

study investigated whether an analgesic plasma concentration could be determined for oxycodone and which factors affect it.

Methods: 1000 women undergoing breast cancer surgery were recruited to the study. Demographic data were collected and their cold and heat pain sensitivity and anxiety scores were measured preoperatively. After surgery, rest and motion pain intensities were measured. Intravenous oxycodone was administered until the patients reported satisfactory pain relief (NRS <4/10). At this point, plasma concentrations of oxycodone and its metabolites were determined. A second plasma sample for oxycodone determination was taken when the patient requested a new dose of oxycodone. Genomic DNA was extracted from whole blood samples and the patients were genotyped for *CYP2D6*, *CYP3A4* and *CYP3A5* variants.

Results: The two oxycodone concentrations showed a strong correlation ($r=0.84$). The pain intensity measured during motion before oxycodone dosing correlated significantly with the plasma oxycodone concentration (geometric mean 35.3 ng/ml and CV% 66.4) required to achieve satisfactory analgesia ($r=0.38$, $p=1.5 \times 10^{-33}$). The most important factors associating with postoperative pain intensity were type of surgery (breast conserving or mastectomy with or without axillary clearance) and the age of the patient. Older patients reported lower pain scores and required smaller oxycodone concentrations for satisfactory analgesia. *CYP2D6*, *CYP3A5* or *CYP3A4* genotypes did not significantly affect the oxycodone concentrations, but *CYP2D6* genotype significantly affected the formation of the metabolites oxymorphone and noroxymorphone. *CYP3A4* and *CYP3A5* genotypes did not affect the metabolite formation.

Conclusions: Our results indicate that the more pain the patient experiences postoperatively the greater her minimum plasma oxycodone concentration must be to achieve satisfactory analgesia. Type of surgery and age significantly affect postoperative pain intensity.

<http://dx.doi.org/10.1016/j.sjpain.2016.05.009>

Sport participation and physical activity level in relation to musculoskeletal pain in a population-based sample of adolescents: The Young-HUNT Study



M.H. Guddal^{a,b,*}, M.C. Småstuen^{a,c}, S. Stensland^{a,d}, M.B. Johnsen^{a,b}, J.A. Zwart^{a,b}, K. Storheim^{a,b}

^a Communication and Research Unit for Musculoskeletal Disorders, Oslo University Hospital, Oslo, Norway

^b Faculty of Medicine, University of Oslo, Norway

^c Faculty of Health Sciences, Oslo and Akershus University College of Applied Sciences, Oslo, Norway

^d Norwegian Centre for Violence and Traumatic Stress Studies, Oslo, Norway

E-mail address: m.h.guddal@studmed.uio.no (M.H. Guddal).

Aims: Studies have shown conflicting results regarding associations between physical activity (PA) and musculoskeletal pain among adolescents, and few have evaluated the impact of sport participation. Therefore, the aims of this study were to examine the associations between sport participation and persistent weekly pain by body region in a population-based sample of adolescents.

Methods: In this cross-sectional study, data from the adolescent part of the Nord-Trøndelag Health Study (Young-HUNT3) were used. Participants were asked how often during the last 3 months

they had experienced pain in the neck-and-shoulders (NSP), low back (LBP) or lower extremities (LEP). The impact of sport participation and PA level on pain was evaluated using logistic regression analyses, stratified by gender, and adjusted for age, socioeconomic status and psychological distress.

Results: In total, 3765 boys and 3831 girls were included, mean age 15.8 years (SD 1.7). NSP was most prevalent (17%). Adolescents who participated in endurance sports had lower odds of NSP and LBP compared to non-participants. Participation in technical sports was associated with increased odds of LBP, and participation in team sports with increased odds of LEP, vs. no participation in the respective sports. Participation in strength sports and risk sports, vs. no participation, was related to higher levels of pain in all regions. Compared to a low PA level, a moderate PA level reduced the odds of NSP and LBP, whereas a high PA level increased the odds of LEP.

Conclusion: This study identified sports potentially protective, as well as sports associated with higher odds of NSP, LBP and LEP in a large population-based sample, and has increased the understanding of participation in sports as potential determinants of musculoskeletal pain among adolescents. Our findings highlight that types of sport adolescents participate in should be considered by healthcare professionals when evaluating their musculoskeletal pain.

<http://dx.doi.org/10.1016/j.sjpain.2016.05.010>

"Tears are also included" – women's experience of treatment for painful endometriosis at a pain clinic



A. Hållstam^{a,*}, B.M. Stålnacke^b, C. Svensén^a, M. Löfgren^c

^a Department of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, and Unit of Anaesthesiology and Intensive Care, Södersjukhuset, SE-118 83 Stockholm, Sweden

^b Department of Community Medicine and Rehabilitation, Rehabilitation Medicine, Umeå University, SE-901 85 Umeå, Sweden

^c Department of Clinical Sciences, Danderyd Hospital, Karolinska Institutet, and Department of Rehabilitation Medicine, Danderyd Hospital AB, SE-182 88 Stockholm, Sweden
E-mail address: andrea.hallstam@ki.se (A. Hållstam).

Aims: To explore how women perceive and are affected by treatment for painful endometriosis.

Method: Qualitative methodology with emergent design was used. Sixteen semi-structured interviews (including 3 follow-ups) with 13 women (age 20–47) treated at a pain clinic, were analysed with Grounded Theory.

Results: A preliminary model describes how women experience treatment for painful endometriosis and its consequences in one core category and three categories. The core category; Surviving painful endometriosis, described the women's promoting strategies like Knowledge, Adaption and Planning, and inhibiting reactions as Anxiety and Resignation. The three interacting categories; Woman with painful endometriosis, included experiences of "The self" and "The body", "The environment/significant others" described the environments' support. Missed opportunities were described as a lack of participation in important life areas; "Social life", "Career" and "Descendants". "New possibilities" were experienced when pain disappeared or could be controlled. Dependent on health care included the experiences of "Treatments" from help-