

How temporal summation of second pain develops along trials, trains and across concomitant tactile stimulations

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Temporal summation of second pain (TSSP) is a progressive increase of pain sensation during constant thermal stimulation intensity. Triggered by low-frequency repetitive stimulation of unmyelinated C-nociceptors, such phenomenon has clinical relevance as it reflects central sensitization mechanisms which appear to be abnormal in chronic pain conditions. Lately, 'affective touch' (AT) has been shown to have pain relieving properties during TSSP but how TSSP develops over time, especially during concomitant AT is unknown. In the present secondary data analysis, thirty-six healthy participants went through three conditions where a TSSP protocol was applied in concomitance with no touch (NoT), discriminative touch (DT) and AT. TSSP was induced by delivering trains of ascending and descending repetitive heat stimulation through a thermode placed on the dorsal side of the participant's right wrist with a stimulation frequency of 0.33 Hz. In total, ten trains of six stimuli each were delivered. Regardless of the condition, in each train, on average, TSSP was evident in the first 4 stimuli. While the final train reached a similar pain level across conditions, the tactile stimulations helped dropping the initial trains, in particular AT. An analysis of 'responders' showed that while both tactile stimulations may lead to pain alleviation in some individuals, AT had a significant greater impact on pain. Finally, after the 6th train sensitization mechanisms may take place. The present study can help similar future studies to better design their experimental TSSP protocols and therefore achieve a better understanding of the effects of their interventions.

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No

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