Differential effects of painful and non-painful stimulation on tactile processing in fibromyalgia syndrome and subjects with masochistic behaviour.

In healthy subjects repeated tactile stimulation in a conditioning test stimulation paradigm yields attenuation of primary (S1) and secondary (S2) somatosensory cortical activation, whereas a preceding painful stimulus results in facilitation. Since previous data suggest that cognitive processes might affect somatosensory processing in S1, the present study aims at investigating to what extent cortical reactivity is altered by the subjective estimation of pain. To this end, the effect of painful and tactile stimulation on processing of subsequently applied tactile stimuli was investigated in patients with fibromyalgia syndrome (FMS) and in subjects with masochistic behaviour (MB) by means of a 122-channel whole-head magnetoencephalography (MEG) system. Ten patients fulfilling the criteria for the diagnosis of FMS, 10 subjects with MB and 20 control subjects matched with respect to age, gender and handedness participated in the present study. Tactile or brief painful cutaneous laser stimuli were applied as conditioning stimulus (CS) followed by a tactile test stimulus (TS) 500 ms later. While in FMS patients significant attenuation following conditioning tactile stimulation was evident, no facilitation following painful stimulation was found. By contrast, in subjects with MB no attenuation but significant facilitation occurred.
Attenuation as well as facilitation applied to cortical responses occurring at about 70 ms but not to early S1 or S2 responses. Additionally, in FMS patients the amount of attenuation was inversely correlated with catastrophizing tendency. The present results imply altered cortical reactivity of the primary somatosensory cortex in FMS patients and MB possibly reflecting differences of individual pain experience.