

SUPPLEMENTARY FILES

Supplementary File 1. Search strategies for all electronic databases

Medline (via Pubmed)	<p>#1 "Laser Therapy"[Mesh] OR "Low-Level Light Therapy"[Mesh] OR (Low-Level Light Therapy) OR (Light Therapies, Low-Level) OR (Light Therapy, Low-Level) OR (Low Level Light Therapy) OR (Low-Level Light Therapies) OR (Therapies, Low-Level Light) OR (Therapy, Low-Level Light) OR (Photobiomodulation Therapy) OR (Photobiomodulation Therapies) OR (Therapies, Photobiomodulation) OR (Therapy, Photobiomodulation) OR LLLT OR (Laser Therapy, Low-Level) OR (Laser Therapies, Low-Level) OR (Laser Therapy, Low Level) OR (Low-Level Laser Therapies) OR (Laser Irradiation, Low-Power) OR (Irradiation, Low-Power Laser) OR (Laser Irradiation, Low Power) OR (Low-Power Laser Therapy) OR (Low Power Laser Therapy) OR (Laser Therapy, Low-Power) OR (Laser Therapies, Low-Power) OR (Laser Therapy, Low Power) OR (Low-Power Laser Therapies) OR (Low-Level Laser Therapy) OR (Low Level Laser Therapy) OR (Low-Power Laser Irradiation) OR (Low Power Laser Irradiation) OR (Laser Biostimulation) OR (Biostimulation, Laser) OR (Laser Phototherapy) OR (Phototherapy, Laser) OR (Laser Therapies) OR (Therapies, Laser) OR (Therapy, Laser)</p> <p>#2 "Achilles Tendon"[Mesh] OR "Calcaneus"[Mesh] OR (Achilles tendinopathy) OR (Achilles Tendon) OR (Achilles tendinitis) OR Calcaneus OR (Tendon, Achilles) OR (Calcaneal Tendon) OR (Calcaneal Tendons) OR (Tendon, Calcaneal) OR (Tendons, Calcaneal) OR (Tendo Calcaneus)</p> <p>#3 #1 AND #2</p>
EMBASE (via Elsevier)	<p>#1 'low level laser therapy'/exp OR 'laser therapy' OR 'low-level light therapy' OR 'light therapies, low-level' OR 'light therapy, low-level' OR 'low level light therapy' OR 'low-level light therapies' OR 'therapies, low-level light' OR 'therapy, low-level light' OR 'photobiomodulation therapy' OR 'photobiomodulation therapies' OR 'therapies, photobiomodulation' OR 'therapy, photobiomodulation' OR llLt OR 'laser therapy, low-level' OR 'laser therapies, low-level' OR 'laser therapy, low level' OR 'low-level laser therapies' OR 'laser irradiation, low-power' OR 'irradiation, low-power laser' OR 'laser irradiation, low power' OR 'low-power laser therapy' OR 'low power laser therapy' OR 'laser therapy, low-power' OR 'laser therapies, low-power' OR 'laser therapy, low power' OR 'low-power laser therapies' OR 'low-level laser therapy' OR 'low level laser therapy' OR 'low-power laser irradiation' OR 'low power laser irradiation' OR 'laser biostimulation' OR 'biostimulation, laser' OR 'laser phototherapy' OR 'phototherapy, laser' OR 'laser therapies' OR 'therapies, laser' OR 'therapy, laser'</p> <p>#2 'achilles tendon'/exp OR 'calcaneus'/exp OR 'achilles tendinopathy' OR 'achilles tendon' OR 'achilles tendinitis' OR 'calcaneus' OR 'tendon, achilles' OR 'calcaneal tendon' OR 'calcaneal tendons' OR 'tendon, calcaneal' OR 'tendons, calcaneal' OR 'tendo calcaneus'</p> <p>#3 #1 AND #2</p> <p>#4 #3 AND [embase]/lim NOT ([embase]/lim AND [medline]/lim)</p>

Cochrane Central Register of Controlled Trials - CENTRAL (via Wiley)	#1 MeSH descriptor: [Achilles Tendon] explode all trees #2 MeSH descriptor: [Calcaneus] explode all trees #3 MeSH descriptor: [Tendinopathy] explode all trees #4 #1 OR #2 OR #3 #5 MeSH descriptor: [Low-Level Light Therapy] explode all trees #6 #4 AND #5
SPORTDiscus (Ebsco)	#1 DE "ACHILLES tendon injuries" #2 DE "ACHILLES tendinitis" #3 DE "ACHILLES tendon" #4 DE "CALCIFIC tendinitis" #5 TX (calcane*) #6 #1 OR #2 OR #3 OR #4 OR #5 #7 TX (Low level laser therapy OR Photobiomodulation OR Low-Level Light Therapy OR Laser Biostimulation OR Laser Phototherapy) #8 #6 AND #7
Physiotherapy Evidence Database (PEDro)	Advanced search option Abstract & Title: Achilles tend* Therapy: electrotherapies, heat, cold Problem: no selection Body part: no selection Subdiscipline: no selection Method: clinical trial Match all search terms (AND)
Cumulative Index to Nursing and Allied Health Literature – CINAHL (EBSCO host)	#1 (MH "Achilles Tendinopathy") #2 (MH "Achilles Tendon") #3 (MH "Achilles tendinitis") #4 (MH "Calcific Tendinitis") #5 TX (Calcaneal Tendon) #6 #1 OR #2 OR #3 OR #4 OR #5 #7 TX (Low level laser therapy OR Photobiomodulation OR Low-Level Light Therapy OR Laser Biostimulation OR Laser Phototherapy) #8 #6 AND #7
Literatura Latino Americana em Ciências da Saúde e do Caribe - LILACS (via Biblioteca Virtual em Saúde - BVS)	#1 MH:"Terapia com Luz de Baixa Intensidade" OR "Low-Level Light Therapy" OR "Terapia por Luz de Baja Intensidad" OR (Terapia com Luz de Baixa Intensidade) OR (Low-Level Light Therapy) OR (Terapia por Luz de Baja Intensidad) OR (Light Therapies, Low-Level) OR (Light Therapy, Low-Level) OR (Low Level Light Therapy) OR (Low-Level Light Therapies) OR (Therapies, Low-Level Light) OR (Therapy, Low-Level Light) OR (Photobiomodulation Therapy) OR (Photobiomodulation Therapies) OR (Therapies, Photobiomodulation) OR (Therapy, Photobiomodulation) OR LLLT OR (Laser Therapy, Low-Level) OR (Laser Therapies, Low-Level) OR (Laser Therapy, Low Level) OR (Low-Level Laser Therapies) OR (Laser Irradiation, Low-Power) OR (Irradiation, Low-Power Laser) OR (Laser Irradiation, Low Power) OR (Low-Power Laser Therapy) OR (Low Power Laser Therapy) OR (Laser Therapy, Low-Power) OR (Laser Therapies, Low-Power) OR (Laser Therapy, Low Power) OR (Low-Power Laser Therapies) OR (Low-Level Laser Therapy) OR (Low Level Laser Therapy) OR (Low-Power Laser Irradiation) OR (Low Power Laser Irradiation) OR (Laser Biostimulation) OR (Biostimulation, Laser) OR (Laser Phototherapy) OR (Phototherapy, Laser) OR (Laser Therapies) OR (Therapies, Laser) OR (Therapy, Laser) OR MH: E02.594.540\$ OR MH: E02.774.500\$ #2 MH:"Tendão do Calcâneo" OR MH:"Achilles Tendon" OR MH:"Tendón Calcáneo"

	<p>#3 MH:"Tendinopatía" OR MH:"Tendinopathy" OR MH:"Tendinopatía" OR OR (Achilles tendinopathy) OR (Achilles Tendon) OR (Achilles tendinitis) OR Calcaneus OR (Tendon, Achilles) OR (Calcaneal Tendon) OR (Calcaneal Tendons) OR (Tendon, Calcaneal) OR (Tendons, Calcaneal) OR (Tendo Calcaneus) OR MH: A02.880.176\$ OR MH: C05.651.869\$ OR MH:C26.874.800\$</p> <p>#4 #1 AND #2 AND #3</p>
Clinicaltrials	<p>Condition: (Achilles Tendon) OR (Calcaneus) OR (Achilles tendinopathy) OR (Achilles Tendon) OR (Achilles tendinitis) OR Calcaneus OR (Tendon, Achilles) OR (Calcaneal Tendon) OR (Calcaneal Tendons) OR (Tendon, Calcaneal) OR (Tendons, Calcaneal) OR (Tendo Calcaneus)</p> <p>Intervention: (Low-Level Light Therapy) OR Photobiomodulation</p>
WHO - ICTRP	<p>Condition: Achilles Tendon OR Calcaneus OR Achilles tendinopathy OR Achilles Tendon OR Achilles tendinitis OR Calcaneus OR Tendon, Achilles OR Calcaneal Tendon OR Calcaneal Tendons OR Tendon, Calcaneal OR Tendons, Calcaneal OR Tendo Calcaneus</p> <p>Intervention: Low-Level Light Therapy OR Photobiomodulation</p>
OpenGrey	<p>(Achilles Tendon OR Calcaneus OR Achilles tendinopathy OR Achilles Tendon OR Achilles tendinitis OR Calcaneus OR Tendon, Achilles OR Calcaneal Tendon OR Calcaneal Tendons OR Tendon, Calcaneal OR Tendons, Calcaneal OR Tendo Calcaneus) AND (Low-Level Light Therapy OR Photobiomodulation)</p>

Supplementary file 2. Risk of bias table judgments

Risk of Bias table domain/ Study	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Bjordal 2006	Unclear risk No sufficient information for judgment.	Low risk <i>Quote:</i> "Which side should be treated was decided for each patient by drawing one of 10 opaque envelopes containing A or B"	Low risk <i>Quote:</i> "Thus the allocation of tendon to groups was concealed from patients, therapist, and observer."	Unclear risk <i>Comment:</i> No sufficient information for judgment.	High risk <i>Quote:</i> "Four right side and three left side Achilles tendons were given active treatment." <i>Comment:</i> High rate of losses (30%) and the reasons for losses were not described.	Unclear risk <i>Comment:</i> Study protocol is not available.	Unclear risk <i>Comment:</i> Baseline characteristics were not described.
Stergioulas 2008	Unclear risk No sufficient information for judgment.	Unclear risk No sufficient information for judgment.	Low risk <i>Quote:</i> "To maintain participant blinding, both the laser unit and the placebo laser unit produced a sound and a visible red light displayed during treatment."	Low risk <i>Quote:</i> "Outcome measurements were performed by a blinded observer who was unaware of group allocation."	High risk <i>Quote:</i> "Twelve patients, 6 in each group, withdrew for lack of effect after the 4 week evaluation." <i>Comment:</i> High rate of losses (23%).	Unclear risk <i>Comment:</i> Study protocol is not available.	Low risk <i>Comment:</i> No other potential sources of bias.
Tumilty 2008	Low risk <i>Quote:</i> "A computer-generated list of random	Low risk <i>Quote:</i> "the clinic receptionist randomized subjects into one of two groups by	Low risk <i>Quote:</i> "Neither the principal investigator, the treating physiotherapist, nor the patient had any knowledge of which group	Low risk <i>Quote:</i> "The principal investigator, blinded to group allocation, performed the initial assessment and	Low risk <i>Quote:</i> "All 20 patients completed the course of treatment."	Unclear risk <i>Comment:</i> Study protocol is not available.	Low risk <i>Comment:</i> No other potential sources of bias.

	numbers was produced"	asking them to select any one of 20 identical opaque sealed envelopes"	was receiving the active laser treatment."	evaluation of baseline and follow-up outcome measures." <i>Comment:</i> Methods for blinding were clearly described.			
Tumilty 2012	Low risk <i>Quote:</i> "Based on a computer-generated random number list"	Low risk <i>Quote:</i> "the clinic receptionist randomized subjects into one of two groups by asking them to select any one of 20 identical opaque sealed envelopes"	Low risk <i>Quote:</i> "Neither the principal investigator, the treating physiotherapist, nor the patient had any knowledge of which group was receiving the active laser treatment."	Low risk <i>Quote:</i> "The principal investigator, blinded to group allocation, performed the initial assessment and evaluation of baseline and follow-up outcome measures." <i>Comment:</i> Methods for blinding were clearly described.	High risk <i>Quote:</i> "Two participants withdrew from the study because of shift work, 1 cited travel as a reason, and 1 could not be contacted after the initial assessment... the reasons for the withdrawal of an additional 3 participants were not ascertained." <i>Comment:</i> High rate of losses (17.5%)	Low risk <i>Comment:</i> Australian New Zealand Clinical Trials Registry Number: ACTRN 12607000508 471 Comments: All planned outcomes were reported"	Low risk <i>Comment:</i> No other potential sources of bias.

Supplementary file 3. Summary of findings table and GRADE assessment

Summary of findings table

Low level laser therapy plus eccentric exercises compared to Sham Low level laser therapy plus eccentric exercises for Achilles tendinopathy

Patient or population: Achilles

Setting: Ambulatory

Intervention: Low level laser therapy plus eccentric exercises

Comparison: Sham Low level laser therapy plus eccentric exercises

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with Sham LLLT + EE	Risk with LLLT + EE				
Pain Intensity assessed with: VAS Scale from: 0 to 10 follow up: mean 1 months	The mean pain Intensity was 1.03 points	The mean pain intensity in the intervention group was 0,38 points lower (2,1 lower to 1,33 higher)	-	108 (3 RCTs)	⊕⊕○○ LOW ^{a,b}	
Pain Intensity assessed with: VAS Scale from: 0 to 10 follow up: mean 2 months	The mean pain Intensity was 6.28 points	The mean pain intensity in the intervention group was 2,55 points lower (3,87 lower to 1,23 lower)	-	46 (1 RCT)	⊕○○○ VERY LOW ^{c,d}	
Pain Intensity assessed with: VAS Scale from: 0 to 10 follow up: mean 3 months	The mean pain Intensity was 0.94 points	The mean pain intensity in the intervention group was 0,61 points lower (2,04 lower to 0,83 higher)	-	102 (3 RCTs)	⊕⊕○○ LOW ^{b,c}	
Pain Intensity assessed with: VAS Scale from: 0 to 10 follow up: mean 13 months	The mean pain Intensity was 0.23 points	The mean pain intensity in the intervention group was 0,48 points higher (0,24 lower to 1,2 higher)	-	33 (1 RCT)	⊕⊕○○ LOW ^f	
Function assessed with: VISA-A Scale from: 0 to 100 follow up: mean 1 months	The mean function was 82.9 points	The mean function in the intervention group was 9,19 points lower (16,16 lower to 2,23 lower)	-	56 (2 RCTs)	⊕⊕○○ LOW ^g	

Summary of findings table

Low level laser therapy plus eccentric exercises compared to Sham Low level laser therapy plus eccentric exercises for Achilles tendinopathy

Patient or population: Achilles

Setting: Ambulatory

Intervention: Low level laser therapy plus eccentric exercises

Comparison: Sham Low level laser therapy plus eccentric exercises

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with Sham LLLT + EE	Risk with LLLT + EE				
Function assessed with: VISA-A Scale from: 0 to 100 follow up: mean 3 months	The mean function was 93 points	The mean function in the intervention group was 3,39 points lower (14,13 lower to 7,34 higher)	-	56 (2 RCTs)	⊕⊕○○ LOW ^g	
Function assessed with: VISA-A Scale from: 0 to 100 follow up: mean 13 months	The mean function ranged from 91 points	The mean function in the intervention group was 8 points lower (16,03 lower to 0,03 higher)	-	33 (1 RCT)	⊕⊕○○ LOW ^f	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; MD: Mean difference

GRADE Working Group grades of evidence

High certainty: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Explanations

- We downgraded one level due to inconsistency ($I^2 = 87\%$, and a little variation of effect)
- We downgraded one level due to imprecision (small sample size - less than 400)
- We downgraded one level due to risk of bias (lack of information about random sequence generation and allocation concealment) and attrition bias (high rate of losses).
- We downgraded two levels due to imprecision (small sample size, N = only 46 participants)
- We downgraded one level due to inconsistency ($I^2 = 70\%$ and a little variation of effect)
- We downgraded two levels due to imprecision (small sample size, N = only 33 participants)
- We downgraded two levels due to imprecision (small sample size - less than 400, wide confidence interval)

FIGURES

Figure 1. PRISMA Flow diagram.



