We thank the editors for the opportunity to respond to a letter to by Ferreira, Saragiotto and Maher regarding our systematic review on the effectiveness of specific muscle activation (SMA) for low-back-pain (LBP).

The authors suggested that "inclusion of only 28 trials and the exclusion of a great number of trials after full-text screening" indicated potential trial selection bias, and that providing excluded trial details is required. We agree that the reporting of our review could be enhanced with this strategy and will provide this information to the editors for publication. We also note that methodological quality in recent systematic reviews (both Cochrane and non-Cochrane) on SMA for LBP is low[1]. A common issue is selecting trials with insufficient treatment fidelity/descriptions to accurately evaluate effectiveness. Based on original descriptions, SMA is a complex skill for practitioners to deliver[2]. Systematic reviews should select trials that provide adequate treatment detail to minimise the risk of erroneously concluding ineffectiveness[3-5].

The authors state that their unpublished update of a Cochrane systematic review on SMA[6] identified 82 trials compared to our 28. This seems unusual as this 2016 review[6] identified 32 trials; comparable to our 28. It's implausible that 50 additional relevant trials have been published in the last 5-years. Comparing the results of our review with unpublished data is questionable as it does not enable transparent evaluation by the reader. The authors used a similar approach critiquing a recent network meta-analysis[7] that was criticised by the editor[8].

The assertion that a "great number of trials after full-text screening" reflects selection bias is incorrect. Our selection criteria were clear and applied independently by two reviewers. Our methodology exhaustively identified relevant trials, with 10,074 abstracts screened (compared to 3113 in the 2016 Cochrane review) and 524 full-text references reviewed (compared to 181) to minimise incorrectly excluding trials at abstract screening. Arguably, our search was more thorough than the 2016 Cochrane review.

Including trials that do/do not have adequate treatment fidelity, as suggested by the authors, is not unreasonable. However, this would add complexity/clinical heterogeneity and downgrading of the quality of evidence for indirectness. Only selecting trials with adequate SMA treatment fidelity answered our primary aim and was a strength frequently absent from systematic reviews including Cochrane reviews.

SMA is contentious, despite mechanistic evidence supporting relevance for LBP[9-15]. Our review has generated a PlumX social media score of 161. The commentary has been largely negative, in response to a tweet from Ferriera listing the above (and other) critiques of our paper. Editorials have also questioned the relevance of SMA[16-18]. Whilst editorials and perhaps[8] social media have a role in promoting awareness/discussion on different treatments, high quality RCTs and systematic reviews accounting for clinical heterogeneity are a more appropriate strategy.

Our conclusion, that SMA applied in accordance with the original descriptions is more effective than exercise, conservative medical management, advice, multi-modal physiotherapy and placebo, is clinically relevant and accurate. Dismissing these data based on minor reporting issues and social media/editorials undermines our search for evidence-based treatment of LBP.

References

1. Almeida MO, Yamato TP, Parreira PDCS, Costa LOP, Kamper S, Saragiotto BT. Overall confidence in the results of systematic reviews on exercise therapy for chronic low back pain: a cross-sectional analysis using the Assessing the Methodological Quality of Systematic Reviews (AMSTAR) 2 tool. Brazilian Journal of Physical Therapy. 2020;24(2):103-17.
2. Richardson C, Jull G, Hodges P. Therapeutic exercise for lumbopelvic stabilisation: a motor control approach for the treatment and prevention of low back pain. Edinburgh: Churchill Livingstone; 2004.
3. Snow M, Trexler S, Gates C, Pudoka K, Wilhelm M. The fidelity of comparison intervention in manual therapy trial for patients with low back pain: a systematic review. Physical Therapy Reviews. 2019;24(5):248-58.
4. Toomey E, Hardeman W. Addressing Intervention Fidelity Within Physical Therapy Research and Clinical Practice. J Orthop Sports Phys Ther. 2017;47(12):895-8.
5. Karas S, Plankis L. Consideration of treatment fidelity to improve manual therapy research. J Man Manip Ther. 2016;24(4):233-7.
6. Saragiotto BT, Maher CG, Yamato TP, Costa LO, Costa LC, Ostelo RW, et al. Motor Control Exercise for Nonspecific Low Back Pain: A Cochrane Review. Spine (Phila Pa 1976). 2016;41(16):1284-95.
7. Maher CG, Hayden JA, Saragiotto BT, Yamato TP, Bagg MK. Letter in response to: 'Which specific modes of exercise training are most effective for treating low back pain? Network meta-analysis' by Owen et al. Br J Sports Med. 2020:bjsports-2019-1.
8. Khan KM. Editorial comment on discussion: 'Which specific modes of exercise training are most effective for treating low back pain? Network meta-analysis'. Br J Sports Med. 2020.
9. Hides JA, Donelson R, Lee D, Prather H, Sahrmann SA, Hodges PW. Convergence and Divergence of Exercise-Based Approaches That Incorporate Motor Control for the Management of Low Back Pain. J Orthop Sports Phys Ther. 2019;49(6):437-52.
10. Hodges PW. Hybrid Approach to Treatment Tailoring for Low Back Pain: A Proposed Model of Care. J Orthop Sports Phys Ther. 2019;49(6):453-63.
11. Hodges PW, Barbe MF, Loggia ML, Nijs J, Stone LS. Diverse Role of Biological Plasticity in Low Back Pain and Its Impact on Sensorimotor Control of the Spine. J Orthop Sports Phys Ther. 2019;49(6):389-401.
12. Hodges PW, Danneels L. Changes in Structure and Function of the Back Muscles in Low Back Pain: Different Time Points, Observations, and Mechanisms. J Orthop Sports Phys Ther. 2019;49(6):464-76.
13. Hodges PW, van Dieen JH, Cholewicki J. Time to Reflect on the Role of Motor Control in Low Back Pain. J Orthop Sports Phys Ther. 2019;49(6):367-9.
14. Reeves NP, Cholewicki J, van Dieen JH, Kawchuk G, Hodges PW. Are Stability and Instability Relevant Concepts for Back Pain? J Orthop Sports Phys Ther. 2019;49(6):415-24.
15. van Dieen JH, Reeves NP, Kawchuk G, van Dillen LR, Hodges PW. Motor Control Changes in Low Back Pain: Divergence in Presentations and Mechanisms. J Orthop Sports Phys Ther. 2019;49(6):370-9.
16. Cook J. Jumping on bandwagons: taking the right clinical message from research. Br J Sports Med. 2008;42(863).
17. O'Sullivan P. It's time for change with the management of non-specific chronic low back pain. Br J Sports Med. 2012;46(4):224-7.
18. Allison G, Morris S. Transversus abdominis and core stability: has the pendulum swung? Br J Sports Med. 2008;42(11):630-1.