

# Brain and spinal stimulation therapies for phantom limb pain: a systematic review

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## Plain English summary

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## Plain English summary

Phantom limb pain (PLP) is pain perceived by amputees in the missing part of their limb. Electrical stimulation of the brain or spine can be used to treat long-term PLP when other treatments have not worked, but there is limited knowledge on how effective it is. Brain stimulation can be non-invasive (electrodes placed on the scalp) or invasive (electrodes inserted into the brain during an operation). Stimulation of the spine is an invasive therapy. This project aimed to find out which types of brain and spine stimulation seem likely to be best for treating PLP.

We identified and studied all the key data from all relevant research publications and also asked NHS clinicians for their views. Results from studies of non-invasive brain stimulation treatments showed that they may improve PLP for a short time after treatment, but there were no long-term data. Results from studies of invasive stimulation treatments suggested that, although many patients benefited from short-term pain reduction, far fewer had long-term benefit.

Other types of study showed that around one-quarter of patients with chronic PLP found their pain to be either moderately or severely limiting or bothersome. The survey of clinicians suggested that spinal stimulation is often used for PLP in the NHS, with most of the clinicians considering it to be at least sometimes effective. There were fewer positive views on how well brain stimulation worked.

Based on all these findings, specific recommendations were made for conducting future research studies that should produce much more reliable results.

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