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Regional differences in the cutaneous thermal sensitivity to wetness across the torso

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Humans are not provided with humidity receptors and the ability to perceive skin wetness seems to rely on the sensory inputs arising from thermal cold afferents. Given the regional variability in thermal sensitivity across the torso, we examined whether regional differences in the sensitivity to wetness exist. Sixteen male participants were tested at rest. Twelve regions of the torso were stimulated with a dry or wet thermal probe (25cm²) set at a temperature of 15°C below the local skin temperature, which was measured pre and post stimulation. Thermal and wetness sensations were recorded using likert scales. As a result of the same relative cold stimuli, the skin cooling response varied by location and regional differences were found in thermal and wetness sensations. The lateral chest showed the greater drop in local skin temperature. Colder sensations were reported on the lateral abdomen and lower back. Greater wetness was reported on the lower back. No differences were perceived between wet and dry stimuli, the dry ones perceived as wet as the wet ones. The regional variability in wetness sensitivity showed a pattern similar to the thermal sensitivity to cold. We conclude that, as thermal cold afferents seem to have a critical role in driving the perception of wetness, based on the regional variability in thermal sensitivity, humans present regional differences in the cutaneous sensitivity to wetness across the torso.