

'Mirror therapy' reduces chronic phantom pain

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(Medical Xpress) -- A team of researchers led by Stefan Seidel from the University Department of Neurology at the MedUni Vienna has demonstrated that – and how – mirror therapy, as it is known, can help patients reduce the symptoms of phantom pain following limb amputations. This is achieved by stimulating a "motor network" in the brain that "substitutes for" the original motor centre.

In the study, which has now been published in the specialist journal *Fortschritt Röntgenstrahlen*, eight leg amputees completed a total of twelve mirror therapy sessions in which they practiced functional movements of the healthy leg. In mirror therapy, the [patients](#) position their bodies in front of a mirror so that they can only see the remaining

leg, not the stump. As soon as the healthy leg is moved, the brain is “fooled” into thinking that the missing body part is the one seen in the mirror and is suddenly restored again.

Before the first and following the last session as part of the MedUni study, fMRT measurements (functional magnetic resonance tomography) were carried out: the average intensity of the phantom pain reduced markedly, and the patients also exhibited significantly increased activity in the frontal and temporal lobes after mirror therapy. Says Seidel: “These centres are actually not primarily responsible for motor functions.” It was possible to demonstrate that, following amputation of a limb, the brain activates a "motor network" which "substitutes for" the original motor centre for the lost limb originally found in the mid-brain. Says Seidel: “After a while, the brain has re-learned.”

The team of researchers also discovered that the modified [brain](#) activity does not occur in the same way in all patients, nor at the same loci in the temporal and frontal lobes. Says Seidel: “If this motor network is custom-activated and custom-trained through mirror therapy or other ‘mind-body’ interventions, the phantom pain experienced is significantly less.”

More information: Mirror Therapy in Lower Limb Amputees - A Look Beyond Primary Motor Cortex Reorganization. S. Seidel, et al. *RoFo*, 2011, Nov; 183(11):1051-7. [DOI: 10.1055/s-0031-1281768](https://doi.org/10.1055/s-0031-1281768)

Provided by Medical University of Vienna

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