

## Changes in spasticity, widespread pressure pain sensitivity, and baropodometry after the application of dry needling in patients who have had a stroke: a randomized controlled trial.

[Salom-Moreno J<sup>1</sup>](#), [Sánchez-Mila Z<sup>2</sup>](#), [Ortega-Santiago R<sup>1</sup>](#), [Palacios-Ceña M<sup>3</sup>](#), [Truyol-Domínguez S<sup>4</sup>](#), [Fernández-de-las-Peñas C<sup>5</sup>](#).

### Author information

- <sup>1</sup>Professor, Department of Physical Therapy, Occupational Therapy, Physical Medicine and Rehabilitation of Universidad Rey Juan Carlos, Alcorcón, Spain; Professor, Cátedra de Investigación y Docencia en Fisioterapia: Terapia Manual y Punción Seca, Universidad Rey Juan Carlos, Alcorcón, Madrid, Spain.
- <sup>2</sup>Clinician, Centro de Fisioterapia CRENE, Madrid, Spain.
- <sup>3</sup>Clinical Researcher, Department of Physical Therapy, Occupational Therapy, Physical Medicine and Rehabilitation of Universidad Rey Juan Carlos, Alcorcón, Spain.
- <sup>4</sup>Professor, Department of Physical Therapy, Universidad Camilo José Cela, Madrid, Spain.
- <sup>5</sup>Professor, Department of Physical Therapy, Occupational Therapy, Physical Medicine and Rehabilitation of Universidad Rey Juan Carlos, Alcorcón, Spain; Professor, Cátedra de Investigación y Docencia en Fisioterapia: Terapia Manual y Punción Seca, Universidad Rey Juan Carlos, Alcorcón, Madrid, Spain. Electronic address: cesar.fernandez@urjc.es.

### Abstract

#### OBJECTIVE:

The purpose of this study was to determine the effects of deep dry needling (DDN) on spasticity, pressure sensitivity, and plantar pressure in patients who have had stroke.

#### METHODS:

A randomized controlled trial was conducted. Thirty-four patients who previously had a stroke were randomly assigned either an experimental group that received a single session of DDN over the gastrocnemius and tibialis anterior muscles on the spastic leg or a control group that received no intervention. Spasticity (evaluated with the Ashworth Scale); pressure pain thresholds over the deltoid muscle, second metacarpal, and tibialis anterior muscle; and plantar pressure (baropodometry) were collected by a blinded assessor before and 10 minutes after intervention.

#### RESULTS:

A greater number of individuals receiving DDN exhibited decreased spasticity after the intervention ( $P < .001$ ). The analysis of covariance showed that pressure pain thresholds increased bilaterally in patients receiving DDN compared with those who did not receive the intervention ( $P < .001$ ). The analysis of covariance also found that patients receiving DDN experienced bilateral increases of support surface in the forefoot, unilateral increase of the support surface in the rear foot of the treated (affected) side, and bilateral decreases in mean pressure (all,  $P < .02$ ) as compared with those who did not receive DDN.

#### CONCLUSIONS:

Our results suggest that a single session of DDN decreases spasticity and widespread pressure sensitivity in individuals with poststroke spasticity. Deep dry needling also induced changes in plantar pressure by increasing the support surface and decreasing the mean pressure.

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#### KEYWORDS:

Acupuncture; Muscle Spasticity; Pain Threshold; Stroke

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