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Professional musicians are frequently exposed to pain due to their highly intensive training and have a high prevalence of musculoskeletal disorders. Previous studies have found that such high-exposure groups may exhibit altered pain sensitivity similar to chronic pain patients. Additionally, psychological factors such as performance anxiety and depression play a significant role in the development and persistence of these disorders.

In this study we employed contact heat evoked potentials (CHEPs) as a measure of pain processing in professional musicians. Previous research has shown that a larger P2 positivity of evoked potentials (EPs) in the right prefrontal hemisphere indicates negative emotional valence. For that reason, we analyzed the P2 positivity of CHEPs in musicians.

We found significantly larger P2 positivity of single trial EPs in musicians compared to the control group in the right prefrontal cortex (PFC), especially in response to the stimuli applied to the hands. Additionally, subjective pain ratings partially aligned with EEG results; musicians showed marginally higher but not statistically significant results.

The enhanced P2 positivity of the CHEPs likely reflect neuroplastic adaptations due to intense musical training. Subjective pain ratings of participants aligned with the enhanced P2 positivity, showing that musicians do indeed have an augmented pain perception due to neuroplasticity-induced alterations.