

INTRODUCTION

- Delayed onset muscle soreness (DOMS) is commonly used as an experimental pain model, as it is purported to mimic clinical features of musculoskeletal pain.
- Validation studies directly comparing participants with DOMS to the modelled clinical population are rare, though necessary to ensure that DOMS adequately replicates features of the condition.

AIM

This study aimed to validate DOMS in the trunk extensor muscles as a model of mild recurrent low back pain (RLBP).

METHODS

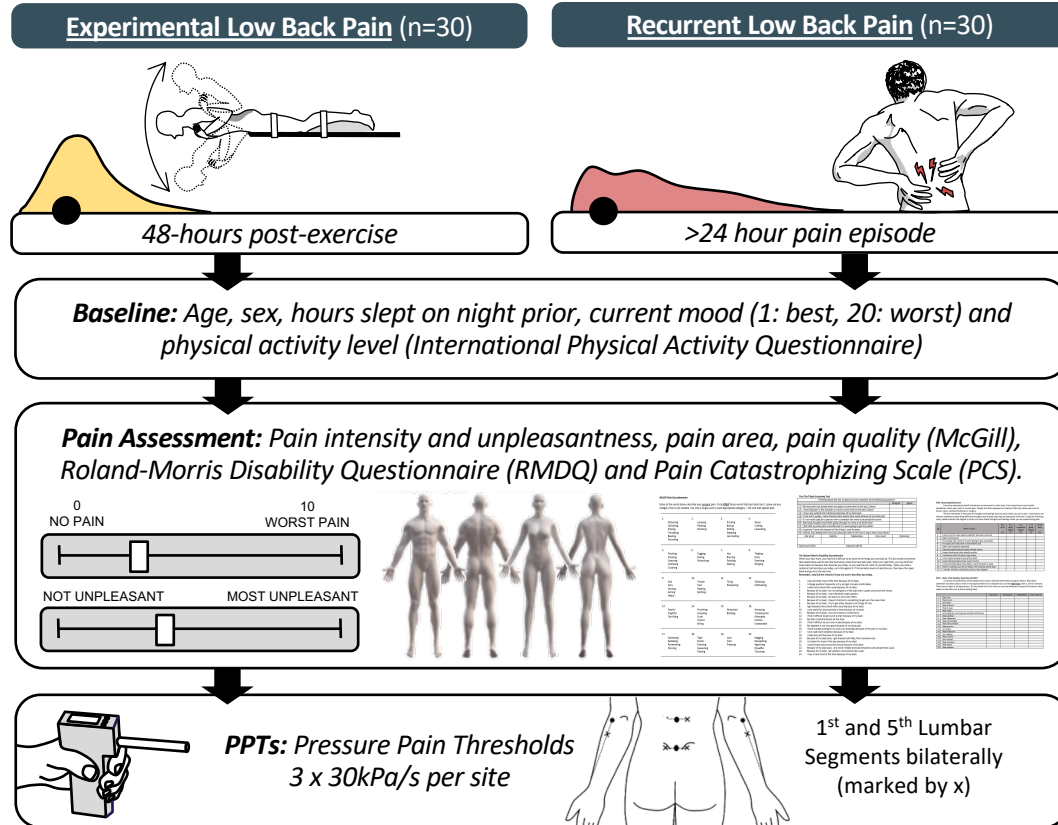


Figure 1: Methods used across painful sessions for experimental [1] and recurrent low back pain [2] studies

RESULTS

- Data from 30 healthy participants (24.5±4.5 years, 14 Male) and 30 participants with a current episode of RLBP (27.3±5.4 years, 16 Male), were compared.
- Participants with RLBP were slightly older, more physically active and slept for longer on the night prior to the testing session.
- Neither current mood nor BMI differed between groups.

Pain intensity, size of pain area and lumbar PPT did not differ between participants with RLBP and DOMS.

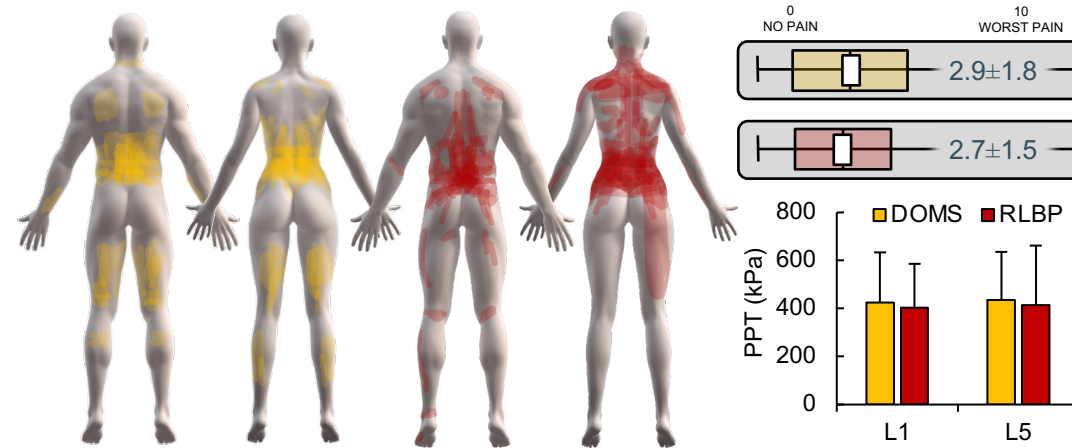


Figure 2: Overlays of participant pain area drawings on provocative movement for participants with DOMS (yellow) and RLBP (red). Total area did not differ between groups (DOMS: 9503±6588 pixels, RLBP: 12413±10426 pixels, $T_{50,0}=-1.3$, $P>0.2$, $d<0.4$)

Figure 3: Mean ±SD pain intensity (top, cm, $T_{58}=0.7$, $P>0.5$, $d<0.2$) and lumbar PPTs (bottom, $T_{58}<0.5$, $P>0.6$, $d<0.3$).

Participants with RLBP reported higher pain unpleasantness and greater RMDQ and PCS scores than those with DOMS.

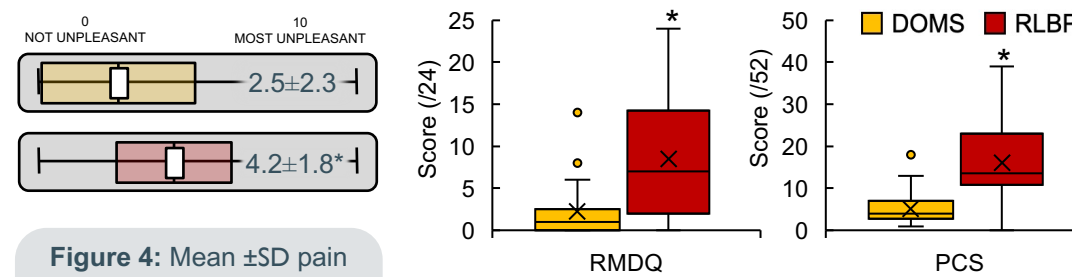


Figure 4: Mean ±SD pain unpleasantness ratings (cm, $T_{58}=-3.2$, $P=0.002$, $d=0.8$)

Figure 5: Box plots of RMDQ and PCS scores. *Denotes higher score in RLBP group ($P<0.001$)

RESULTS (CONT.)

Participants with RLBP chose more intense quality descriptors, though both groups chose words from the “dull” and “annoying” categories most frequently

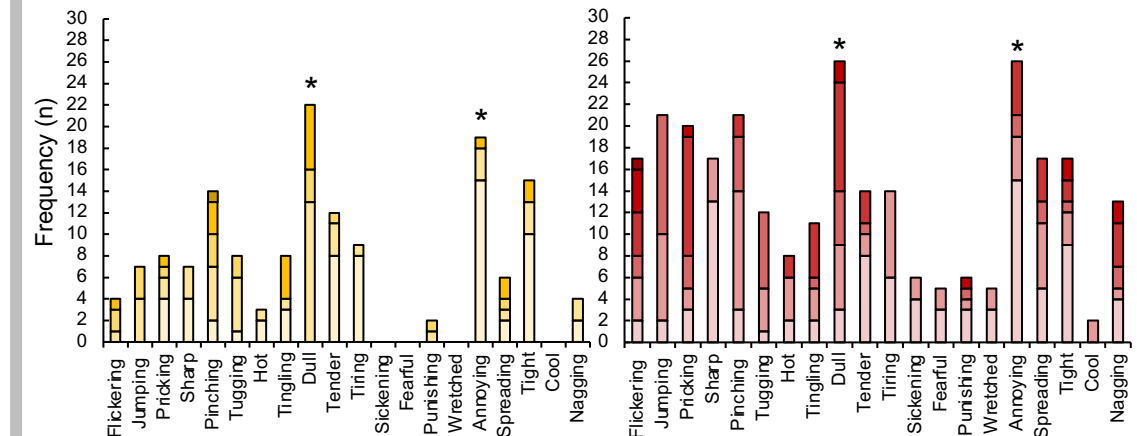


Figure 6: Frequency of words chosen from the 12 categories of the 72-word table from the McGill Pain Questionnaire. Darkening colours indicate increasing intensity of words (DOMS: 7(4-16) < RLBP: 19.5(12-30), $P<0.001$), *denotes most commonly selected categories.

CONCLUSIONS

DOMS evoked similar pain intensity, pain area, pressure pain sensitivity, and pain quality to that reported by RLBP patients, suggesting that it is an appropriate model of the sensory features of RLBP. However, DOMS could not sufficiently mimic disability levels nor affective features even in comparison to this mildly affected RLBP population.

REFERENCES

- [1] McPhee, M., & Graven-Nielsen, T. (2019). Alterations in temporal summation of pain and conditioned pain modulation across an episode of experimental exercise-induced low back pain. *The Journal of Pain*, 20(3), 264-276.
- [2] McPhee, M. E., & Graven-Nielsen, T. (2019). Recurrent low back pain patients demonstrate facilitated pronociceptive mechanisms when in pain, and impaired antinociceptive mechanisms with and without pain. *Pain*, 160(12), 2866-2876.