

A Commentary on Laser Acupuncture for the Pain of Knee Osteoarthritis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials [Response to Letter]

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Dear editor

Thank you for your valuable comments and suggestions regarding our systematic review and meta-analysis titled “Laser Acupuncture for the Pain of Knee Osteoarthritis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials”, published in the Journal of Pain Research. We highly appreciate your thorough review and provide further clarification on the relevant issues below.

Accuracy of Trial Reporting and Interpretation

Incorrect Trial Location Annotation

We confirm an error in the original manuscript where the study location for Al Rashoud et al. Al Rashoud et al¹ was inaccurately listed as the “United Kingdom”; it should be Saudi Arabia. Similarly, the location for Hellanthi et al² was mistakenly written as “India” but is actually Indonesia. We will correct these study locations in a subsequent correction.

Description of Follow-up Time

The “Length of Follow-Up” column in Table 1 indeed refers to the “Intervention Period.” Our intention was to report the treatment cycle, as for this non-pharmacological therapy, we assessed efficacy at the earliest time point following the completion of treatment. Therefore, our “follow-up” denotes the treatment duration. To prevent any potential confusion, we will add a note to the table clarifying that this column specifies the treatment duration, not an independent follow-up period.

Inaccurate Description of Interventions

Regarding the description of the Al Rashoud et al,¹ the design logic is clear: the study compares the additive effect of laser acupuncture versus placebo laser, both administered on top of identical exercise and educational advice. The original description “Laser & exercise vs exercise and exercise” should be changed to “Laser Acupuncture vs Placebo” conveying this core comparative relationship. We believe that readers should be able to understand that, under this design, the essential comparison in the data analysis is between the laser and the placebo laser.

Consistency Between Conclusions and Overall Findings

The statement in the “Overall Findings” Zeng et al⁶ emphasizing “little to no effect” of laser acupuncture compared to exercise therapy, versus the conclusion noting “may experience a greater reduction in pain intensity”, could potentially

Table 1 Characteristics of Included Studies

Study	Interventions	Funding	Country	No. of Participants at Baseline, n	Intervention Period*, Days	Mean Age (SD), Years	Female %
ZY M 2019 ³	Laser & exercise vs exercise	NA	China	109	28	54.00(8.04)	43%
AS Al R 2014 ¹	Laser vs Placebo*	INDUSTRIAL	Saudi Arabia*	49	Nine sessions*	53.90(10.09)	63%
DR H 2016 ²	Laser vs Placebo	NA	Indonesia	62	35	68.50(5.51)	68%
FY L 2020 ⁴	Laser vs Placebo	NA	Taiwan(China)*	33	28	70.10(6.79)	90%
MK L 2017 ⁵	Laser vs Placebo	INDUSTRIAL	Australia	40	28	62.20(10.65)	50%

Notes: ★, have been revised.

Abbreviation: NA, not reported.

cause misunderstanding. Our intended meaning was: although a statistical difference exists (WMD -0.84 cm), its clinical significance (failing to meet the MID of 1 cm) is limited.

Discrepancy Between Predefined and Applied Inclusion Criteria

Our Methods section stated the inclusion of trials comparing “laser needle versus placebo laser, exercise therapy, or no treatment.” Two studies involving combined interventions (Al Rashoud et al¹; Mu ZY et al³) were included. The original text did not explicitly state that “versus. etc.” included combined interventions. We maintain that when the non-laser components (eg, education, exercise) are essentially identical between the intervention and control groups, the effect difference can still be attributed to the laser component. Therefore, we consider the inclusion of these studies justified.

Rationale for Excluding Short-Duration Trials

Issue of Study Duration for Al Rashoud (2014)

We noted in the original manuscript that the¹ reported “9 treatment sessions” without explicitly stating the specific number of weeks for the treatment cycle. Based on its treatment frequency (eg, twice weekly) and the total number of sessions (9), the total treatment duration was reasonably inferred to meet the 4-week criterion. We believe this study satisfies our predefined “minimum effective exposure” standard regarding treatment exposure and observation period, warranting its inclusion.

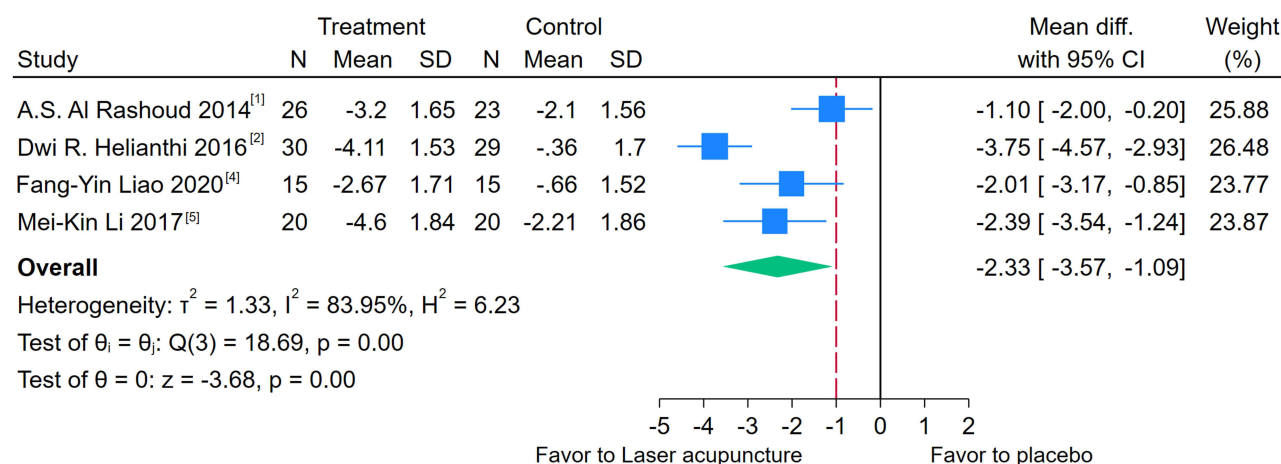
Rationale for Excluding Studies with <4 Weeks Duration

We should have more explicitly elaborated the rationale for excluding short-duration studies in the manuscript. Our consideration is that knee osteoarthritis, as a chronic degenerative disease, involves clinical improvement dependent not only on treatment technique and dosage but also on the natural processes of tissue repair, neural regulation, and functional adaptation. Short-duration studies (eg, <4 weeks) might not adequately capture the potential cumulative effects of laser acupuncture or the body’s sustained response to this intervention. Thus, we set this duration threshold to enhance the comparability of included studies in efficacy assessment and the reference value of their conclusions for clinical practice.

Pooling of Heterogeneous Trials and Inconsistent Outcome Time Points

We acknowledge the presence of clinical heterogeneity when pooling studies with different designs. However, due to the limited number of included studies ($n=5$), conducting subgroup analysis or meta-regression lacked sufficient statistical power. We explicitly noted the high heterogeneity ($I^2 = 83.95\%$) in the manuscript and employed a random-effects model to account for its influence.

Regarding the outcome time points, we primarily pooled assessment data collected “at the end of treatment.” Although Hellanthi et al² assessed outcomes at 2 weeks post-treatment, this still constitutes short-term follow-up and is considered comparable in timing to the endpoint assessments in the other studies.



Random-effects DerSimonian–Laird model

Figure 1 Pain intensity on a 10 cm VAS among patients with osteoarthritis of the knee who received Laser acupuncture compared to placebo control.

Inadequate Investigation of Heterogeneity and Publication Bias

We noted the high heterogeneity ($I^2 = 83.95\%$). Despite this high heterogeneity, all study results favored laser acupuncture, lying to the left of the line of null effect. The high heterogeneity primarily reflects differences in the magnitude of effect sizes; the fact that the 95% confidence interval of the pooled effect size does not include the MID value of -1 cm indicates that the pooled effect possesses clinical significance (Figure 1). Therefore, in interpreting the results, we suggested that laser acupuncture might provide clinically meaningful pain relief.

Uncertainty in the Evidence Regarding Adverse Events

We extracted adverse event data only from the Hellanthei et al,² and the results were imprecise ($RR = 3.52$, 95% CI 0.76–6.29). We will revise the original statement claiming “fewer adverse reactions associated with laser acupuncture” to “the existing evidence is insufficient to determine the difference in adverse events between laser acupuncture and placebo laser.” We also call for standardized reporting of adverse events in future studies.

Summary

We once again thank you for your attention and constructive comments on our research. Within the scope permitted by the journal, we will submit a correction or clarification to further enhance the clarity and rigor of the article. We look forward to continued in-depth exchanges with you on this topic in the future.

Funding

No funding was received.

Disclosure

The authors declare no competing interests in this communication.

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