Nr 2024;14 (2):235-238

Ref: Serra G. *et al. The effect of hydrokinetic therapy on patients with low back pain: a systematic review and meta-analysis* (doi: 10.32098/mltj.01.2023.10)

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DOI:
10.32098/mltj.02.2024.01

LEVEL OF EVIDENCE: N/A

KEY WORDS
Aquatic therapy; musculoskeletal disorders; low back pain; aquatic exercise; hydrokinetic therapy.

To the Editor,

we would like to thank Serra *et al.* for the published article *The effect of hydrokinetic therapy on patients with low back pain: a systematic review and meta-analysis*, because we believe how difficult it is to carry out a systematic review. By the way, systematic reviews with meta-analyses aim to resolve controversies arising from conflicting results and answer questions not clarified by individual studies. However, they can lead to errors when there is variation between the studies and when some biases are not considered. The Cochrane Collaboration provides a guide for correctly carrying out this type of study, with the intention of reducing possible errors and uncertainties, as well as proposing a reliable study in terms of internal and external validity. Therefore, the recommendations of the Cochrane Collaboration and the PRISMA statement should be followed.

According to the recommendations of the Cochrane Handbook, a meta-analysis should only be carried out when the pooled studies are sufficiently homogeneous in the criteria of participants (P), interventions (I), comparisons (C), and outcomes (O) (1). However, in the analyses presented in this review, studies with different interventions and comparisons were pooled together, invalidating the answers obtained by each one. For example, in meta-analysis 1, regarding the results of the visual analogue scale for the four-week follow-up, in the comparison between aquatic therapy and conventional therapy, the following studies were included:

- Balogh *et al.* (2005) (2), which evaluated the therapeutic efficacy of reduced sulfur water in comparison with reduced sulfur mineral water and modified tap water with corresponding odor in patients with low back pain in a three-month follow-up.
- Dilekci *et al.* (2020) (3), which compared conventional on land physiotherapy with the association of conventional on land physiotherapy and balneotherapy in a three-week follow-up.

- Dundar *et al.* (2009) (4), which analyzed the difference between conventional land-based therapy and aquatic therapy in a 12-week follow-up.
- So *et al.* (2019) (5), which analyzed the differences between two aquatic modalities, Bad Ragaz and Ai Chi, in a 12-week follow-up.

In view of the above, it can be observed that randomized controlled trials with different treatment methods were grouped together, which included the comparison of aquatic exercises with land exercises, with aquatic exercises, or the combination of both, that is, the studies are not comparable. This contradiction can be observed in the results of the study, which presented -1.22 (-1.45; -0.99); $p < 0.0001$, with a heterogeneity of 91%. In addition to not using the standardized mean difference, the analysis was based on the fixed effect, which ignores the heterogeneity between studies and incorporates a very narrow confidence interval that is far from reality. In this case, to carry out any meta-analysis, the random effect is recommended, as it incorporates the hypothesis that there is diversity in the conduction of the studies, even if they are sufficiently homogeneous. Furthermore, the standard error adjustment proposed by Hartung and Knapp, that widens the confidence interval to reflect the uncertainty in the heterogeneity estimate and the estimation method by Sidik and Jonkman, should be used (6).

When conducting a systematic review, it is expected that the primary studies that need to be included are not completely free of methodological errors, which makes assessing the risk of bias extremely important. To this end, the use of Risk of Bias 2 is prioritized, referring to the most recent tool available, which systematically classifies studies as low risk of bias, some concerns, or high risk of bias (7). The Cochrane handbook discourages the use of scales, as they include topics that are not consistent with the true assessment of internal validity. As an example, the PEDro scale includes an assessment based on masking the patient and therapist in physiotherapy studies, where it is only possible to mask the evaluator. Furthermore, scales like the Jadad are outdated and have been out of use for years. Therefore, the GRADE system should be incorporated in order to ensure that factors such as imprecision, heterogeneity, risk of bias, and publication bias are considered when interpreting the review results. After all, what is the point of studies with degree of evidence number 1?

FUNDINGS

The authors wish to thank the CNPq for the productivity scholarship and CAPES for the MSc scholarship (Funding Code: 001).

DATA AVAILABILITY

N/A.

CONTRIBUTIONS

All authors contributed equally to this work.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interests.

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Reply to: "*Ref: Serra et al. The effect of hydrokinetic therapy on patients with low back pain: a systematic review and meta-analysis*"

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As corresponding author, I am grateful to the author of the letter received regarding the publication entitled *The Effect of Hydrokinetic Therapy on Patients with Low Back Pain: A Systematic Review and Meta-Analysis* (doi: 10.32098/mltj.01.2023.10).

The interest aroused by this contribution makes me proud and highlights the desire for an intellectual and constructive exchange on the methodology of systematic review without any personal interest.

With this letter I would like to respond to all comments where appropriate.

Regarding the objective of systematic reviews, as reported by Uman 2011 it is difficult, if not impossible, for busy clinicians and researchers to keep up with the literature. Systematic reviews that summarize the results of various intervention studies are therefore a method extremely efficient at getting the bottom line on what works and what doesn't (1). Another definition from Devis *et al.* (2014) states that these techniques are used to synthesize research findings to determine an estimate of the overall effect for a population of studies. A systematic review refers to the process of systematically identifying and collecting all available information about an effect. Meta-analysis refers to the statistical techniques used to combine this information to provide an overall estimate of the effect in the population (2). Therefore, the purpose of a systematic review is not only to resolve controversies, but sometimes also to bring them to light.

As regards the use of the guidelines, for the drafting of the document the PRISMA checklist was used which to date constitutes the guideline for the drafting of systematic reviews as rightly reported by the author of the letter.

Regarding the presence of studies sufficiently homogeneous to be included in the meta-analysis, the level of homogeneity of the studies to be included is established by the authors themselves depending on the objective expressed in the review. In fact, as reported by Ahn *et al.* (2018) "*systematic reviews and meta-analyses present results by combining and analyzing data from different studies conducted on similar research topics*" (3).

The objective of the study by Serra *et al.* was to implement good clinical practices regarding the use of hydrokinesitherapy in people with low back pain (LBP). We know very well the methodological limitations of individual studies in the rehabilitation field, caused using different follow-ups and different control groups (lack of placebo for ethics) which often do not allow for a meta-analysis.

The researcher has the duty, if he/she/* wants to carry out studies that can resolve the controversies, to carry out follow-up groups and a broad-spectrum evaluation of the control groups.

As regards Bias Risk within the rehabilitation research, in this study all three of the most useful tools for assessing Bias Risk were rightly used. The JADAD is the scale created for the evaluation of the risk of bias of pharmacological RCTs, subsequently the PEDRO scale was developed to solve the problem of the floor effects of the JADAD for the evaluation of rehabilitation studies. As the author of Letter to the Editor, rightly knows, my research group published a work in 2022 in which it was highlighted that although the scale has excellent psychometric properties with regards to test-retest reliability and construct validity, the scale presents ambiguous levels of internal validity due to a significant ceiling effect of some items (4).

In the study by Serra *et al.* (2023), it is possible to notice that the Risk of Bias 1, related to the scores of the individual studies, is reported in the meta-analysis graphs. The total risk assessment graph highlighted that all studies

presented present a risk due to lack of blinding, for this reason we did not stratify by risk score.
Furthermore, regarding the use of Risk of Bias 2, I guess that the author of the letter did not notice that, as reported in the methods section of the document under discussion, the study was conducted in 2021 when the guidelines for the use of Risk of Bias 2 were not published. The author of the letter to the Director itself cites the document published only in 2023.
Finally, regarding the last comment regarding the use of the GRADE method in the systematic review, I would like to underline that this method is often used to evaluate different studies within a guideline. In the Prisma Check list that the author rightly mentioned, it is not required to report the GRADE method.
The reason why the scientific community is required to carry out systematic reviews is that this research is useful in a clinical setting and allows healthcare professionals to carry out scientifically valid work.
Hoping to have answered all the doubts raised, I will update the review including, as suggested by the author of the letter, the use of the most updated version of the Risk of Bias.

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