**the predictive effect of physical activity on conditioned pain modulation in healthy individuals: a cross-sectional study**

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**Background and Aims**

Conditioned pain modulation (CPM) is an experimental paradigm used to assess the endogenous pain-inhibits-pain mechanism. Previous research has demonstrated that several personal factors can influence the CPM efficacy and thus have to be taken into account during assessment. One of the factors which have been studied less extensive in relation to CPM is physical activity. Therefore, the present study examined whether physical activity levels influence the efficacy of CPM.

**Methods**

Physical activity levels of 105 healthy subjects were assessed by self-report using the International Physical Activity Questionnaire and accelerometry monitoring during seven consecutive days. CPM was examined by means of a heterotopic noxious conditioning stimulation protocol during which the effect of immersing the non-dominant hand in hot water of ±45.5°C (i.e. conditioning stimulus) on pressure pain thresholds (i.e. test stimulus) was evaluated. Hierarchical regression analysis was performed to determine the predictive effect of physical activity on CPM, while controlling for known confounding factors of experimental pain testing.

**Results**

In 86.7% of the participants, the HNCS protocol was effective in eliciting an inhibitory CPM response. Partaking in physical activities of moderate levels more frequently or performing at least 12,500 steps/day was predictive for more efficacious CPM.

**Conclusions**

The findings of this study add to the limited evidence on the predictive influence of physical activity on CPM. It urges to take physical activity into consideration as a confounding factor when examining CPM. Additionally, performing activities of moderate intensity and walking are achievable for chronic pain patients in whom dysfunctional CPM has been previously established.