ACHILLES TENDINOPATHY (mid-substance):
Summary of the Evidence for Physical Therapy Interventions

PURPOSE, SCOPE & DISCLAIMER: *The purpose of this document is to provide physical therapists with a summary of the evidence for interventions commonly used to manage mid-substance Achilles tendinopathy. This decision-making tool is evidence-informed and where there is insufficient evidence, expert-informed. It is not intended to replace the clinician's clinical reasoning skills and inter-professional collaboration. 'Acute' refers primarily to the stage with the cardinal signs of heat, redness, pain, swelling and loss of function and a very recent onset of symptoms.*

INTERVENTION	STAGE OF PATHOLOGY	CLINICAL RESEARCH EVIDENCE	PUBLISHED EXPERT OPINION	TAKE HOME MESSAGE	CLINICAL IMPLICATION **See final page for description of categories*
Manual Therapy	Acute				May consider using manual therapy in the acute stage after undertaking a comprehensive biomechanical evaluation of the hip, knee, foot and ankle.
- *Joint mobs*		**No**	**Yes**	There is no clinical evidence but there is expert level consensus to support the use of joint mobilizations in the acute stage if assessment reveals joint restriction.	
- *Soft tissue techniques*		**No**	**No**	The clinical evidence neither supports nor refutes the use of frictions in the acute stage.	
	Chronic				
- *Joint mobs*		**Yes** **1 CS**	**Yes**	There is a small amount of clinical evidence and more substantial expert level consensus to support the use of joint mobilizations in the chronic stage if assessment reveals joint restriction.	May consider using manual therapy in the chronic stage after undertaking a comprehensive biomechanical evaluation of the hip, knee, foot and ankle.
- *Soft tissue techniques*		**Yes** **1 SR** **2 CS**	**Yes**	There is a small amount of clinical evidence to support the use of soft tissue techniques, such as frictions, in the chronic stage.	May consider a trial of soft tissue techniques, such as frictions, in the chronic stage.
Exercise	Acute	**No**	**Yes**	There is a small amount of expert opinion to support the use of stretches in the acute stage.	May consider using stretching exercises in acute stage. No prescription parameters are provided. ACSM recommends 10-30 sec hold, 2-4 repetitions.
	Chronic	**Yes** **14 OS** **6 SR** **5 RCT**	**Yes**	There is a large amount of clinical evidence to support the use of exercise in the chronic stage but the precise parameters to ensure effectiveness are not clear. Eccentric exercise in particular is supported although some protocols use both concentric and eccentric exercise. Males appear to benefit slightly more than females from eccentric exercise.	Strongly consider using eccentric exercise in the chronic stage using the following general parameters of a gradual progression to 3 sets of 15 repetitions, twice per day with the knee extended and with the knee flexed. **See Appendix A for further details on exercise prescription.*

INTERVENTION	STAGE OF HEALING	CLINICAL RESEARCH EVIDENCE	PUBLISHED EXPERT OPINION	TAKE HOME MESSAGE	CLINICAL IMPLICATION **See final page for description of categories*
Low level laser therapy (LLLT)	Acute	**Yes** **2 SR**	**Yes**	There is no clinical evidence, but there is a physiological rationale, to support the use of LLLT in the acute stage.	May consider a trial of LLLT in the acute stage at the doses recommended by the World Association for Laser Therapy (www.walt.nu) i.e., 2-4 J/point (not per cm^2)*, minimum 2-3 points. **See Appendix B for further details on calculation of dosage.*
	Chronic	**Yes** **1 MA** **5 RCT**	**Yes**	There is conflicting clinical evidence and conflicting expert opinion to support the use of LLLT in the chronic stage.	Consider a trial of LLLT in the chronic stage at the following parameters: 0.9 J/point (not per cm^2)*; 6 points on tendon. **See Appendix B for further details on calculation of dosage.*
Ultrasound (US)	Acute	**No**	**No**	There is no clinical evidence, but there is physiological rationale, to support the use of US in the acute stage.	May consider a trial of US in the acute stage at a low to moderate dose (0.5 - 1.0 W/cm^2, pulsed 1:4-1:1, 3 MHz, 5 mins for each treatment area equivalent in size to transducer head).
	Chronic	**No**	**No**	There is no clinical evidence and no physiological rationale to support the use of US in the chronic stage.	Consider NOT using US in the chronic stage.
Extracorporeal shock wave therapy (SWT) *Focused or radial SWT (low energy)*	Acute	**No**	**Yes**	There is expert opinion which suggests that SWT be reserved for chronic stage.	Consider NOT using Extracorporeal Shock Wave for the acute stage.
	Chronic	**Yes** **4 RCT** **1 Cohort**	**Yes**	There is conflicting evidence to support the use of SWT in the chronic stage. There is evidence suggesting that the outcomes are dependent upon the dosage of the shock wave energy (EFD - energy flux density = mJ/mm^2), rather than the type of shock wave generation (focused vs. radial SWT). There is also evidence that the use of anesthetic required in high energy protocols decreases the effectiveness of SWT. Therefore, using low energy SWT protocols without the need for anesthetic are recommended as more practical, more tolerable, and less expensive with equivalent results. Low energy SWT protocols can apply to both focused and radial SWT.	Consider a trial of SWT in the chronic stage, especially if other interventions have failed, at the following parameters: Low energy SWT: EFD = 0.18 – 0.3 mJ/mm^2 (2-4 Bars) 2000-3000 shocks 15-30 Hz 3-5 sessions, weekly intervals. Advise patients that this is an experimental technique. SWT enhances the outcomes compared to eccentric exercise alone, therefore patients should be instructed to continue with a well-designed exercise program.

INTERVENTION	STAGE OF HEALING	CLINICAL RESEARCH EVIDENCE	PUBLISHED EXPERT OPINION	TAKE HOME MESSAGE	CLINICAL IMPLICATION *See final page for description of categories
Iontophoresis using dexamethasone	Acute	**Yes** **1 RCT** **1 review**	**No**	There is a small amount of evidence to support the application of iontophoresis using dexamethasone in the acute stage. The role of iontophoresis is still investigational.	May consider, in the acute stage, a trial of iontophoresis, 0.4% dexamethasone (aqueous), 80 mA-min; 6 sessions over 3 weeks. A program of concentric-eccentric exercises should be continued in combination with iontophoresis, if exercise loading is tolerated.
	Chronic	**No**	**No**	There is no evidence that anti-inflammatory intervention with iontophoresis using dexamethasone has a useful role in the chronic stage.	Consider NOT using iontophoresis using dexamethasone in the chronic stage.
Taping	Acute	**No**	**Yes**	There is expert opinion to support the use of antipronation taping in the acute stage.	May consider using antipronation taping in the acute stage.
	Chronic	**Yes** **1 CS**	**Yes**	There is expert opinion to support the use of controlled pronation taping in the chronic stage.	May consider using antipronation taping in the chronic stage.
Orthotics	Acute	**Yes** **2 CS**	**Yes**	There is a small amount of clinical evidence to support the use of orthotics in the acute stage.	Consider using orthotics – perhaps using taping first, in the acute stage.
	Chronic	**Yes** **2 CS** **1 RCT**	**Yes**	There is a moderate amount of clinical evidence to support the use of orthotics in the chronic stage.	Consider using orthotics in the chronic stage.
Night splints and braces	Acute	**No**	**Yes**	There is expert opinion to support the use of night splints and braces in the acute stage.	Consider a trial of night splints and braces in the acute stage.
	Chronic	**Yes** **3 RCT**	**Yes**	There is a moderate amount of evidence against the use of night splints and braces in the chronic stage.	Consider NOT using night splints and braces in the chronic stage.
Heel raise inserts	Acute	**No**	**Yes**	There is some expert opinion to support the use of heel raise inserts in the acute stage.	May consider a trial of inserts in the acute stage.
	Chronic	**Yes** **2 RCT**	**Yes**	There is conflicting evidence for and against the use of heel inserts in the chronic stage.	Consider a trial of inserts in the chronic stage.

INTERVENTION	STAGE OF HEALING	CLINICAL RESEARCH EVIDENCE	PUBLISHED EXPERT OPINION	TAKE HOME MESSAGE	CLINICAL IMPLICATION **See final page for description of categories*
Needling techniques ***Acupuncture (Traditional Chinese medicine, anatomical, electrical) and Intramuscular stimulation***	Acute	**Yes** **1 CS**	**No**	There is a small amount of evidence to support the use of Traditional Chinese Medicine electroacupuncture in the acute stage. There is expert opinion to support the use of other needling techniques in the acute stage.	Consider a trial of electro-acupuncture in the acute stage. May consider a trial of other acupuncture-related needling techniques in the acute stage.
	Chronic	**Yes** **1 CS**	**No**	There is a small amount of evidence to support use of Traditional Chinese Acupuncture in the chronic stage. There is expert opinion on the use of other needling techniques in the chronic stage.	Consider a trial of Traditional Chinese Acupuncture in the chronic stage. May consider a trial of other acupuncture-related needling techniques in the chronic stage.

CS - Case studies; **MA** - Meta-analyses; **OS** - Observational studies; **RCT** - Randomized controlled trials; **SR** - Systematic reviews

For any intervention selected by the clinician, it is strongly recommended that the clinician use one or more of the following outcome measures:

A. Patient reported outcome measure such as:

- A global measure of lower extremity function: e.g., The Lower Extremity Functional Scale (LEFS) - not specific to Achilles tendinopathy
  - http://www.physther.net/content/79/4/371/F1.large.jpg
- Detailed questionnaire, specific to Achilles tendinopathy e.g. the VISA-A questionnaire
  - http://bjsm.bmj.com/content/suppl/2001/11/09/35.5.335.DC1/01055_Fig_1_data_supplement.pdf (click on 'view questionnaire')

B. Patient specific functional outcome measure such as:

- How much weight can be applied to the plantar flexed foot on a weighing scale before the onset of pain
- The number of heel raises before the onset of pain
- The number of heel drops before the onset of pain
- The number of heel drops with a specific weight in a backpack before the onset of pain
- How far can the client walk or run before the onset of pain

Explanation of Clinical Implications

- ***Strongly consider:*** High level/high quality evidence that this should be included in treatment.
- ***Consider:*** Consistent lower level/lower quality or inconsistent evidence that this should be included in treatment.
- ***May consider:*** No clinical evidence but expert opinion and/or plausible physiological rationale that this should be included in treatment.
- ***Consider NOT:*** High level/high quality evidence that this should not be included in treatment.

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A Physical Therapy Knowledge Broker project supported by: UBC Department of Physical Therapy, Physiotherapy Association of BC, Vancouver Coastal Research Institute and Providence Healthcare Research Institute.

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Please see *Appendix C Achilles Tendinopathy: Details of Individual Articles* for the specific details on each of the articles referenced in this document.

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