounding piece of information.

## Looking after your Lifestyle

### I heart me!

Do you take an active interest in monitoring your blood pressure? Know the risks of the health complications associated with high blood pressure? If you haven't in the past, now is the time to take notice and see how your systolic and diastolic are looking. Systolic is the top number taken for blood pressure and is the highest pressure when your heart beats and pushes the blood around your body. Diastolic is the lowest pressure reading when your heart relaxes between beats.

To put it simply, if your top number is 140 or more, you may have high blood pressure regardless of your bottom number.

If your bottom number is 90 or more, you may have high blood pressure regardless of your top number.

If your top number is 90 or less, you may have low blood pressure regardless of your bottom number.

If your bottom number is 60 or less, you may have low blood pressure regardless of your top number.

There are health risks to having both high or low blood pressure (BP). Higher pressure



a family history of the condition, a poor diet, have too much salt, are overweight or drink too much alcohol.

On the flipside, many of us worry about low blood pressure and generally shouldn't cause concern as may be good news. In some cases, low BP can cause problems and as such you should visit your GP.

There are no specific causes or reason why you may have a low BP reading, although it has been found that some health conditions or medicines can cause low BP to develop.

It may be no surprise to learn that to keep a healthy heart, you need a healthy diet and adequate exercise to keep your heart happy!

puts extra strain on your heart and can increase your risk of a heart attack or stroke. It's interesting to know that higher blood pressure is also linked to some forms of dementia.

You may be at risk of high BP if you have

Get to 'Know Your Numbers!' The nationwide campaign runs 12-18 September.

For further information please contact us to see how we can support you.

## Doctors Corner

### Dear Doctor,

We are planning our summer holidays and are concerned about diarrhoeal type illnesses. We recently had a friend who returned from holiday with severe symptoms.

What would you advise?



### Dear Patient,

It is estimated that up to 50% of travellers will experience travellers' diarrhoea (TD) during a holiday to countries where standards of hygiene and sanitation are poorer than we are accustomed to at home. High risk areas include India, parts of Africa and South America.

Contaminated food and water are the main sources of infection. High risk foods include raw fruit and vegetables, dairy products, undercooked meat and seafood. Ice in drinks and tap water in many countries can be contaminated and should always be avoided. Food that has been sat out for some time such as buffets may be contaminated by flies and over handling. Take care with street food.

#### Prevention:

To prevent Travellers' diarrhoea, hands must be washed thoroughly after using the toilet and before eating or preparing food and hand sanitiser should be used often. Drinking water should be bottled, boiled or purified and food should be thoroughly cooked and piping hot.

Travellers' diarrhoea can affect travellers at any point of their trip. It is usually self-limiting, resolving within a few days however symptoms can be distressing and debilitating, impacting on travel plans. Symptoms include frequent watery stools, urgency to go to the toilet, abdominal cramps, pain and fever.

#### Pre and probiotics:

There is currently ongoing research into the use of prebiotics and probiotics in the prevention of TD and taking this prior to and during travel may offer some protection in preventing TD. There are several products on the market for travel such as Bimuno and Optibac.

### Treatment:

Medicines such as loperamide (Imodium) and rehydration solution should be carried by travellers to help manage symptoms of diarrhoea and reduce the risk of dehydration. Antibiotics such as Ciprofloxacin and Azithromycin can be taken as self- treatment for moderate to severe cases of Travellers' diarrhoea. Talk to your doctor about these. This is particularly useful for long term travellers and those visiting very high risk countries where access to health care provisions may be limited.



### **Do you have a health related question?**

Why not try emailing us in confidence and you could see your question answered by a qualified Doctor in our next newsletter!

Email: [DoctorsQuestions@roodlane.co.uk](mailto:DoctorsQuestions@roodlane.co.uk)

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