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BACKGROUND

Scientific evidence indicates a link between motor and social cognition. The observation of an action elicits a motor cortex activity that is similar when the person executes the same action; this complex mechanism is named Motor Resonance (MR). The direct and non-inferential character of this process seems to represent a significant contribution to understanding other's actions in humans.

Generally, it is known that the motor cortical activation is very important for improving chronic pain conditions, like fibromyalgia (FM).

AIMS

The main aims of this study were: the exploration of the MR mechanisms in FM patients compared to healthy subjects and the evaluation of the body representation in both its interoceptive and exteroceptive aspects comparing the two groups.

MATERIALS AND METHODS

22 FM patients (age= 50.45 ± 10.67 years) and 20 controls (age= 46.30 ± 11.48 years) were instructed to observe videos in which they could see hand grasping a flat object or a sharp-tip object. In a defined experimental session of *execution*, subjects were asked to click a button as soon as the hand touched the object to be grasped. In a second experimental session (*observation*), subjects were only required to observe the grasping videos.

RESULTS

The paired-sample t-test performed on reaction times (RTs) showed that for both groups RTs were delayed when the shown movement was not suitable to grasp the object (i.e., the sharp-tip object), revealing the presence of MR mechanisms (fig.1, fig.2).

The MANOVA analysis was performed for fNIRS data collected during observation and execution tasks. Results showed a significant group x condition interaction in different fNIRS channels (p=.029) (fig.3). Specifically, there was a greater activation in FM patients during the observation session compared to controls. In addition, there were significant differences between groups for the interoceptive awareness of the body.

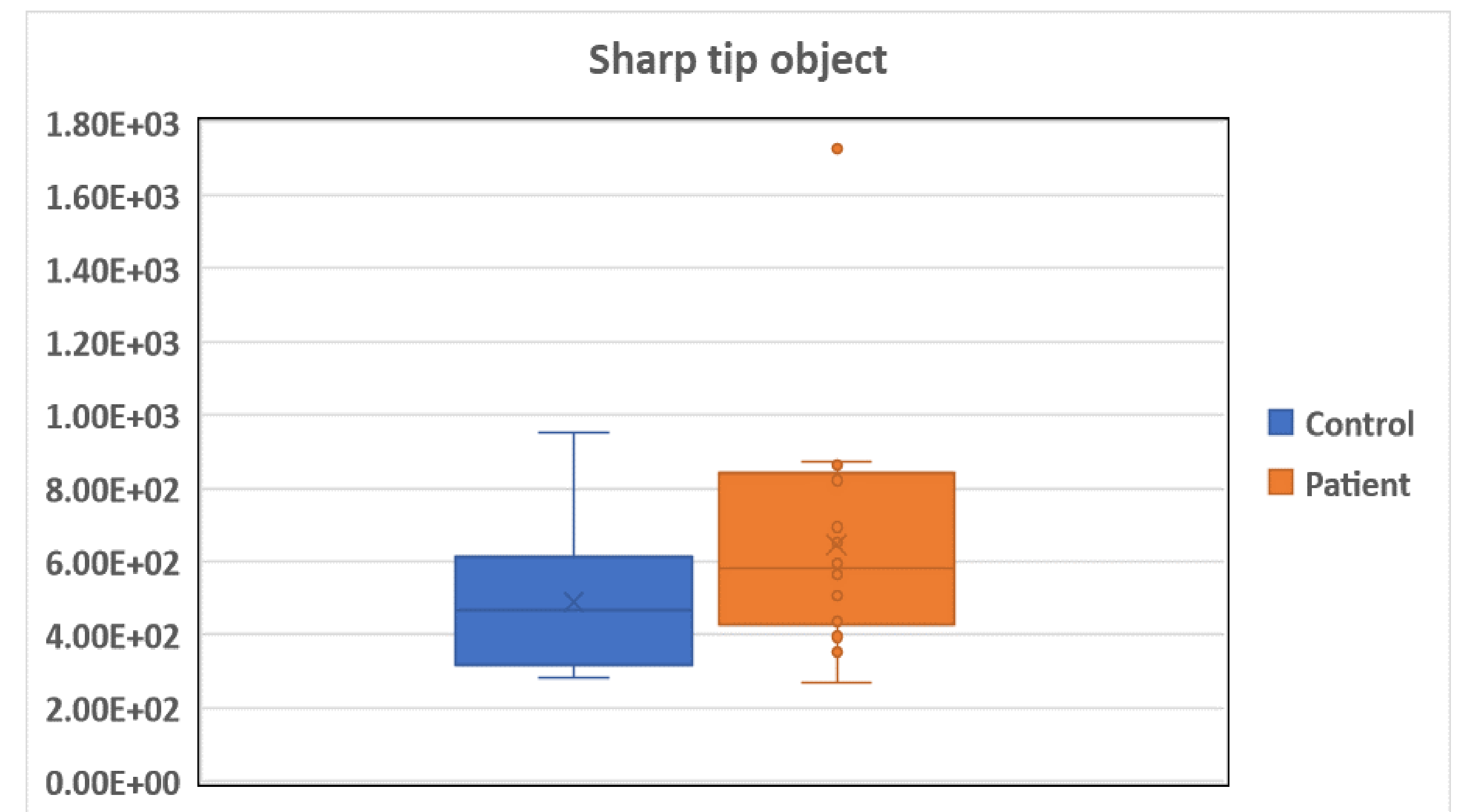


Fig. 2 Graphical representation of time for clicking during the observation of the sharp tip object to be grasped in each group.

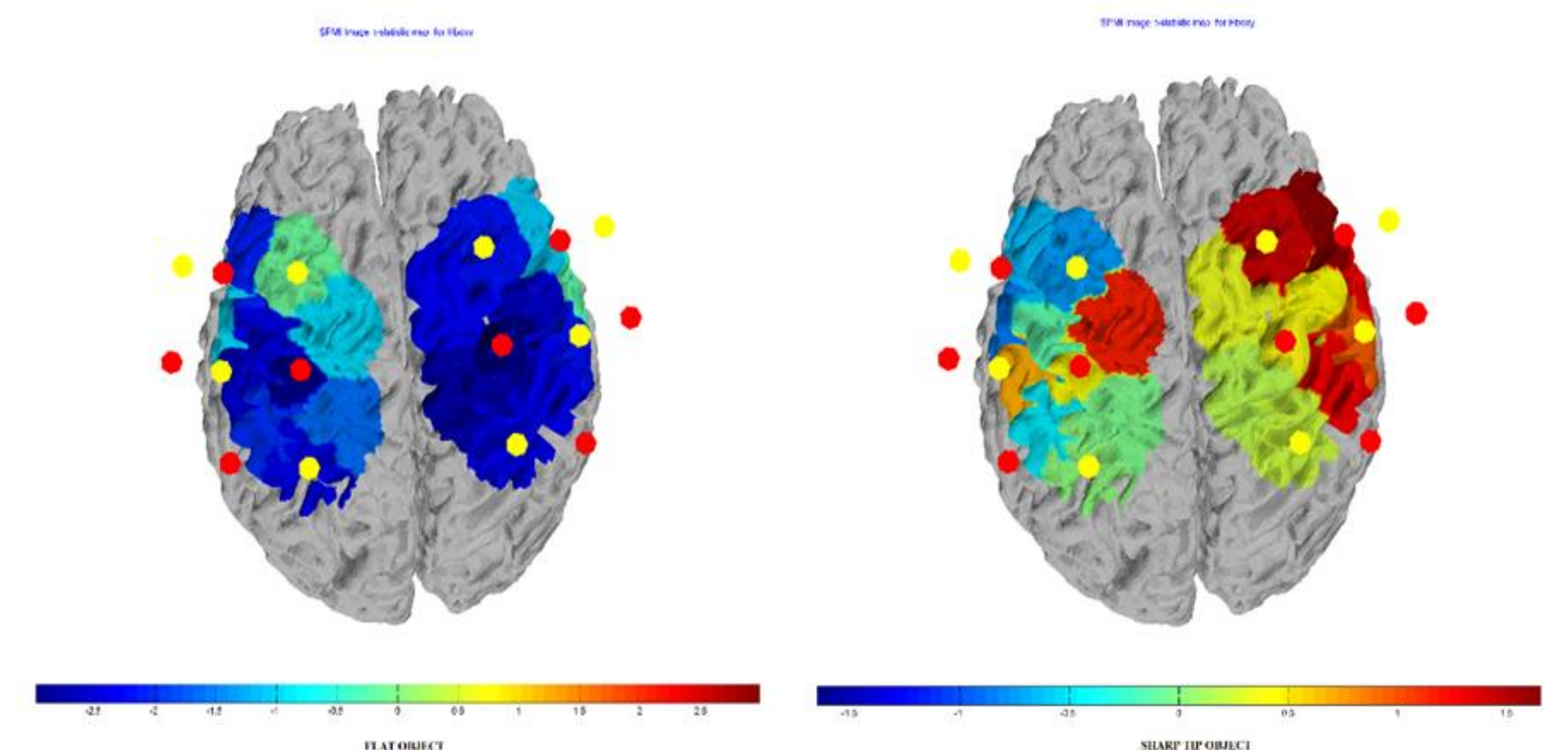


Fig. 3 FM and control groups activation maps. The higher difference between control subjects and patients' activations is represented with the red colour.

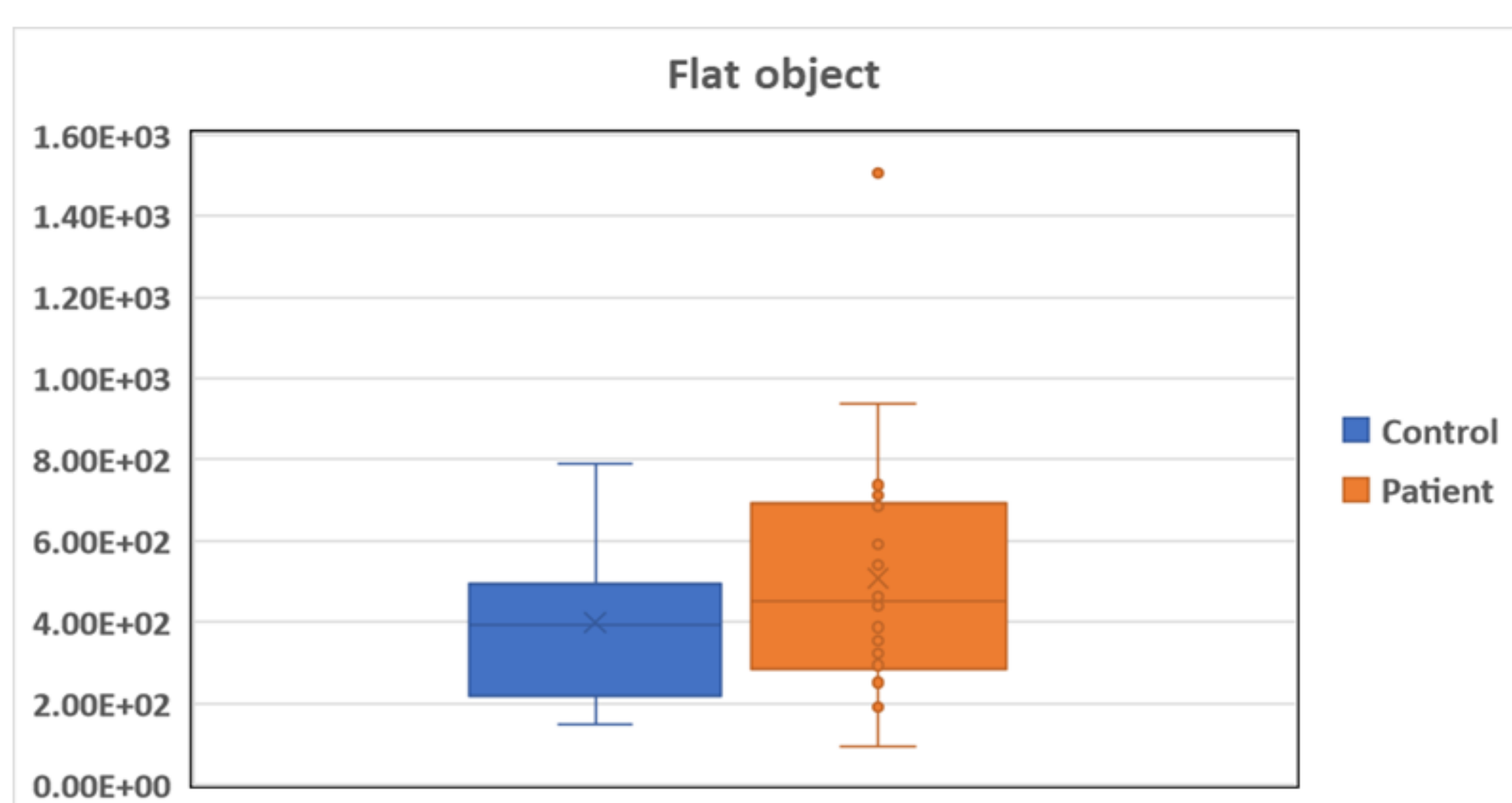


Fig. 1

Graphical representation of time for clicking during the observation of the flat object to be grasped in each group.

DISCUSSION

The results of the behavioural task indicated that both groups show the presence of MR. Moreover, the analysis of fNIRS data suggests that the cortical activation determined by action observation is greater in FM patients than in controls. The increase of MR mechanism in FM patients could represent a compensatory phenomenon to pain-related motor impairment.

FM patients show a lesser trust and a greater worrying for the body compared to healthy subjects. The promotion of greater body awareness is starting to represent a promising method of treatment for patients with fibromyalgia.

Finally, motor rehabilitation protocols based on action observation could be effective in improving chronic pain in FM patients.