

Supplemental digital content for the article:

## **Efficacy of low-level laser therapy in patients with lower extremity tendinopathy or plantar fasciitis: systematic review and meta-analysis of randomised controlled trials**

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## PubMed database search string

("Low-Level Light Therapy"[Mesh] OR LLLT[Title/Abstract] OR "low level"[Title/Abstract] OR "low power"[Title/Abstract] OR laser therap\*[Title/Abstract] OR "laser acupuncture"[Title/Abstract] OR "HeNe"[Title/Abstract] OR "632 nm"[Title/Abstract] OR "Ga-Al-As"[Title/Abstract] OR "820 nm"[Title/Abstract] OR "830 nm"[Title/Abstract] OR "850 nm"[Title/Abstract] OR "GaAs"[Title/Abstract] OR "904 nm"[Title/Abstract] OR Photobiomodulation[Title/Abstract] OR phototherap\*[Title/Abstract]) and ("Tendinopathy"[Mesh] or tendi\*[Title/Abstract] or tendo\*[Title/Abstract] or "plantar fasciitis"[Title/Abstract] or "Fasciitis, Plantar"[Mesh] or "Policeman's Heel"[Title/Abstract] or "Iliotibial Band Syndrome"[Mesh] or Iliopsoas tendi\*[Title/Abstract] or Jumper\*[Title/Abstract] or Patella[Title/Abstract] or Achill\*[Title/Abstract] or "Achilles Tendon"[Mesh])

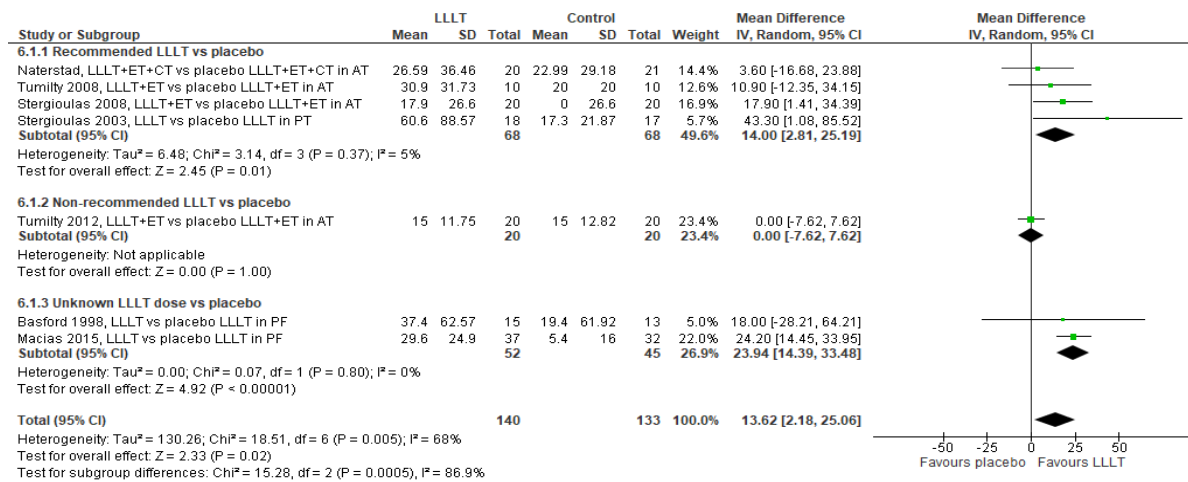
## Excluded full text articles

Author/Year/Reference	Reasons for exclusion
Abat et al. 2016 <sup>1</sup>	Impossible to isolate effect, combined treatments compared with other treatment
Aigner et al. 1996 <sup>2</sup>	No control group
Ashok et al. 2018 <sup>3</sup>	Lacks randomisation
Atik et al. 2018 <sup>4</sup>	Commentary only
Bjordal et al. 2006 <sup>5</sup>	Outcomes of interest not reported
Chang et al. 2015 <sup>6</sup>	Outcomes of interest not reported
Cinar et al. 2013 <sup>7</sup>	Conference paper only (author contacted)
Cinar et al. 2012 <sup>8</sup>	Solely abstract available
Costantino et al. 2005 <sup>9</sup>	Not LLLT, high intensity laser therapy
Coughlin et al. 2014 <sup>10</sup>	Solely abstract available
Fernandes et al. 1991 <sup>11</sup>	Mixed population with unclear inclusion of diagnosis
Foley et al. 2016 <sup>12</sup>	Not LLLT, light emitting diode therapy
Jastifer et al. 2014 <sup>13</sup>	No control group
Lögberg-Andersson et al. 1994 <sup>14</sup>	Only pooled data on lower and upper extremity available
Mardh et al. 2016 <sup>15</sup>	Not LLLT, high intensity laser therapy
Meier et al. 1988 <sup>16</sup>	Outcomes of interest not reported
Morimoto et al. 2013 <sup>17</sup>	No control group
Mulcahy et al. 1995 <sup>18</sup>	Lacks credible control group, includes only 3 patients with tendinopathy
Notarnicola et al. 2014 <sup>19</sup>	Not LLLT, high intensity laser therapy
Olivera et al. 2009 <sup>20</sup>	Animal study
Orellana-Molina et al. 2010 <sup>21</sup>	Outcomes of interest not reported
Saxena et al. 2015 <sup>22</sup>	Not LLLT
Scott et al. 2011 <sup>23</sup>	Review
Siebert et al. 1987 <sup>24</sup>	Mixed population/diagnoses
Simunovic 1996 <sup>25</sup>	Narrative review
Suleymanoglu et al. 2014 <sup>26</sup>	Conference abstract
Takla et al. 2019 <sup>27</sup>	Used a combination of LLLT and light emitting diode therapy
Tumilty et al. 2015 <sup>28</sup>	Conference abstract
Tumilty et al. 2016 <sup>29</sup>	Not LLLT, high intensity laser therapy

LLLT, low-level laser therapy.

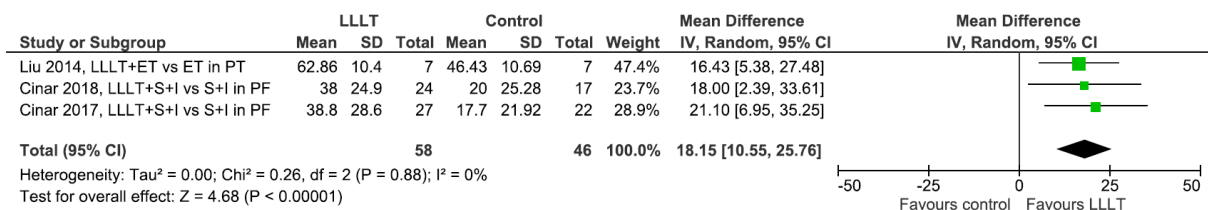
## Supplementary figures

Figure S1 Pain at follow-ups 4-8 weeks after completed therapy - LLLT versus placebo



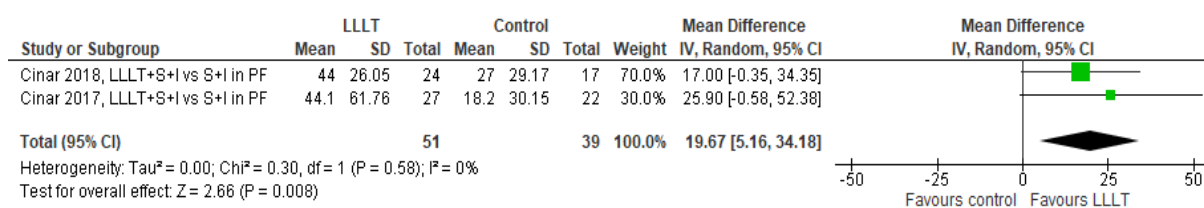
AT, Achilles tendinopathy; CT, cryotherapy; ESWT, Extracorporeal Shock Wave Therapy; ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching; TU, Therapeutic Ultrasound.

Figure S2 Subgroup pain results immediately after completed therapy - LLLT versus no intervention



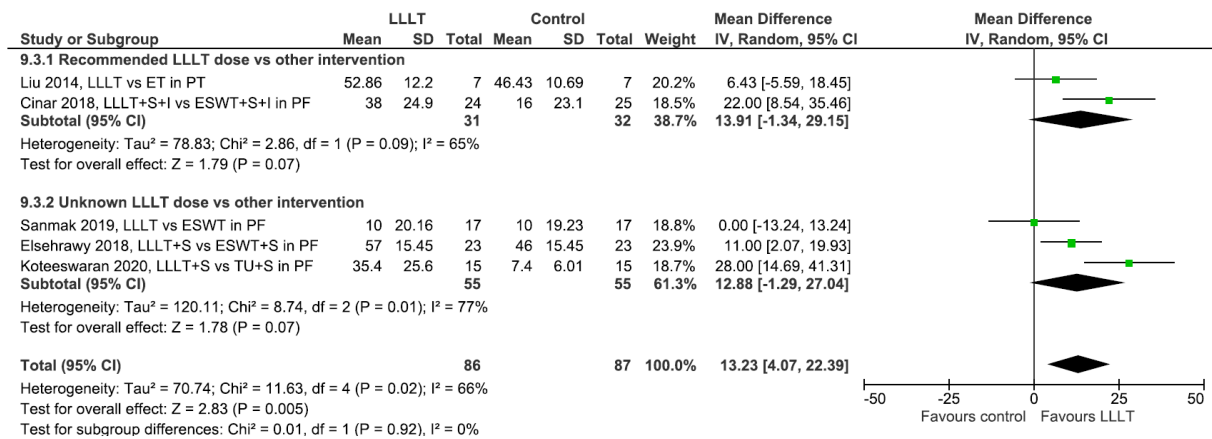
ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

Figure S3 Pain at follow-ups 8 weeks after completed therapy - LLLT versus no intervention



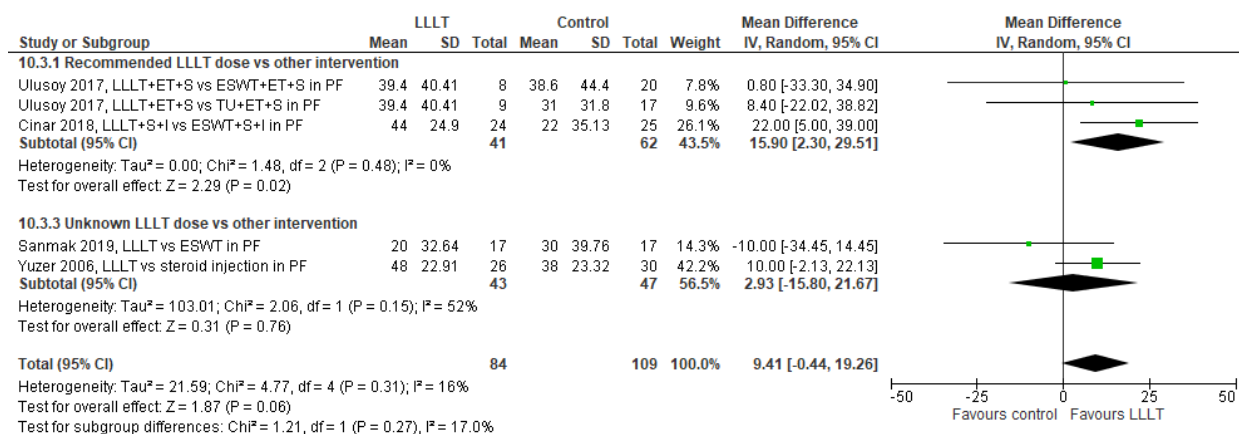
ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; S, stretching.

Figure S4 Overall and subgroup pain results - LLLT versus other interventions



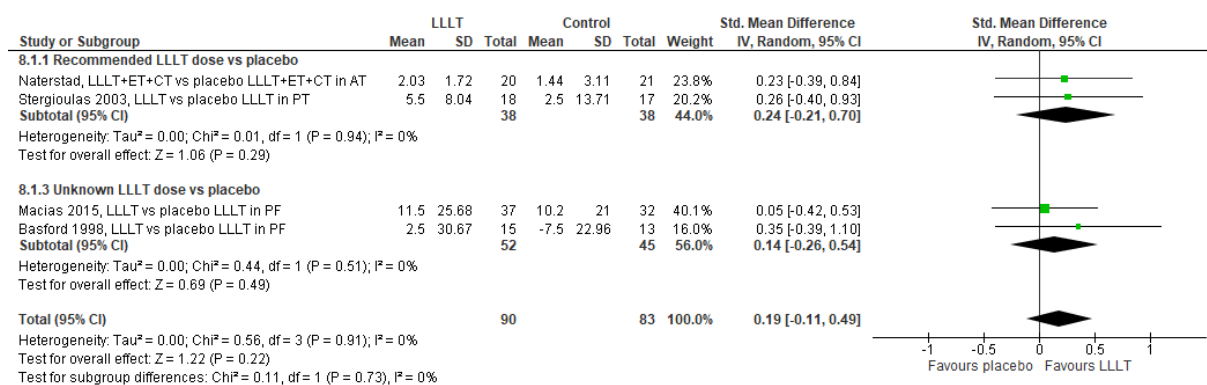
ESWT, Extracorporeal Shock Wave Therapy; ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S = stretching; TU, Therapeutic Ultrasound.

Figure S5 Pain at follow-ups 4-12 weeks after completed therapy - LLLT versus other interventions



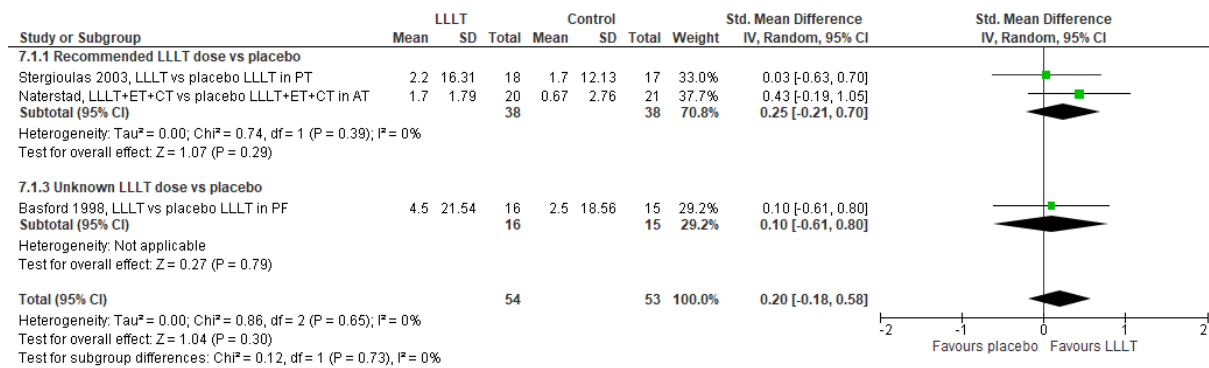
AT, Achilles tendinopathy; CT, cryotherapy; ESWT, Extracorporeal Shock Wave Therapy; ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching; TU, Therapeutic Ultrasound.

Figure S6 Disability at follow-ups 4-8 weeks after completed therapy - LLLT versus placebo



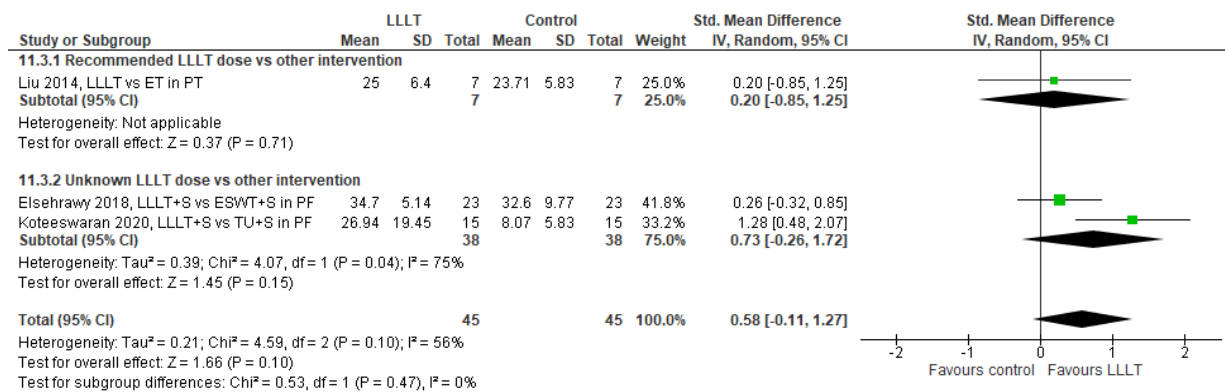
AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy.

Figure S7 Disability immediately after completed therapy - LLLT versus placebo



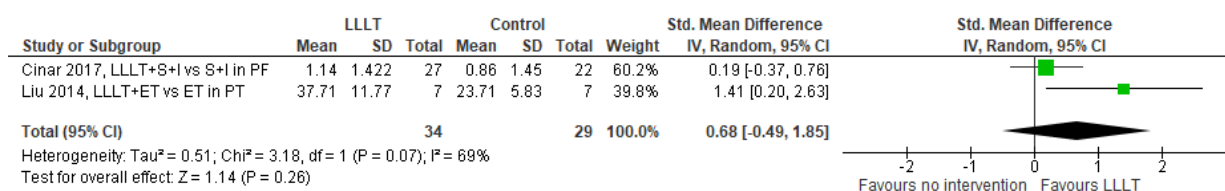
AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy.

Figure S8 Disability immediately after completed therapy - LLLT versus other interventions



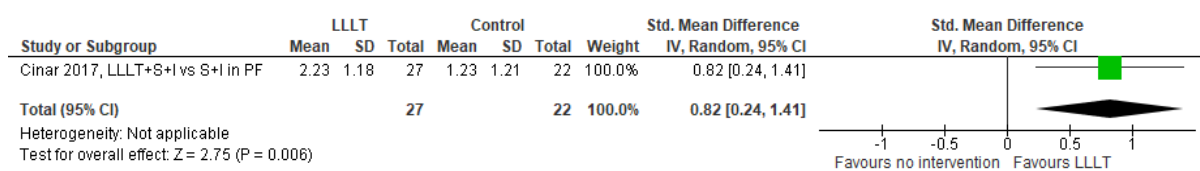
ET, exercise therapy; ESWT, Extracorporeal Shock Wave Therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching; TU, Therapeutic Ultrasound.

Figure S9 Disability immediately after completed therapy - LLLT versus no intervention



ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

Figure S10 Disability at follow-up 9 weeks after completed therapy - LLLT versus no intervention

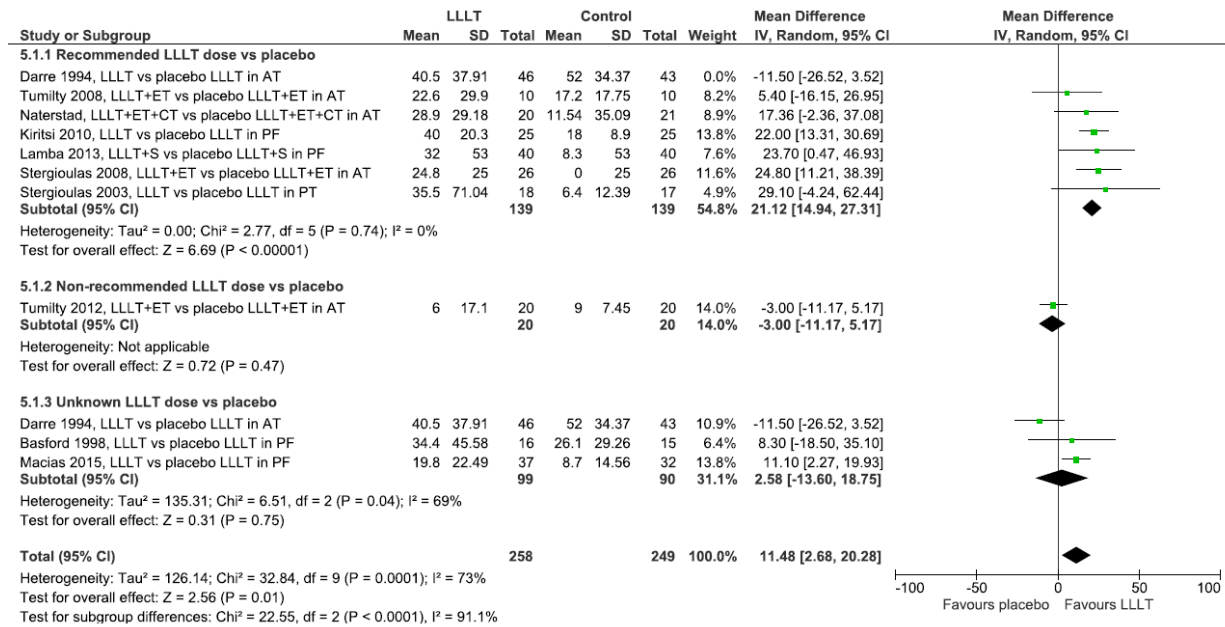


ET, exercise therapy; I, insoles; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

## Sensitivity analyses

Allocating the study by Darre et al. 1994 to the unknown laser dose subgroup eliminates the statistical heterogeneity in the recommended laser dose subgroup and increases the estimate of placebo-controlled pain reduction to 21.12 mm VAS ((95% CI: 14.94 to 27.31),  $I^2 = 0\%$ ,  $N = 278$ ) immediately after completed therapy (Figure S11).

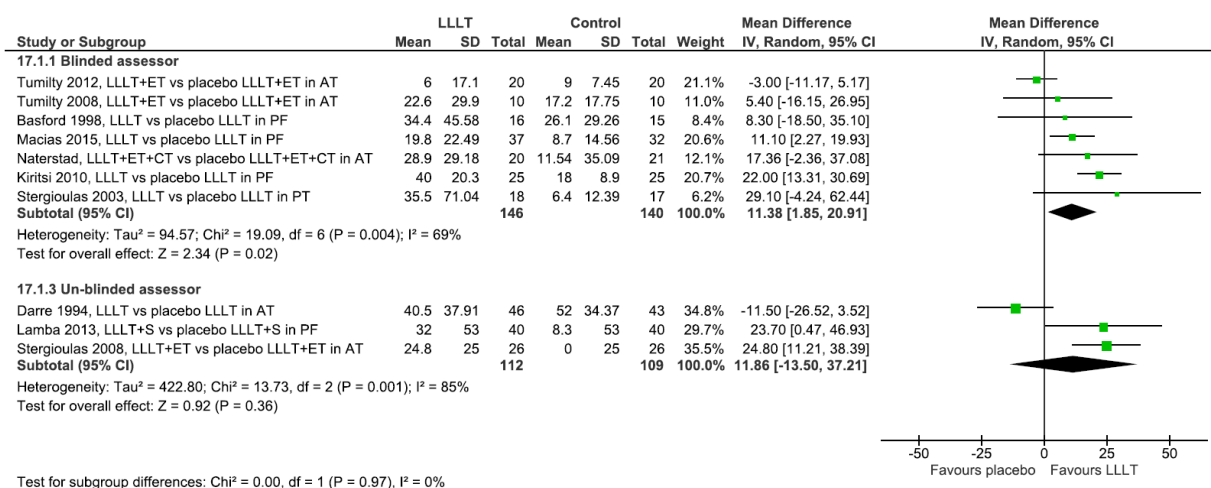
Figure S11 Alternative LLLT dose subgrouping



AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

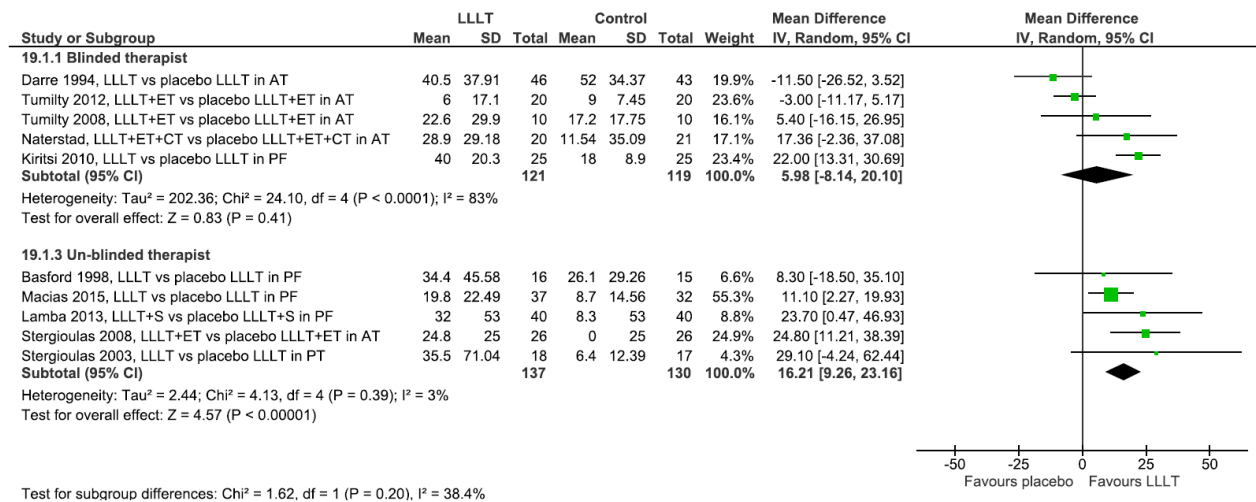
## Risk-of-bias within studies post-hoc analyses

Figure S12 Blinded versus unblinded assessor



AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

Figure S13 Blinded versus unblinded therapist

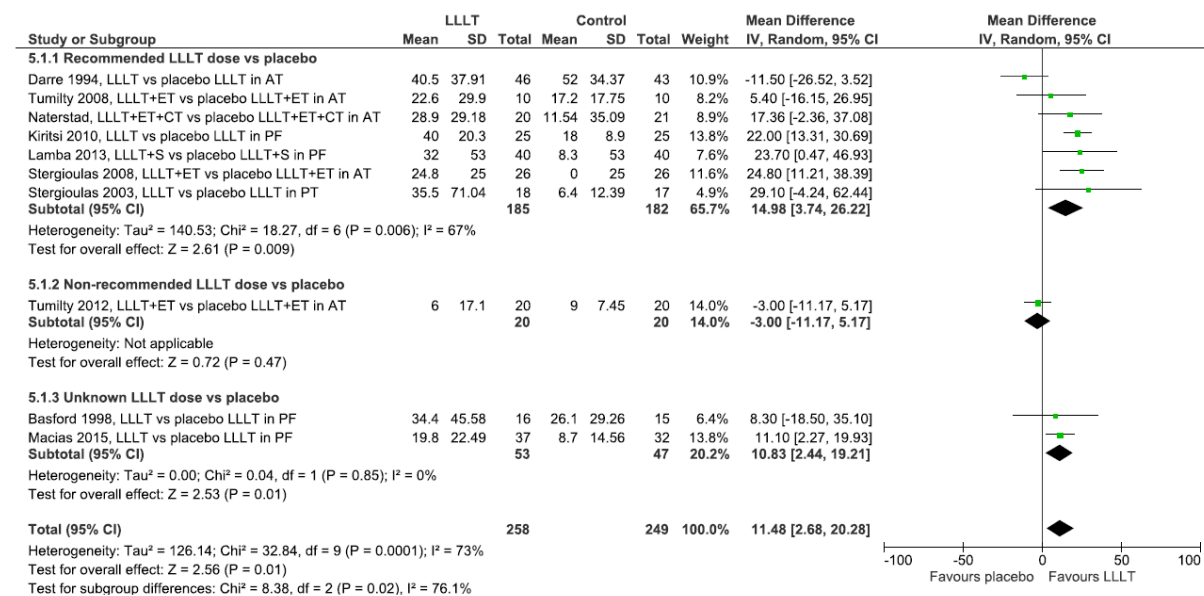


AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

### Risk-of-bias across studies - random versus fixed effects meta-analysis results of pain

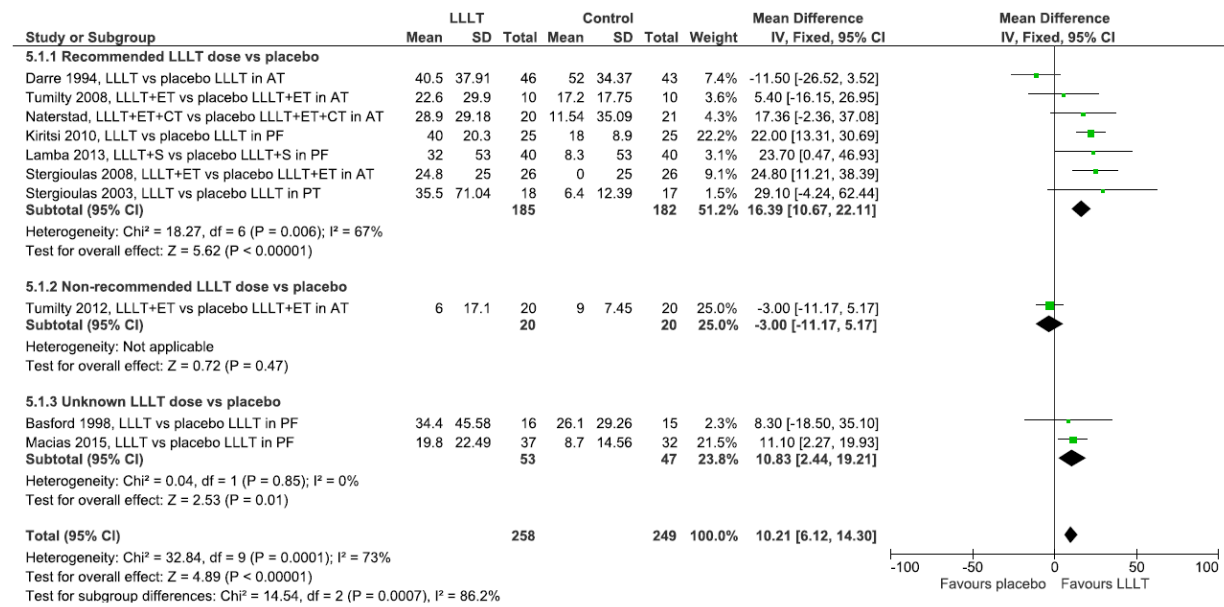
There was almost no difference between the pain point estimates of the random and fixed effects models (pain immediately after the end of therapy), that is, 11.48 mm versus 10.21 mm VAS, indicating that no small study bias exists (Figures S14 and S15).

Figure S14 Random effects meta-analysis model



AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

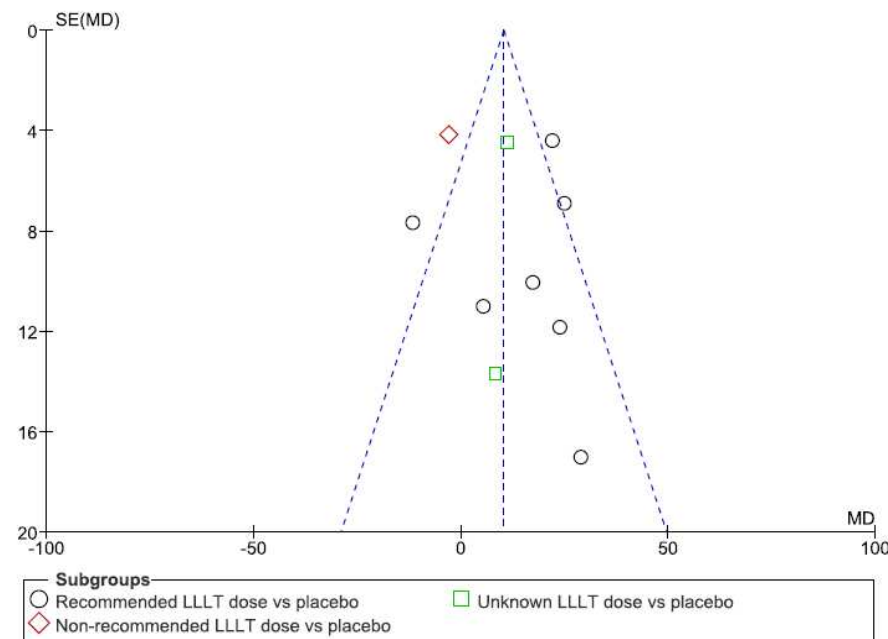
Figure S15 Fixed effects meta-analysis model



AT, Achilles tendinopathy; CT, cryotherapy; ET, exercise therapy; LLLT, Low-Level Laser Therapy; PF, plantar fasciitis; PT, patellar tendinopathy; S, stretching.

Funnel plot of pain results immediately after completed therapy indicating that small study bias is absent (Figure S16).

Figure S16 Funnel plot



LLLT, Low-Level Laser Therapy; MD, mean difference; SE, standard error.



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