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Tongue 'display' helps you keep your balance

15:03 04 June 2008 by [Tamsin Osborne](#)

A device that relays a person's body movements to an array of electrodes on their tongue could help people with balance problems recover their poise, or wheelchair users avoid pressure sores.

The wireless "tongue display" being used by French researchers is worn in the mouth like an orthodontic retainer. A matrix of 36 electrodes on the underside transmits electrical impulses to the tongue.

"The sensation is a kind of 'ticklish' feeling," says [Yohan Payan](#), a researcher at the TIMC lab near Grenoble, France.

"The idea is that if one of your senses is lacking, you try to use another sense to convey information", he says, adding that it initially takes around 10 minutes for people to learn to use the information from the display.

Switching senses

The same principle, known as sensory substitution, has previously been used to [relay output from cameras onto the tongue](#) or [forehead](#) to help blind people "see".

Payan and colleagues are instead interested in helping people with conditions that affect their perception of body movements and balance. Output from movement sensors on a person's body is sent to the tongue display to help the brain detect and correct stability and posture.

Trials have included using the device to display head position, and pressure on the soles of the feet and have had promising results.

In one experiment volunteers became worse at balancing when their backs were tired, but could compensate when they felt foot pressure on their tongue too. Another study projected data from the ankles onto the tongue. Volunteers found they were better able to compensate for difficulties in sensing the joints when their muscles were tired.

Payan's team is now using the tongue display to help people in wheelchairs stay healthy. "Paraplegic patients suffer from pressure sore problems due to the absence of perception of the point of pressure on the buttock area," he explains.

Pressure sensors on the wheelchair's seat connect to the tongue display to make a person aware of pressure they would otherwise not feel, so they can shift position to avoid sores. The same technique can be used for amputees who have balance problems or pressure sores from their prosthesis.

Information overload

The tongue display design used by Payan's team was developed by [Kurt Kaczmarek](#) and colleagues at University of Wisconsin, Madison, US, as an alternative to vision.

The French team made the device smaller and wireless - improvements that Kaczmarek is enthusiastic about. "It will enable not only practical, wide-scale deployment of rehabilitation applications for balance or vision disorders, but also a new era in human-machine interfaces."

[Maurice Ptito](#) of the McGill University, Montreal, Canada, agrees. He is currently using a tongue display to help blind people navigate around obstacles.

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An array of electrodes supply the tongue with information from sensors around the body to help people with balance problems (Image: Yohan Payan)

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Pitro says that studying how the brain uses balance information from the tongue display could help reveal the way balance is usually regulated.

Tongue displays could also be a help in situations where people are overloaded with information, such as when flying aircraft, driving racing cars, taking space walks or new communication devices, Kaczmarek adds.

0 tweets

J'aime

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Not Suprised

Wed Jun 04 18:44:02 BST 2008 by John Kendall

The tongue is well known in chinese medicine to be a n important signifier. So on that basis as much as it receives a "message " it will in all probability send one as well. I have had personal experience of this when I had a streded adrenal situation. The medical proffesion had not one clue , and looked at me as if I was mad. . The chinese medicine guiy I saw who actually helped to finally fix it saw it as completely understandable .

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Not Suprised

Thu Jun 05 11:58:10 BST 2008 by Ste

Chinese guy say "you buy special plant extract, i charge you lots of money, your problem disappear after you take magical placebo"

no offense... But if the medical profession looked at you as if you were mad, then you probably are - not in a bad way, but the problem may just have been in your head - and the Chinese doctor offers you something which you don't understand and seems mystical, you take it and assume that it has done some good - making you think that your imaginary problem is fixed - and thus.. It is.

Now I'm not saying that hundreds of years of using plants to cure diseases is a bad idea - I'm sure there's loads of plants with certain extracts which could be useful - but lets face it, it's not an exact science... It's guess work at best.

If there was an actual problem which you suffered, medical doctors in time could have found the solution to your problem using exact solid science..

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Not Suprised

Thu Jun 05 16:33:02 BST 2008 by J K

I just want to point out that almost every modern medication and pill in our health industry either is derived from a plant or is the synthetic version of the compound we extracted from

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