

## APPENDIX 3

### Achilles tendinopathy

#### Effects of interventions mid-portion Achilles tendinopathy

##### *Functional disability*

Two studies (Rompe et al., 2009a, Rompe et al., 2007) reported VISA-A scores (Robinson et al., 2001) to assess the functional disability of the participants with mid-portion AT at mid-term follow-up and results are presented in **Figure 1**. There was no significant difference between ECSWT and eccentric training group. (Rompe et al., 2007) The quality of evidence was low (only one high-quality RCT, 50 participants, MD=5.20, 95%CI -14.92 to 4.52). Between those who received ECSWT and those following a wait-and-see policy, low-quality evidence revealed a significant difference in disability scores in favour of ECSWT (one RCT (Rompe et al., 2007), 50 participants, MD=15.4, 95%CI 7.25 to 23.55). This difference was clinically relevant as the MCID in the VISA-A is considered 12 points. The difference between ECSWT and ECSWT combined with eccentric training reached the criteria of MCID for the group with combined treatment. The level of evidence was very low-quality, because of the indirect comparison (**Table 3**) (one RCT (Rompe et al., 2009a), 68 participants, MD=13.50, 95%CI 5.15 to 21.85)

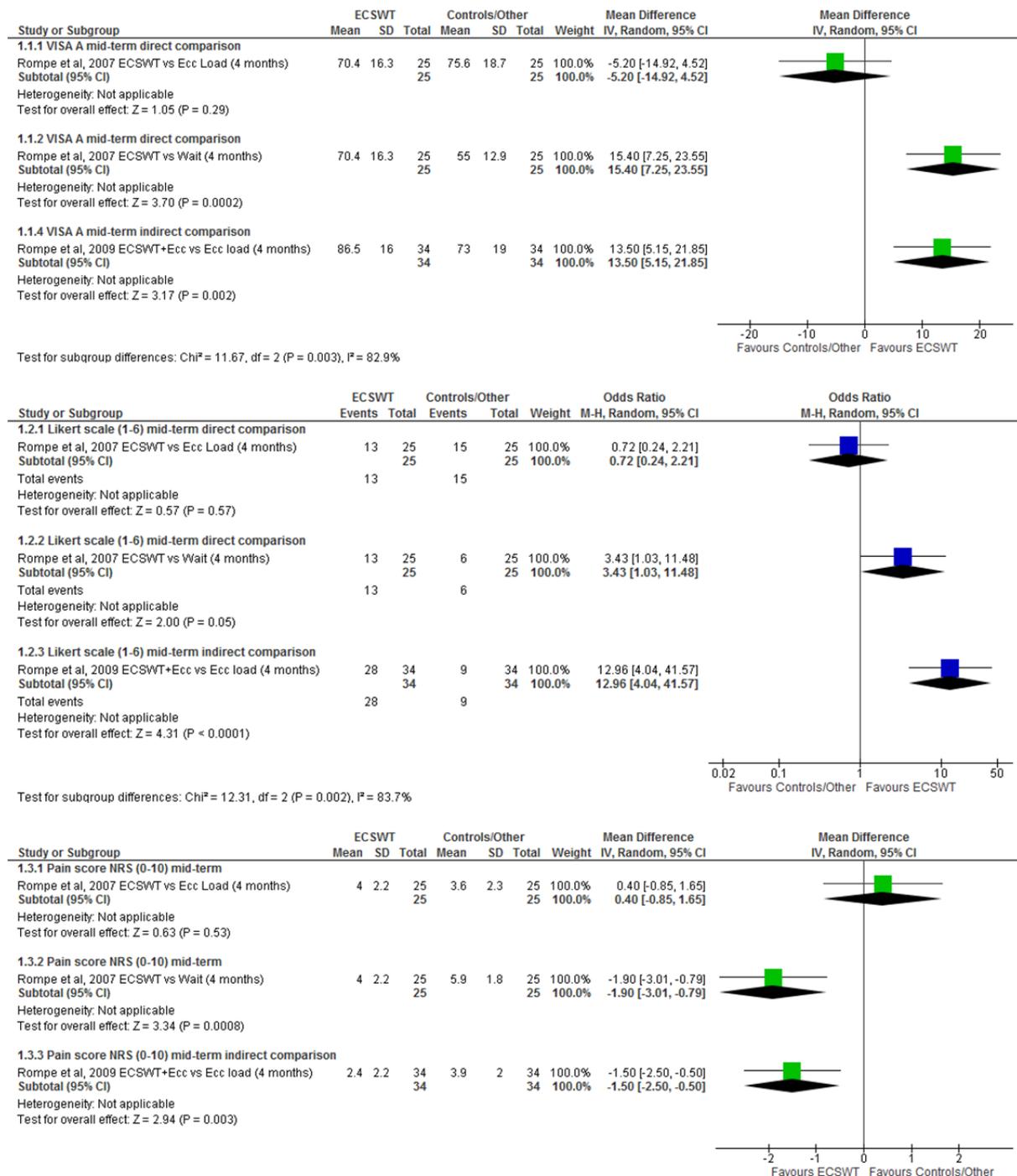
##### *Self-perceived recovery*

In both studies (Rompe et al., 2007, Rompe et al., 2009a) self-perceived recovery was assessed on a 6-point Likert scale. For the computation of success rates, patients who rated themselves as completely recovered and much improved were counted as successes. Low quality evidence suggests that there was no significant difference between radial ECSWT and eccentric training (one high-quality RCT (Rompe et al., 2007), 50 participants, OR=0.72, 95%CI 0.24 to 2.21). Between those who received ECSWT and those following a wait-and-see policy, low-quality evidence revealed marginally significant difference in favour of ECSWT (one RCT (Rompe et al., 2007), 50 participants, OR=3.43, 95%CI 1.03 to 11.48). The difference between ECSWT and ECSWT combined with eccentric training presented very low quality of evidence in favour of ECSWT. The level of evidence had to be decreased because of the indirect comparison (**Figure 1 and Table 3**) (one RCT (Rompe et al., 2009a), 68 participants, OR=12.96, 95%CI 4.04 to 41.57).

##### *Pain reduction in NRS*

Pain reduction was assessed in NRS and showed no significant difference between ECSWT and eccentric training group. (Rompe et al., 2007) The quality of evidence was low (only one high-quality RCT, 50 participants, MD=0.40, 95%CI -0.85 to 1.65). Between those who received ECSWT and those following a wait-and-see policy, low-quality evidence revealed a significant difference in pain scores in favour of ECSWT (one RCT (Rompe et al., 2007), 50 participants, MD=-1.90, 95%CI -3.01 to -0.79).

This difference was not clinically relevant as the MCID in the NRS was set at 2.0 points. The significant difference between ECSWT and ECSWT combined with eccentric training did not reach the criteria of MCID for the group with combined treatment. The level of evidence was very low-quality, because of the indirect comparison (one RCT(Rompe et al., 2009a), 68 participants, MD=1.50, 95%CI -2.50 to -0.50) (Figure 1 and Table 3).



**Figure 1** Forest plots for the effectiveness of ECSWT in mid-portion Achilles tendinopathy. Data are depicted according to follow-up time and outcome measures.

**1.1.** Functional outcomes as measured by VISA-A questionnaire. **1.2.** Self-perceived recovery in a 6-point Likert scale. **1.3.** Pain scores in a NRS.  
Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; Ecc load, eccentric load; Wait, wait-and-see policy; NRS, numeric rating scale.

### *Patient-rated pain reduction*

Equal results were measured when ECSWT was compared with eccentric load.(Rompe et al., 2007) The reduction in NRS effect size of ECSWT at 4 months was found to be 2.8 points compared to 3.4 for the controls, which is a patient rating of “much improved” in both groups (**Figure 4 – main text**).(Farrar et al., 2001)The group following wait-and-see policy had a mean pain reduction of 2.0 points corresponding to “minimally improved.” Nevertheless, the effectiveness of ECSWT was significantly improved when combined with eccentric exercises.(Rompe et al., 2009a) Considering the reduction in NRS effect size, in eccentric loading alone or combined with ECSWT (3.1 and 4.4, respectively) both groups were improved in terms of patient rating, with the combined treatment group having more significant results (“much improved” compared to “very much improved”).(Farrar et al., 2001)

## **Effects of interventions insertional Achilles tendinopathy**

### *Functional disability*

Rompe et al,(Rompe et al., 2008) evaluated the effectiveness of radial ECSWT compared to 12-weeks eccentric training in patients with insertional AT and assessed the functional improvement by using VISA-A questionnaire at mid-term follow-up. Between those who received ECSWT and those following eccentric training programme, low-quality evidence revealed a significant difference in functional disability scores that exceeded the MCID of 12 points in favour of radial ECSWT (one RCT(Rompe et al., 2008) 50 participants, MD=16.0, 95%CI 9.78 to 22.22) (**Figure 2 and Table 4**).

### *Self-perceived recovery*

Rompe et al,(Rompe et al., 2008) assessed the self-perceived recovery on a 6-point Likert scale and for the computation of success rates, patients who rated themselves as completely recovered and much improved were counted as successes. Low quality evidence suggests that there was a significant difference favouring radial ECSWT compared to eccentric training (one high-quality RCT(Rompe et al., 2008), 50 participants, OR=4.57, 95%CI 1.38 to 15.11) (**Figure 2 and Table 4**).

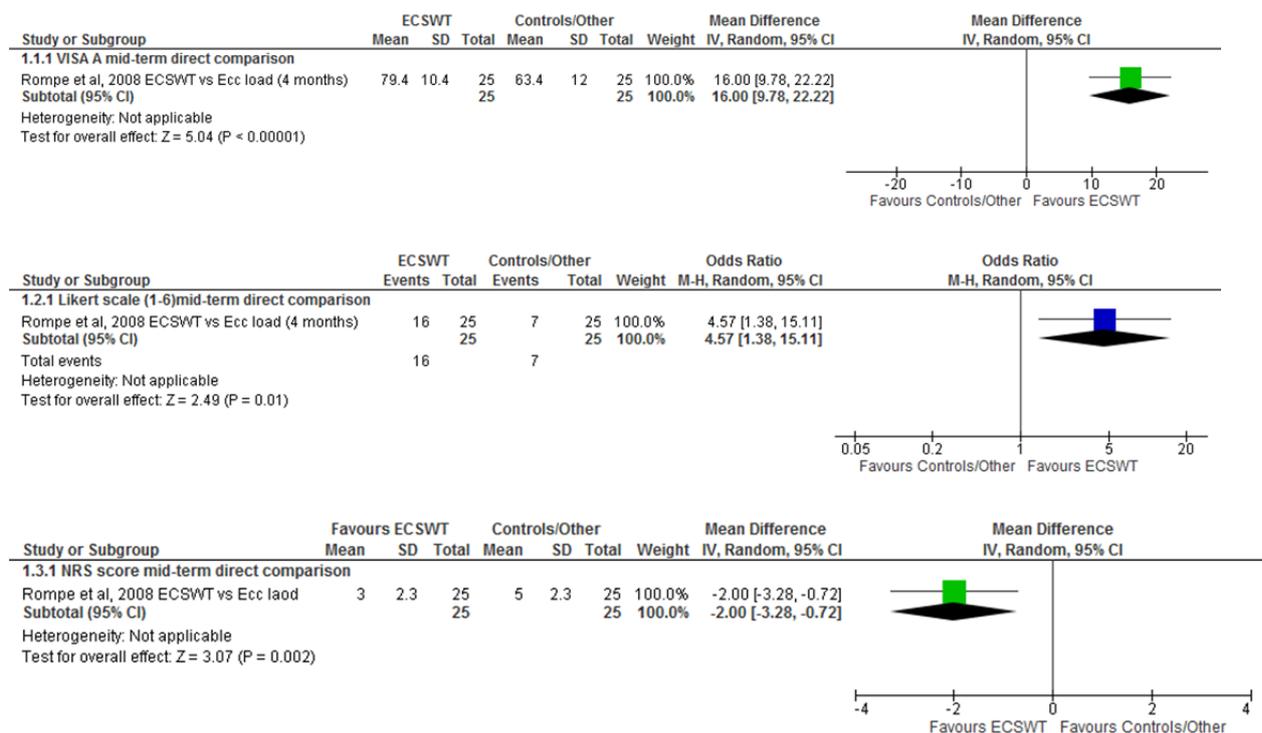
### *Pain reduction in NRS*

Pain reduction in load-induced pain was assessed in NRS and showed significant difference between ECSWT and eccentric training group.(Rompe et al., 2008) The quality of evidence was low (only one high-quality RCT, 50 participants, MD=2.00,

95%CI -3.28 to -07.2), but this difference met the MCID criterion adding clinical significance to these results (**Figure 2 and Table 4**).

### Patient-rated pain reduction

Clinically significant results were found in patient-rated pain in favour of ECSWT compared with eccentric loading.(Rompe et al., 2008) The reduction in NRS effect size of ECSWT at 4 months was found to be 4.0 points compared to 1.8 for the eccentric training group, which is a patient rating of “much improved” compared to “minimally improved” (**Figure 4 – main text**).(Farrar et al., 2001)



**Figure 2** Forest plots for the effectiveness of ECSWT in insertional Achilles tendinopathy. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by VISA-A questionnaire. **1.2.** Self-perceived recovery in a 6-point Likert scale. **1.3.** Pain scores in a NRS. Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; Ecc load, eccentric loading; NRS, numeric rating scale.

## Effects of interventions mixed/non-specified Achilles tendinopathy

### Functional disability

Investigators used different disability questionnaires between the studies included in this review. Costa et al,(Costa et al., 2005) reported Functional index of lower limb activity (FIL) scores, while Rasmussen et al,(Rasmussen et al., 2008) reported American Orthopaedic Foot and Ankle Society scores (AOFAS). We provided pooled

estimates of one RCT(Costa et al., 2005) by calculating standardised mean differences in FIL scores. Between those who received ECSWT and those receiving placebo ECSWT, very low-quality of evidence shows a significant difference regarding disability scores in favour of ECSWT in short-term follow-up (two RCTs, 97 participants, SMD=0.77, 95%CI 0.25 to 1.30) (**Figure 3 and Table 5**). The quality of evidence had to be decreased because of inconsistent results among studies, bias in reporting (**Appendix 2**), and indirect comparison in one RCT.(Rasmussen et al., 2008) The mean difference (calculated 35.68 points) reached the criteria of a MCID.

### *Self-perceived recovery*

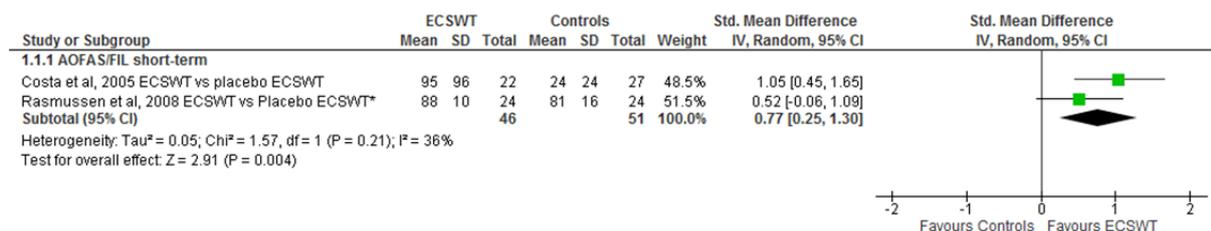
Only Costa et al,(Costa et al., 2005) assessed the recovery of patients with AT in terms of activities of daily living (EQ-5D). Very low level of evidence suggests no significant difference between ECSWT and placebo ECSWT groups (one RCT, 49 participants, MD=0.04, 95%CI -0.10 to 0.18). The level of evidence had to be decreased due to the possibility of reporting bias (**Figure 3 and Table 5**).

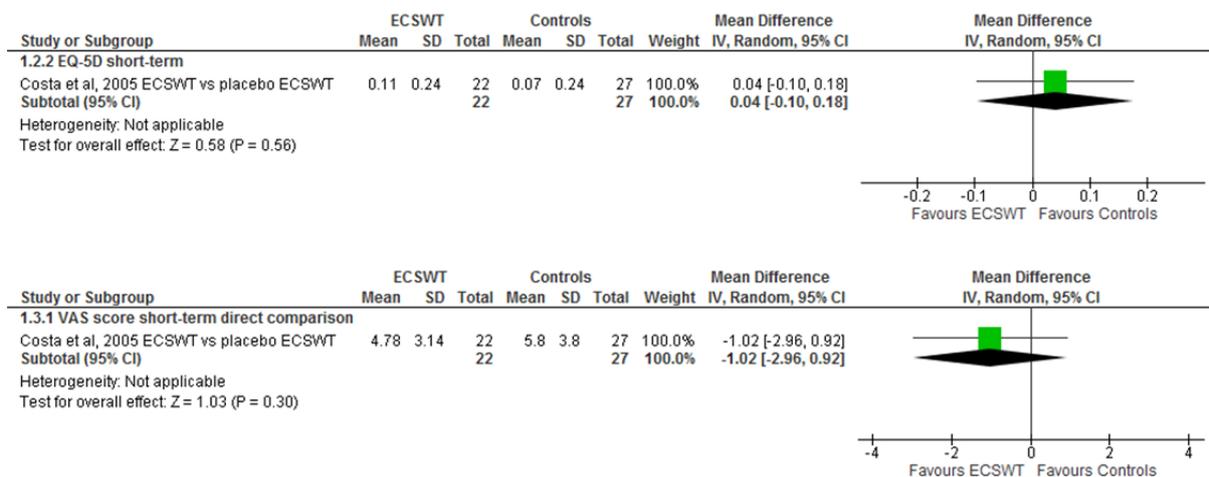
### *Pain reduction in VAS*

Both RCTs(Costa et al., 2005, Rasmussen et al., 2008) reported no statistically significant difference between groups. However, the pain scores reported by Rasmussen et al,(Rasmussen et al., 2008) are not included in this comparison because we were unable to derive means and standard deviations from the figures that were presented. Very low level of evidence revealed no difference in VAS score during sports participation between ECSWT and placebo groups (one high quality RCT, 49 participants, MD=-1.02, 95%CI -2.69 to 0.92). The quality of evidence had to be decreased because of the exclusion of one high quality study from data synthesis (**Figure 3 and Table 5**).

### *Patient-rated pain reduction*

The reduction in VAS effect size for pain in sports participation of the treatment groups at 3 months follow-up was not significantly different.(Costa et al., 2005) However, according to patient's rating was "much improved" for the ECSWT group compared to "minimally improved" for the placebo shock wave group (**Figure 4 – main text**).(Farrar et al., 2001)





**Figure 3** Forest plots for the effectiveness of ECSWT in patients with mixed/non specified Achilles tendinopathy. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by AOFAS and FIL questionnaires. **1.2.** Self-rated improvement in activities of daily living measured by EQ-5D questionnaire **1.3.** Pain scores in a VAS.

Note. Standardised values for FIL converted to 0-100 scale.(Costa et al., 2005)

\*Indirect comparison: both groups receive a stretching and eccentric training programme.

Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; AOFAS, American Orthopaedic Foot and Ankle Society score; FIL, Functional index of lower limb activity; EQ-5D, Euro Quality of life 5 dimensions questionnaire; VAS, visual analogue scale.

## Greater Trochanteric Pain Syndrome

### Effects of interventions

#### *Functional disability*

Only one case-control study(Furia et al., 2009) that met all the predefined criteria to pool data reported functional disability outcomes. Between those who received radial ECSWT and those receiving traditional non-operative treatment (i.e. stretching and strengthening, physical therapy modalities, iontophoresis, rest), very low-quality of evidence shows a significant difference regarding HHS in favour of ECSWT in short-term and long-term follow-up (one good quality study(Furia et al., 2009), 66 participants, short-term MD=16.75, 95%CI 14.31 to 19.19 and long-term MD=22.3, 95%CI 19.40 to 25.20) (**Figure 4, Table 6**). The mean difference met the MCID of 10 points threshold for clinical significance.

#### *Self-perceived recovery*

Investigators used different assessment tools for recovery between the studies included in this review. Rompe et al,(Rompe et al., 2009b) used a 6-point Likert scale, while Furia et al,(Furia et al., 2009) used the Roles and Maudsley score.

Despite this difference we proceeded to quantitative synthesis due to both studies for the computation of success rates implemented the same criteria; patients who rated themselves as completely recovered and much improved were counted as successes (**Figure 4, Table 6**).

There is low quality of evidence from only one RCT(Rompe et al., 2009b) reporting significantly bigger recovery rate between those who received corticosteroid injection (CI) and those received radial ECSWT, but the CI effect was washed out at mid and long-term follow-up in favour of ECSWT (one RCT(Rompe et al., 2009b), 153 participants, short-term OR=0.05, 95%CI 0.02 to 0.12; mid-term OR=2.06, 95%CI 1.07 to 3.98; long-term OR=3.14, 95%CI 1.59 to 6.21). Between those who were treated with radial ECSWT and those received conservative treatment(Furia et al., 2009) or home exercise program (HT)(Rompe et al., 2009b), low quality of evidence suggests a significant difference in self-perceived recovery in favour of ECSWT at mid-term follow-up (two studies(Furia et al., 2009, Rompe et al., 2009b), 220 participants, OR=5.02, 95%CI 1.62 to 15.56). Regarding the self-perceived recovery at long-term follow-up the studies reported conflicting results. One trial showed evidence of self-perceived recovery in favour of ECSWT, while the other no difference between ECSWT and HT. When the two studies were pooled, low quality of evidence revealed no significant difference between the groups (two studies(Furia et al., 2009, Rompe et al., 2009b), 220 participants, OR=2.08, 95%CI 0.24 to 18.10). The quality of evidence had to be decreased because of the inclusion in analysis of a case-control study.(Furia et al., 2009)

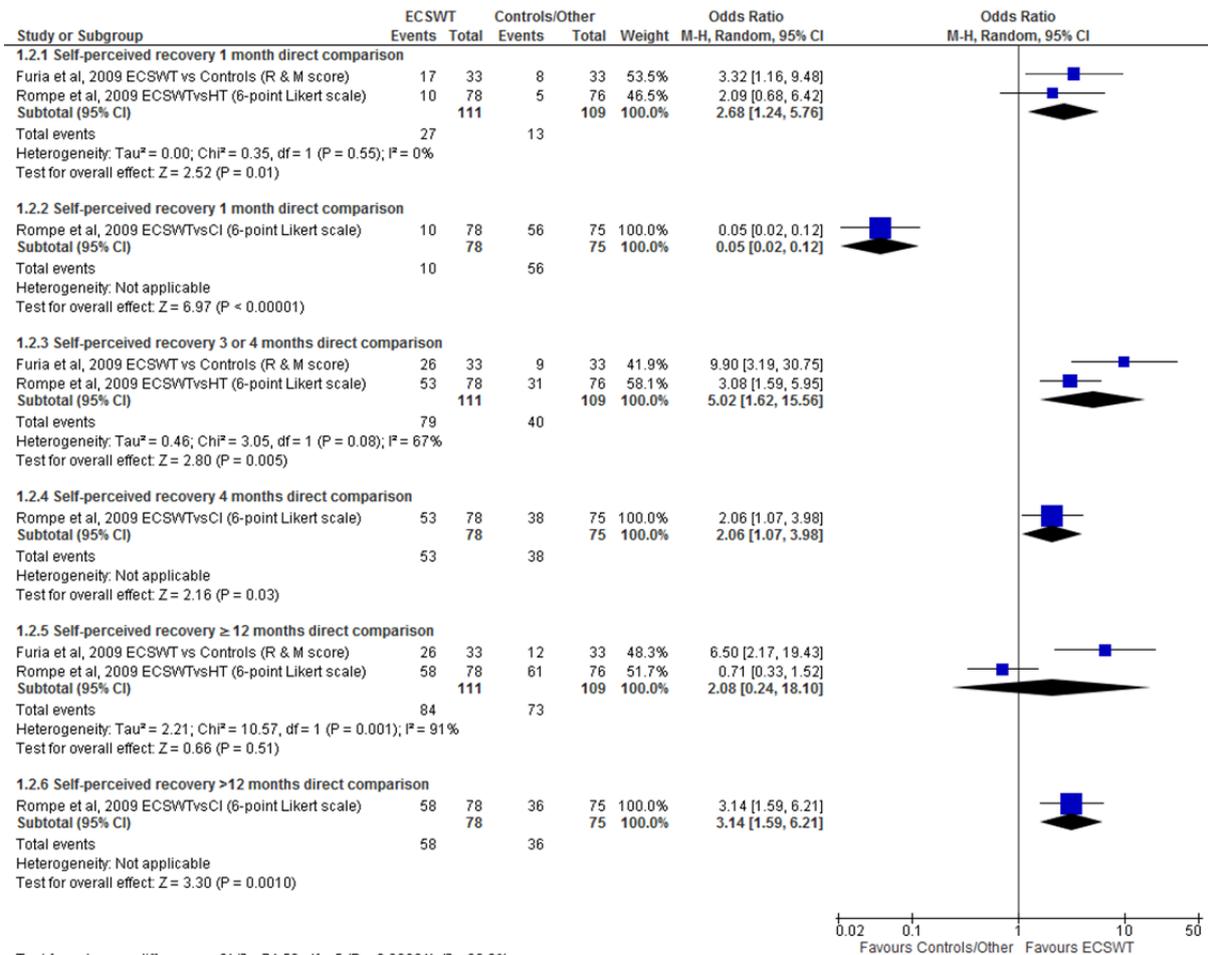
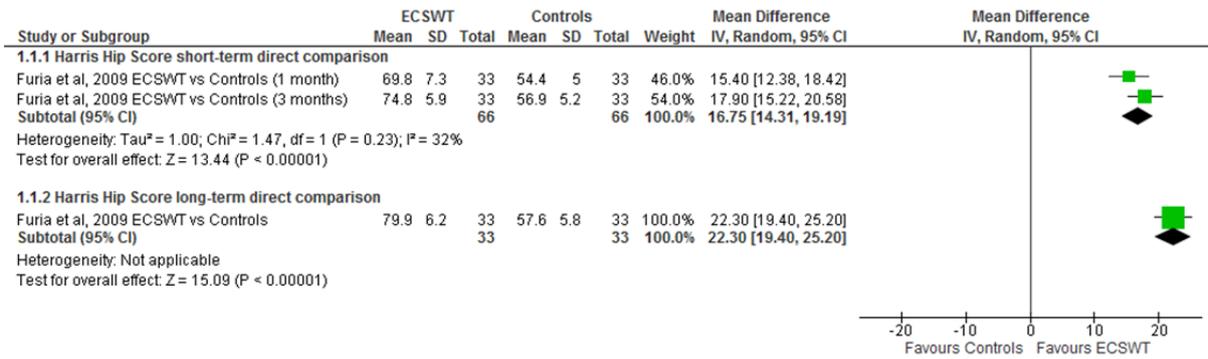
#### *Pain reduction in NRS*

We did not plot pain scores and combine in quantitative synthesis both studies due to substantial statistical heterogeneity and poor overlapping of 95% CIs in created forest plots. We found low quality evidence from one RCT(Rompe et al., 2009b) reporting significant pain reduction at 1-month follow-up for the corticosteroid injection group compared to the ECSWT group, this result was reversed at the 4-month and 15-month follow-up (one RCT(Rompe et al., 2009b), 153 participants, short-term MD=3.40, 95%CI 2.46 to 4.34; mid-term MD=-1.30, 95%CI -2.16 to -0.44; long-term MD=-2.90, 95%CI -3.92 to -1.88). All differences were statistically significant, but only the short-term and long-term pain reduction values reached a MCID. The comparison of ECSWT to HT did not reveal statistically nor clinically significant results in terms of pain reduction at 1-month and 15-month follow-up (one RCT(Rompe et al., 2009b), 153 participants, short-term MD=-0.30, 95%CI -1.33 to 0.73; long-term MD=-0.30, 95%CI -1.22 to 0.62) Low quality of evidence suggests that improvement in pain was statistically and clinically significantly bigger in the ECSWT group at 4 months compared to the HT group (one RCT(Rompe et al., 2009b), 153 participants, mid-term MD=-2.00, 95%CI -2.84 to -1.16).(**Figure 4, Table 6**)

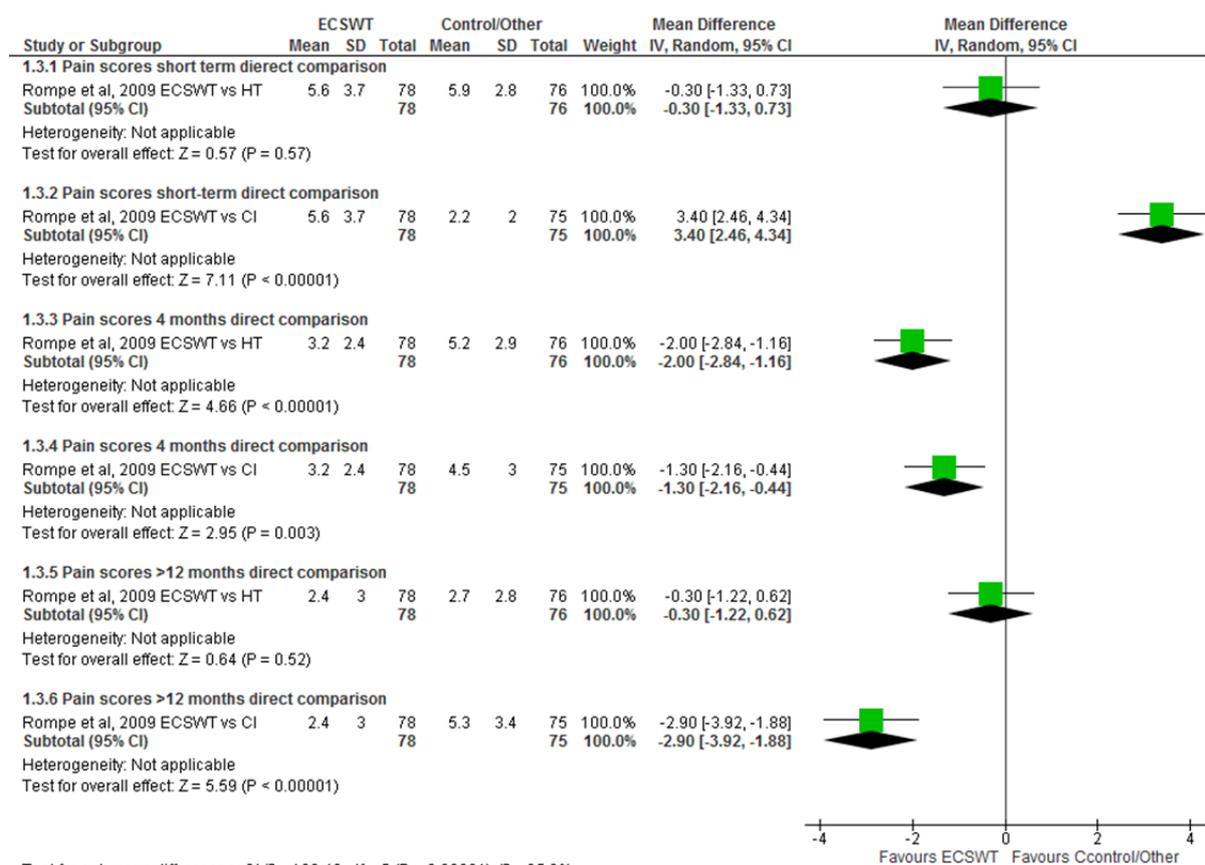
#### *Patient-rated pain reduction*

Regarding the comparison of radial ECSWT with traditional non-operative treatment,(Furia et al., 2009) the reduction in VAS effect size of ECSWT group at 1, 3 and 12 months was seen to be 3.4, 4.8 and 5.8 points respectively (compared to 0.9, 1.5 and 2.2 for the controls) which is a patient rating of “much improved” and “very much improved” (compared to “minimally improved” and “much improved” (12 months), respectively).(Farrar et al., 2001)

In the study that compared CI and HT to ECSWT,(Rompe et al., 2009b) the reduction in NRS effect size of CI group at 1 month was seen to be 3.6 points compared to 0.7 for ECSWT and 0.3 for the HT group, which is a patient rating of “much improved” compared to “no change” and “no change”, respectively.(Farrar et al., 2001) Interestingly, ECSWT and home training groups presented comparable results at long term (both “much improved”) (**Figure 4 – main text**).(Farrar et al., 2001)



Test for subgroup differences: Chi<sup>2</sup> = 74.56, df = 5 (P < 0.00001), I<sup>2</sup> = 93.3%



**Figure 4** Forest plots for the effectiveness of ECSWT in patients with greater trochanteric pain syndrome. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by HHS questionnaire. **1.2.** Self-rated improvement measured a 6-point Likert scale and Roles and Maudsley score **1.3.** Pain scores in a NRS.

Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; HHS, Harris Hip Score; HT, home training; CI, corticosteroid injection.

## Effectiveness of interventions in Patellar tendinopathy

### Focused ECSWT compared to placebo shock-wave

Two multicentre double-blinded RCTs compared ECSWT to placebo shock-wave with(Thijs et al., 2016) or without(Zwerver et al., 2011) additive eccentric training.

#### Functional disability

Both studies(Thijs et al., 2016, Zwerver et al., 2011) evaluated functional disability of the participants by using VISA-P questionnaire. When data were pooled into a summary estimate, we found moderate quality of evidence (initially high level of evidence due to both RCTs were multi-centre and had low-risk of bias) revealing no difference between ECSWT and placebo shock-wave in both short-term (two RCTs,

114 participants, MD=-3.79, 95%CI -10.84 to 3.26) and mid-term follow-up (two RCTs, 114 participants, MD=-4.72, 95%CI -11.26 to 1.82). The level of evidence had to be decreased because of the indirect comparison and attrition bias in one included study (**Figure 5, Table 7**).

#### *Self-perceived recovery*

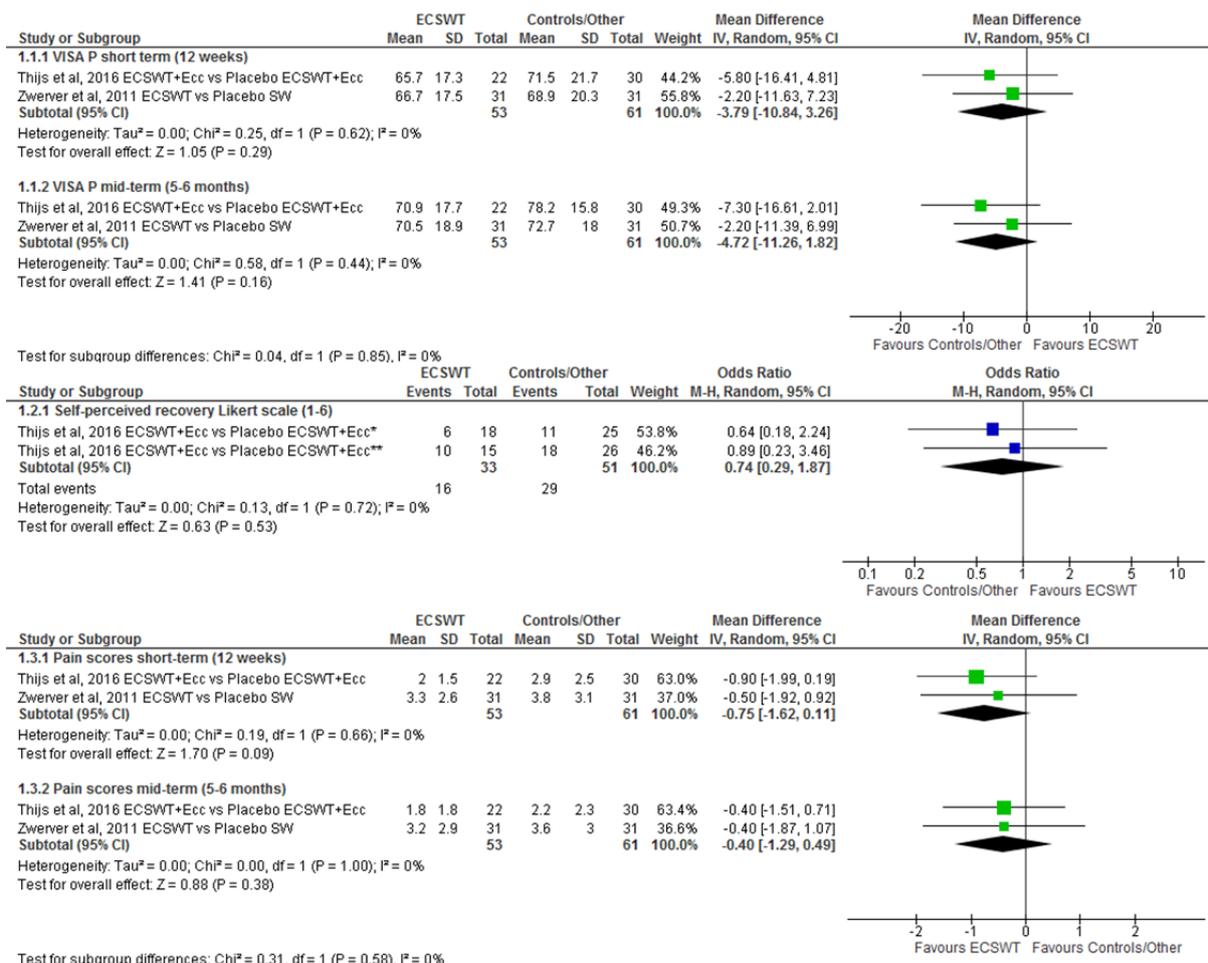
Self-perceived recovery was reported only by Thijs et al.(Thijs et al., 2016) in 6-point Likert scale. Low quality of evidence depicted no difference between ECSWT and placebo shock-wave additive to eccentric training at short (one RCT, 52 participants, OR=0.64, 95%CI 0.18 to 2.24) and mid-term follow-up (one RCT, 52 participants, OR=0.89, 95%CI 0.23 to 3.46). The level of evidence had to be decreased because of only one study included in analysis, indirect comparison and attrition bias in the study (**Figure 5, Table 7**).

#### *Pain reduction in NRS/VAS*

Both studies(Thijs et al., 2016, Zwerver et al., 2011) reported no significant difference between groups in pain reduction during sports participation and several functional activities. When data were pooled into a summary estimate in terms of pain after 10 decline squats on injured leg (most relevant test in clinical practice), we found moderate quality of evidence depicting no difference between ECSWT and placebo shock-wave in both short-term (two RCTs, 114 participants, MD=-0.75, 95%CI -1.62 to 0.11) and mid-term follow-up (two RCTs, 114 participants, MD=-0.40, 95%CI -1.29 to 0.49). The level of evidence had to be decreased because of the indirect comparison and attrition bias in one included study(Thijs et al., 2016) (**Figure 5, Table 7**).

#### *Patient-rated pain reduction*

The reduction in NRS/VAS in 10 decline squats-induced pain of both treatment groups at short and mid-term follow-up was not significantly different.(Thijs et al., 2016, Zwerver et al., 2011) In both studies the pain reduction effect size in ECSWT group ranged from 1.3 to 2.3 points which is a patient rating of “minimally improved” in both short and mid-term follow-up.(Farrar et al., 2001) Regarding the placebo ECSWT groups the effect size in pain reduction in the Zwerver et al.(Zwerver et al., 2011) study was calculated to be 0.8 and 1.0 point for each follow-up indicating “no change” compared to baseline.(Farrar et al., 2001) However, in the Thijs et al.(Thijs et al., 2016) study the placebo group reported “minimally improved” with a difference from baseline reaching 1.8 and 2.5 points respectively for each follow-up assessment. (**Figure 4 – main text**).(Farrar et al., 2001)



**Figure 5** Forest plots for the effectiveness of ECSWT compared to placebo ECSWT in patients with patellar tendinopathy. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by VISA-P questionnaire. **1.2.** Self-rated improvement measured a 6-point Likert scale **1.3.** Pain scores in a NRS/VAS.

\*Self-perceived recovery 12 weeks

\*\* Self-perceived recovery 24 weeks

Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; Ecc, Eccentric loading.

## Focused ECSWT compared to conservative management

### Functional disability

Wang et al,(Wang et al., 2007) evaluated the effectiveness of focused ECSWT compared to conservative treatment consisting of NSAIDs, physiotherapy, exercise program, and the use of knee strap in patients with PT and assessed the functional improvement by using VISA-P questionnaire at 2 to 3-year follow-up (mean 32.7 months for ECSWT group and 28.6 months control group). Between those who received ECSWT and those following control conservative management, low-quality evidence revealed a significant difference in functional disability scores as measured

by VISA-P that exceeded the MCID of 12 points in favour of focused ECSWT (one RCT(Wang et al., 2007) 50 participants, MD=50.96, 95%CI 45.26 to 56.66). The level of evidence had to be decreased because of different follow-up times for groups compared, but also had to be increased due to the large magnitude of effect (**Figure 6, Table 8**).

### Self-perceived recovery

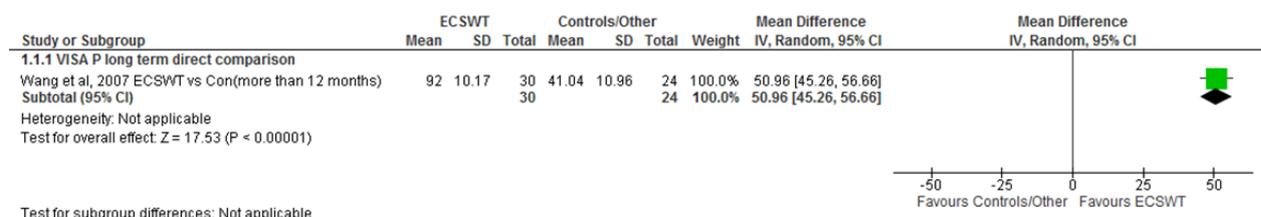
Self-perceived recovery was assessed on a 4-point Likert scale and was subjectively evaluated by the performance of activities of daily living, including sports. For the computation of success rates, patients who rated their overall clinical outcomes as excellent and good were counted as successes. Low quality evidence suggests that there was a big and significant difference favouring focused ECSWT compared to control conservative management (one good-quality RCT(Wang et al., 2007), 50 participants, OR=9.00, 95%CI 2.14 to 37.85) The level of evidence had to be decreased because of different follow-up times for comparison groups, but also had to be increased due to the large magnitude of effect (**Figure 6, Table 8**).

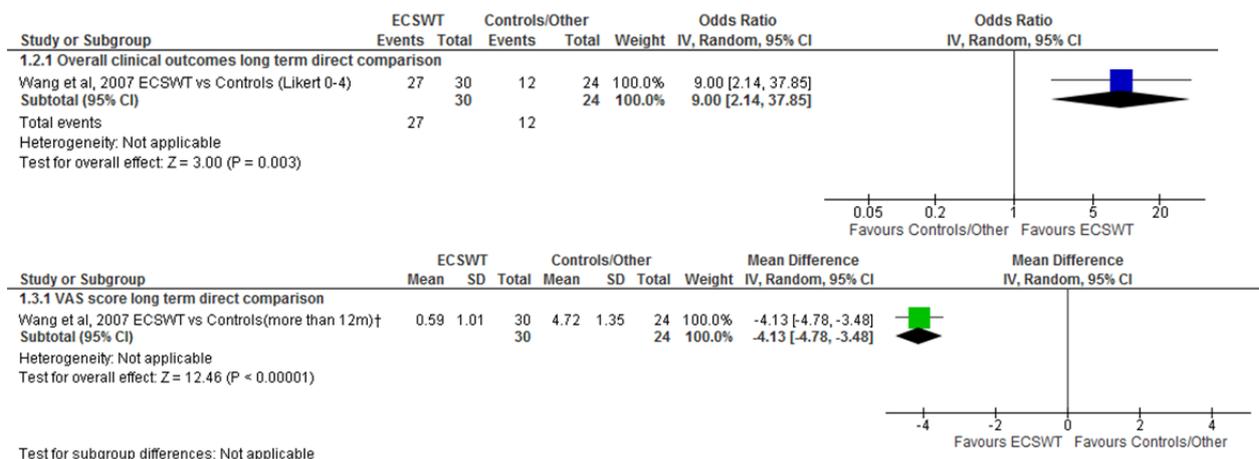
### Pain reduction in VAS

Pain reduction in palpable and load-induced pain was assessed in VAS and showed significant difference between focused ECSWT and control conservative treatment group.(Wang et al., 2007) The quality of evidence was low (only one good-quality RCT, 50 participants, MD=-4.13, 95%CI -4.78 to -3.48), but this difference met the MCID criterion adding clinical significance to these results. The level of evidence had to be decreased because of different follow-up times for comparison groups, but also had to be increased due to the large magnitude of effect (**Figure 6, Table 8**).

### Patient-rated pain reduction

Clinically significant results were found in patient-rated pain in favour focused ECSWT compared to control conservative treatment.(Wang et al., 2007) The reduction in VAS effect size of ECSWT group at 2 to 3 years follow-up was seen to be 5.41 points compared to 0.66 points for the control group which is a patient rating of “very much improved” compared to “no change” (**Figure 4 – main text**).(Farrar et al., 2001)





**Figure 6** Forest plots for the effectiveness of ECSWT compared to conservative management in patients with patellar tendinopathy. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by VISA-P questionnaire. **1.2.** Self-rated overall clinical outcomes measured a 4-point Likert scale **1.3.** Pain scores in a VAS. Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; Con, controls.

## Focused ECSWT compared to Platelet-rich Plasma

### *Functional disability*

Only one RCT(Vetrano et al., 2013) evaluated the effectiveness of focused ECSWT compared to PRP injection up to 12-month follow-up. The comparison was indirect as both groups received additionally a standardized stretching and strengthening protocol for 2 weeks post-treatment. Between those who received focused ECSWT and those receiving PRP injection, very low-quality of evidence showed a significant difference regarding VISA-P scores in favour of PRP in mid-term and long-term follow-up (one high-quality RCT(Vetrano et al., 2013), 46 participants, mid-term MD=-13.0, 95%CI -22.99 to -3.01 and long-term MD=13.70, 95%CI -22.78 to -4.62). The mean difference did not meet the MCID of 15 points threshold for clinical significance. Regarding the short-term follow-up, very low level of evidence indicated no significant differences between ECSWT and PRP injection groups (one high-quality RCT(Vetrano et al., 2013), 46 participants, short-term MD=-4.90, 95%CI -15.22 to -5.42) (**Figure 7, Table 9**). The level of evidence had to be decreased because of indirect comparison of treatments.

### *Self-perceived recovery*

Self-perceived recovery in term of grading clinical status was assessed on a modified 5-point Blazina scale. For the computation of success rates, patients who rated their condition in stages 0 and 1 were counted as successes.(Vetrano et al., 2013) Very low-quality evidence suggests that there was no significant difference

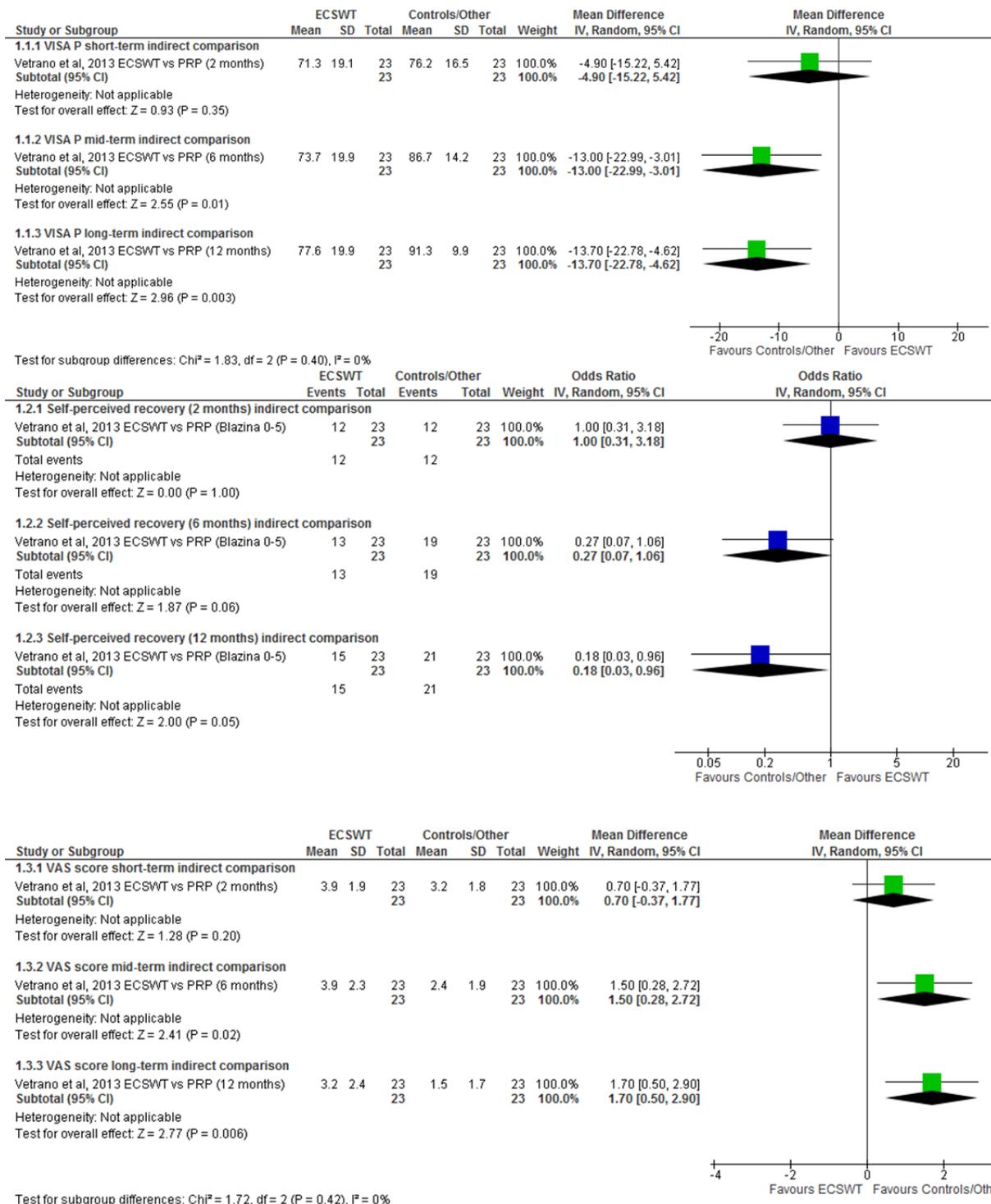
between focused ECSWT and PRP injection groups at short and mid-term follow-up assessments (one high-quality RCT,(Vetrano et al., 2013) 46 participants; short-term OR=1.00, 95%CI 0.31 to 3.18, mid-term OR=0.27, 95%CI 0.07 to 1.06). Marginally significant results were observed in favour of PRP group compared to ECSWT group at long-term follow-up (one high-quality RCT,(Vetrano et al., 2013) 46 participants, OR=0.18, 95%CI 0.03 to 0.96). The level of evidence had to be decreased due to the indirect comparison (**Figure 7, Table 9**).

#### *Pain reduction in VAS*

Pain reduction at 5 single-leg squats was assessed in a VAS between PRP injections and focused ECSWT groups.(Vetrano et al., 2013) Despite no significant differences in short-term follow-up, the pain reduction in PRP group reached the clinical significance threshold at mid and long-term follow-up assessments. The quality of evidence was very low because the level of evidence had to be decreased due to the indirect comparison (only one good-quality RCT,(Vetrano et al., 2013) 46 participants; short-term MD=0.70, 95%CI -0.37 to 1.77, mid-term MD=1.50, 95%CI -0.28 to 2.72, long-term MD=1.70, 95%CI 0.50 to 2.90) (**Figure 7, Table 9**).

#### *Patient-rated pain reduction*

Clinically significant results were found in patient-rated pain mostly in favour of PRP injection compared with focused ECSWT. The reduction in VAS effect size of PRP injection group at 2, 6 and 12 months was seen to be 3.4, 4.2 and 5.6 points respectively (compared to 2.4, 2.4 and 3.1 for the ECSWT group)(Vetrano et al., 2013) which is a patient rating of “much improved” at 2 months and “very much improved” at both 6 and 12 months (compared to “minimally improved”/2 and 6 months and “much improved”/12 months, respectively) (**Figure 4 – main text**).(Farrar et al., 2001)



**Figure 7** Forest plots for the effectiveness of focused ECSWT compared to Platelet-rich Plasma injections in patients with patellar tendinopathy. Comparison was indirect due to both groups received a standardized stretching and strengthening protocol for 2 weeks post-treatment. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by VISA-P questionnaire. **1.2.** Self-rated overall clinical outcomes measured a 5-point Blazina classification. **1.3.** Pain scores in a VAS.

Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; PRP, platelet-rich plasma.

## **Focused ECSWT compared to radial ECSWT**

### *Functional disability*

The high-quality RCT of van der Worp et al. (van der Worp et al., 2014) evaluated the effectiveness of focused ECSWT compared to radial ECSWT at mid-term follow-up. The comparison was indirect as both groups received additionally a standardized eccentric exercise program that started 2 weeks after the final ECSWT session. Between those who received focused ECSWT and those receiving radial ECSWT, very low-quality of evidence showed no significant difference in terms of functional assessment as revealed by VISA-P scores at short and mid-term follow-up (one high-quality RCT, (van der Worp et al., 2014) 43 participants, short-term MD=6.10, 95%CI -5.43 to 17.63 and short-term MD=5.20, 95%CI -8.67 to 19.07) (**Figure 8, Table 10**). The level of evidence had to be decreased because of indirect comparison of treatments.

### *Self-perceived recovery*

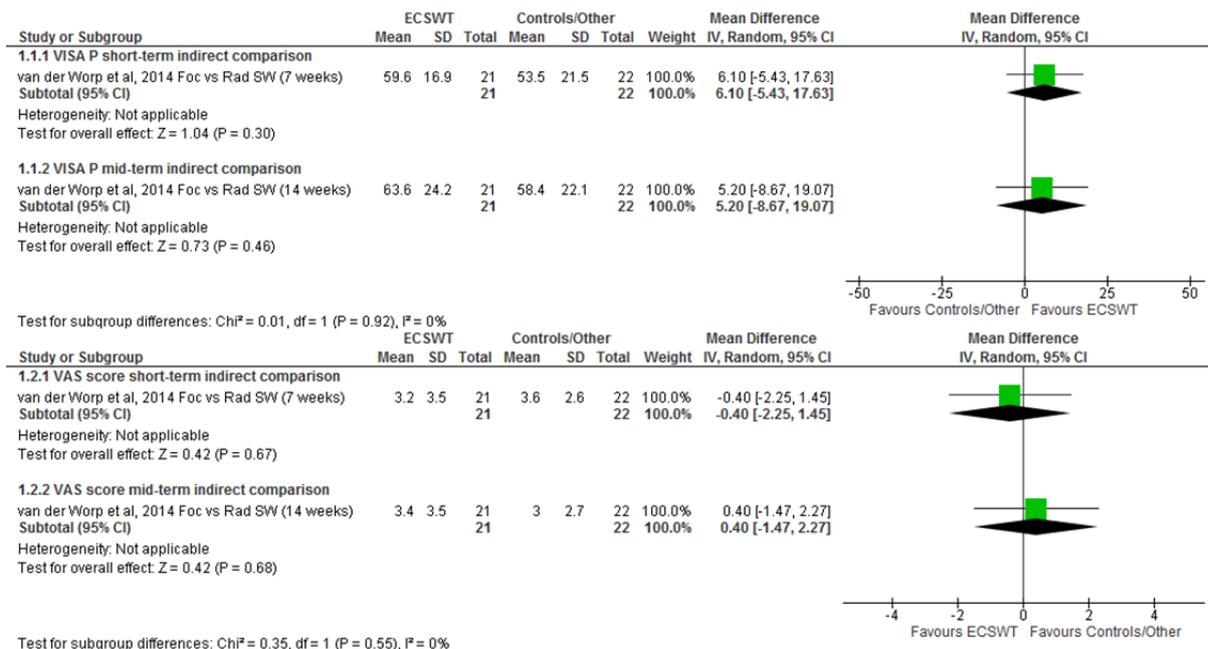
The study (van der Worp et al., 2014) did not assess self-perceived recovery.

### *Pain reduction in VAS*

Pain reduction at 10 single-leg decline squats was assessed in a VAS between focused ECSWT and radial ECSWT groups. (van der Worp et al., 2014) No significant differences were revealed at short and mid-term follow-up and did not reach the clinical significance threshold. The quality of evidence was very low because the level of evidence had to be decreased due to the indirect comparison (only one good-quality RCT, (van der Worp et al., 2014) 43 participants; short-term MD=-0.40, 95%CI -2.25 to 1.45, mid-term MD=0.40, 95%CI -1.47 to 2.27) (**Figure 8, Table 10**).

### *Patient-rated pain reduction*

Clinically significant results were not found in patient-rated focused and radial ECSWT groups. The reduction in VAS effect size of focused ECSWT group at 7 and 14 weeks was seen to be 1.2 and 1.0 points respectively (compared to 0.5 and 1.1 for the radial ECSWT group) (van der Worp et al., 2014) which is a patient rating of “much improved” and “minimally improved”, respectively for focused ECSWT group (compared to “minimally improved” and “much improved”) (**Figure 4 – main text**). (Farrar et al., 2001)



**Figure 8** Forest plots for the effectiveness of focused ECSWT compared to radial ECSWT in patients with patellar tendinopathy. Comparison was indirect due to both groups received a standardized eccentric training program. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by VISA-P questionnaire. **1.2.** Pain scores in a VAS. Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; Foc SW, Focused ECSWT; Rad SW, Radial ECSWT.

## Proximal Hamstring Tendinopathy

### Functional disability

Only one high-quality RCT (Cacchio et al., 2011) evaluated the effectiveness of radial ECSWT compared to traditional conservative treatment at 12-month follow-up. The control treatment consisted of rest, NSAIDs, physiotherapy and exercise program for the last 3 weeks. Functional disability was assessed in Nirschl rating scale, a 7-phase (1-7) assessment of pain and activity limitations caused by overuse injuries. Between those who received radial ECSWT and those receiving control conservative treatment, moderate level of evidence showed significant differences at short, mid, and long-term follow-up (one high-quality RCT, (Cacchio et al., 2011) 40 participants, short-term MD=-3.70, 95%CI -4.38 to -3.02, mid-term MD=-3.80, 95%CI -4.61 to -2.99, and long-term MD=-4.40, 95%CI -5.57 to -3.23) (**Figure 9, Table 11**). The difference met the criteria for MCID and clinical significance. The level of evidence had to be increased due to the magnitude of the effect.

### Self-perceived recovery

Self-perceived recovery was assessed on 6-point Likert scale and success rates were calculated by dichotomising responses. (Cacchio et al., 2011) Patients who

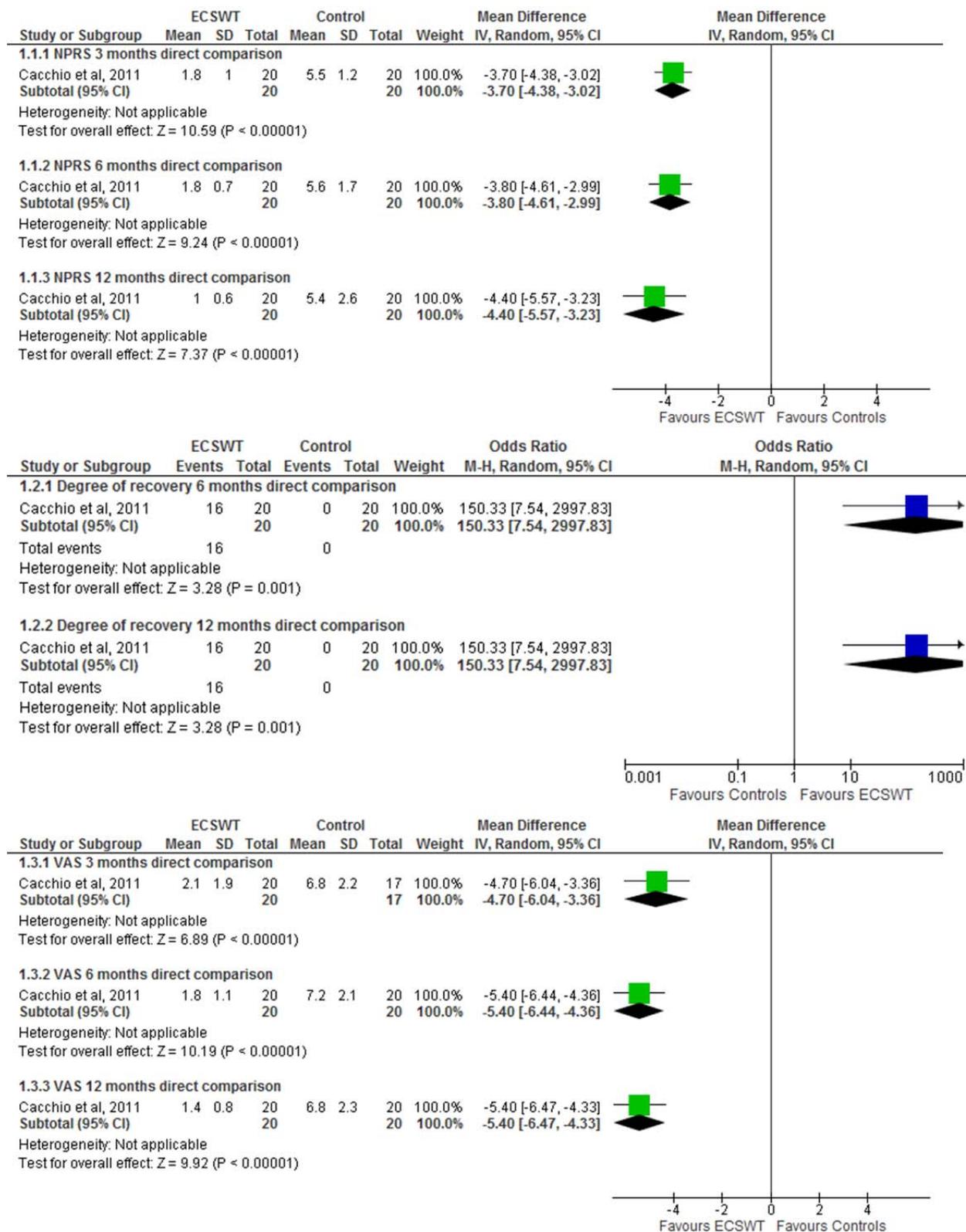
referred themselves as “completely recovered” and “much improved” were counted as successes. Moderate level of evidence suggests an extremely significant difference between focused ECSWT and control groups at mid and long-term follow-up assessments (one high-quality RCT,(Cacchio et al., 2011) 40 participants; for both mid and long-term OR=150.33, 95%CI 7.54 to 2997.83). The level of evidence had to be increased due to the magnitude of the effect (**Figure 9, Table 11**).

#### *Pain reduction in VAS*

Pain intensity score was assessed in a VAS between radial ECSWT and control conservative treatment group.(Cacchio et al., 2011) Moderate level of evidence for significant difference in favour of radial ECSWT was found that exceeded the threshold for clinical significance in all follow-up assessments (only one good-quality RCT,(Cacchio et al., 2011) 40 participants; short-term MD=-4.70, 95%CI -6.04 to -3.36, mid-term MD=-5.40, 95%CI -6.44 to -4.36, long-term MD=-5.40, 95%CI -6.47 to -4.33). The level of evidence had to be increased due to the magnitude of the effect (**Figure 9, Table 11**).

#### *Patient-rated pain reduction*

Clinically significant results were found in patient-rated pain reduction between ECSWT and conservative treatment groups. The reduction in VAS effect size of radial ECSWT group at 3, 6 and 12 months was seen to be 5.0, 5.3 and 5.7 points respectively (compared to 0.2, +0.2 and 0.2 for the conservative treatment group)(Cacchio et al., 2011) which is a patient rating of “very much improved” (compared to “minimally improved”, “minimally worse”, and “minimally improved”, respectively) (**Figure 4 – main text**).(Farrar et al., 2001)



**Figure 9** Forest plots for the effectiveness of radial ECSWT compared to control conservative treatment in patients with proximal hamstring tendinopathy. Data are depicted according to follow-up time and outcome measures. **1.1.** Functional outcomes as measured by Nirchl phase rating scale. **1.2.** Self-rated overall clinical outcomes measured a 6-point Likert scale. **1.3.** Pain scores in a VAS.

Abbreviations: ECSWT, extracorporeal shock wave therapy; SD, standard deviation; IV, inverse variance; NPRS, Nirschl phase rating scale.

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