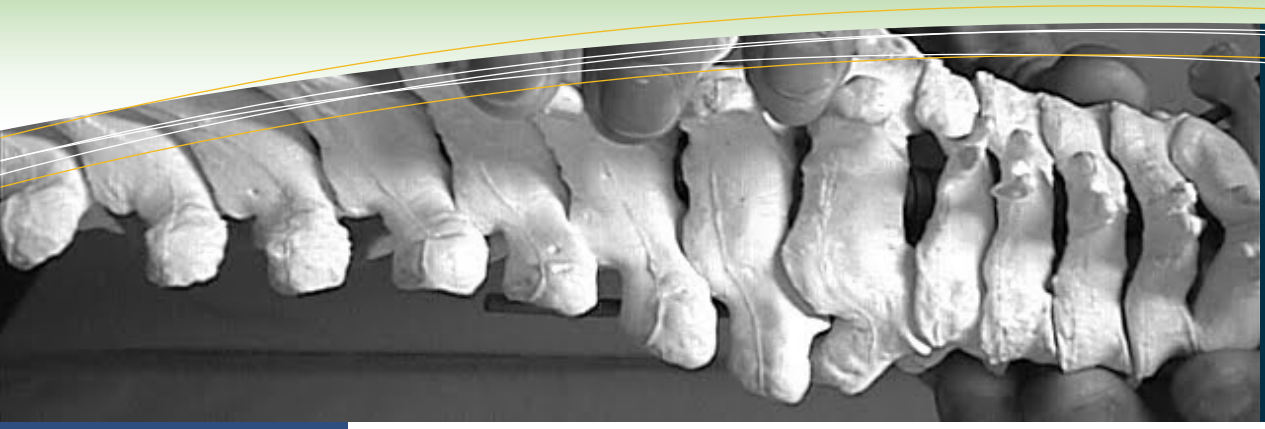
Manual Therapy Research Review



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This issue:

Welcome

Welcome to the 29th Edition of the MT Research Review and the final one for 2022. In this issue I have selected papers that are mostly open access so that you can download the full paper to read at your leisure. More and more journals are providing some or all of the papers as open access which great when you don't have access to the academic libraries.

In this review we have a paper by Magni et al (2022) on predictions of outcomes to treatment of the OA hand, a review paper by Fourré et al (2022) on leg pain neuropathic vs nociceptive, a study Foldager et al (2022) on the relationship between power and function using accelerometers in people with OA of the hip, and finally a paper by Hage, et al (2022) on the development of a card game to improve clinical reasoning.

Wishing you all a very Merry Xmas and Prosperous New Year

Enjoy! Duncan Reid

Paper One

Magni, N., Rice, D., & McNair, P. (2022). Development of a prediction model to determine responders to conservative treatment in people with symptomatic hand osteoarthritis: A secondary analysis of a single-centre, randomised feasibility trial. Musculoskeletal Science and Practice, 62, 102659. https://doi.org/10.1016/j.msksp.2022.102659

Abstract

Background: Conservative treatments are beneficial for people with hand osteoarthritis (OA).
Objective: It was the purpose of this study to develop and internally validate both a basic model and a more complex model that could predict responders to conservative treatments in people with hand OA.
Design: This was a secondary analysis of a single-centre, randomised feasibility study.
Methods: Fifty-nine participants (34 responders) with hand osteoarthritis were recruited from the general population. Participants were randomised to receive either advice alone, or advice in combination with blood flow restriction training (BFRT), or traditional high intensity training (HIT). Participants underwent supervised hand exercises three times per week for six weeks. The OMERACT-OARSI criteria were utilised to determine responders vs non responders to treatment at the end of six weeks. A basic logistic regression model (treatment type, expectations, adherence) and a more complex logistic regression model (basic model variables plus pain catastrophising and neuropathic pain features) were created. Discrimination ability, and calibration were assessed. Internal model validation through bootstrapping (200 repetitions) was utilised to calculate the prediction model optimism.

Results: The results showed that the basic model presented with acceptable discrimination (optimism corrected statistic: 0.72, 95% CI 0.71–0.73) and calibration (slope = 1.41; intercept = 0.68). The more complex model had better discrimination but poorer calibration.
Conclusion: A prediction tool was created to provide an individualised estimate of treatment response in people with hand OA. Future studies will need to validate this model in other groups of patients. Trial registration: https://www.anzctr.org.au/- ACTRN12617001270303

Commentary
Whilst this paper was centred around people presenting with OA of the hand, I think there are some lessons for those with OA in general. The authors found that the combination of resistance training and advice provides a larger probability of treatment response, compared to advice only. This fits in with the concept that treatment that matches patients' expectations is often the most effective. Strengthening exercises in other OA joint areas like the knee have shown good treatment results. The other interesting finding was the indication that no more than two exercises also reflected in a more positive outcome. I think we are all guilty of giving patient too many things to do, so this study also supports the concept 'less is more'. The authors also made the comment that this research was more of a decision aid rather than a prediction tool until more work is done in the area.

Paper Two

Fourré, A., Monnier, F., Ris, L., Telliez, F., Michielsen, J., Roussel, N., & Hage, R. (2022). Low-back related leg pain: is the nerve guilty? How to differentiate the underlying pain mechanism. Journal of Manual & Manipulative Therapy, 1-7.
https://doi.org/10.1080/10669817.2022.2092266

Abstract
Low back pain (LBP) that radiates to the leg is not always related to a lesion or a disease of the nervous system (neuropathic pain): it might be nociceptive (referred) pain. Unfortunately, patients with low-back related leg pain are often given a variety of diagnoses (e.g. 'sciatica'; 'radicular pain'; psedoradicular pain"). This terminology causes confusion and challenges clinical reasoning. It is essential for clinicians to understand and recognise predominant pain mechanisms. This paper describes pain mechanisms related to low back-related leg pain and helps differentiate these mechanisms in practice using clinical based scenarios. We illustrate this by using two clinical scenarios including patients with the same symptoms in terms of pain localisation (i.e. low-back related leg pain) but with different underlying pain mechanisms (i.e. nociceptive versus neuropathic pain).

Commentary
Once of the constant challenges we have as clinicians is the ability to differentiate nociceptively driven pain from neuropathic pain when patients present with radiating arm or leg pain. This paper provides a very nice summary of the key features that is easy to understand. I particularly liked the way they differentiated this based on both subjective and objective characteristics. Well worth the read.

Paper Three

Foldager, F., Jørgensen, P. B., Tønning, L. U., Petersen, E. T., Jakobsen, S. S., Vainorius, D., ... & Mechlenburg, I. (2022). The relationship between muscle power, functional performance, accelerometer-based measurement of physical activity and patient-reported outcomes in patients with hip osteoarthritis: A cross-sectional study. Musculoskeletal Science and Practice, 62, 102678.
https://doi.org/10.1016/j.msksp.2022.102678

Abstract
Background: Patients with unilateral hip osteoarthritis appear to have between-leg differences in leg extension power (LEP). The Nottingham Leg Extensor Power Rig provides reliable and valid results but requires sensitive equipment. It would be relevant to identify measures closely associated with this test.
Objective: (i) To investigate if LEP is lower in the affected leg compared to the non-affected leg. Furthermore, to investigate the associations between LEP and the measures: (ii) Functional performance, (iii) accelerometer-based measurement of physical activity and (iv) patient-reported outcome measures (PROM). Design: Cross-sectional study including 60 patients (30 men, 30 women) with hip osteoarthritis scheduled for hip replacement.
Method: The counter movement jump and 10-m sprint tests were used to determine functional performance, accelerometer-sensors were used to determine physical activity and the Copenhagen Hip and Groin Outcome Score (HAGOS) was used to determine PROM.

Results: (i) LEP in the affected leg corresponded to 79% [95% CI 74%; 85%] of the non-affected leg, (ii) LEP was positively associated with functional performance tests (β 0.63 to 0.78, $p < 0.05$), (iii) positively associated although non-significantly with physical activity (β 0.16 to 0.23, $p > 0.05$) and (iv) positively associated with the six HAGOS subscales (β 0.25 to 0.54, $p < 0.05$).
Conclusion: Functional performance tests may be used as feasible, inexpensive and fast ways to assess LEP in clinical settings. These results may suggest that interventions aimed at improving LEP can improve functional performance and PROM, but not physical activity. Future research is needed to confirm the causality of these cross-sectional findings. The clinical trial registration numbers: Danish Data Protection Agency (1-16-02-640-14), ClinicalTrials.gov (NTC02301182) and approved by the Danish Biomedical Research Ethics Committee (1-10-72- 343-14) prior to data collection.

Commentary

There was a time not that long ago when the thought of using accelerometers in clinical practice was both expensive and considered the domain of research laboratories. The cost of these devices has come down considerably and can now be easily used in clinical practice. We recently published a study on altering running biomechanics using very cheap but effective accelerometers. I think these types of devices will be very helpful to guide the impact of our rehabilitation .

References

Sheerin, K. R., Reid, D., Taylor, D., & Besier, T. F. (2020). The effectiveness of real-time haptic feedback gait retraining for reducing resultant tibial acceleration with runners. Physical Therapy in Sport, 43, 173-180.

Paper Four

Hage, R., Fourré, A., Ramonfosse, L., Leteneur, S., Jones, M., & Dierick, F. (2022). Description and rules of a new card game to learn clinical reasoning in musculoskeletal physiotherapy. Journal of Manual & Manipulative Therapy, 1-10.
https://doi.org/10.1080/10669817.2022.2132346

Abstract

Teaching hypothetico-deductive clinical reasoning (CR) should be an essential part of the physiotherapy education system, but currently there are very few learning tools for teachers in the musculoskeletal discipline. The aim of this article was to describe and present the rules of a new game-based and structured didactic tool that can be used by teachers for 'players' (students and licensed clinicians) to learn systematic CR in musculoskeletal physiotherapy.
The tool is based on the 'Happy Families' card game, and they propose to use it as part of a classic musculoskeletal subjective examination-based hypothesis category framework and the International Classification of Functioning, Disability and Health model. It allows players to dynamically formulate hypotheses from clinical case studies. Each 'Family' of cards represents a hypothesis category. The game highlights the missing information and trains players to consider it in their CR.
This game should efficiently structure all components of CR and is an interesting resource for all teachers. Its greatest strength is that it can be used with other category frameworks. Further studies are needed to assess the efficacy and efficiency of such a tool and to measure students' actual progress in learning the CR.

Commentary

Clinical reasoning is the cornerstone of contemporary practice. However, it is not always an area that is easy to teach. The novel card game developed by Mark Jones (a world leader in CR research and teaching) and his fellow researchers looks alike a fun way to engage students and clinicians in this process. I for one and going to give this a go with my students next year!