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## High-resolution whole-body mapping of warm and cold thermosensitivity in people with multiple sclerosis

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**Introduction:** Multiple sclerosis (MS) is a chronic autoimmune neurological disease affecting >2.5M people worldwide. Sensory symptoms (e.g. altered thermal sensations) are common in MS. However, data is lacking on whether and to what extent warm and cold sensitivity is impaired across the body in MS. The aim of this study was to map with high resolution warm and cold sensitivity across the body of people with MS and compare it to a control group.

**Methods:** Fourteen people with MS (48±15y; BSA 1.94± 0.25m<sup>2</sup>) and 9 age-matched healthy controls (CTR; 47±14y; BSA1.84±0.21m<sup>2</sup>) underwent a quantitative sensory test in a thermoneutral environment (24°C, 50%RH) where they rated on a numerical rating scale (10=very warm, 0=neutral, -10 very cold) local thermal sensations arising from the application (2s) of a warm (38°C) and a cold (26°C) thermal probe (1.32cm<sup>2</sup>) to 115 bilateral skin sites across the front and back of the body. We analysed the independent effect of MS and body region on thermosensitivity and on its inter-individual variability (standard deviation).

**Results:** Thermosensitivity to both warmth and cold varied significantly across body regions ( $p < 0.01$ ) with no differences between MS and CTR (warm-front:  $p=0.483$ , back:  $p=0.112$ ; cold-front:  $p=0.552$ , back:  $p=0.517$ ). Inter-individual variability was greater in MS than in CTR (warm-front MS=2.75±0.53, CTR=2.18±0.64,  $p < 0.01$ ; back MS=2.85±0.55, CTR=2.06±0.65,  $p < 0.01$ ) (Coldfront MS=2.97±0.61, CTR= 2.08±0.62,  $p < 0.01$ ; back MS= 2.96±1.12, CTR= 2.16±0.70;  $p < 0.01$ ).

**Conclusions:** We have developed the most detailed thermosensitivity maps in MS to date, and demonstrated that regional patterns of thermosensitivity are largely preserved in the presence of MS. Yet, we show that people with MS present greater individual variability in warm and cold sensitivity than CTR. Disability levels induced by MS likely contribute to a greater variability in regional patterns of thermosensitivity. This should be considered when assessing individual vulnerability to thermal stress in MS.

**Disclosure:** Nothing to disclose