

Table 1: Search strategy and the keywords used in the study

	Extracorporeal shockwave therapy	Anterior Cruciate Ligament Reconstruction
Mesh term	“Extracorporeal Shockwave Therapy”	“Anterior Cruciate Ligament Reconstruction” “Bone-Patellar Tendon-Bone Grafting”
Synonyms	“Extracorporeal Shockwave Therapy” “Extracorporeal Shockwave Therapies” “Shockwave Therapy”[tiab] AND extracorporeal[tiab] “Shockwave Therapies”[tiab] AND extracorporeal[tiab] “Extracorporeal Shockwave”[tiab] And Therapy[tiab] “Extracorporeal Shockwave”[tiab] And Therapies[tiab] “Extracorporeal Shock Wave Therapy” “Shock Wave Therapy” “Shock Wave Therapies” “Shock Wave” [tiab] AND therapy [tiab] “Shock Wave” [tiab] AND therapies [tiab] “Extracorporeal High-Intensity Focused Ultrasound Therapy” “Extracorporeal High Intensity Focused Ultrasound Therapy” “High-Intensity Focused Ultrasound Therapy” “High Intensity Focused Ultrasound Therapy” “HIFU Therapy” “HIFU Therapies” HIFU[tiab] AND Therapy[tiab] HIFU[tiab] AND Therapies[tiab]	“Anterior Cruciate Ligament Reconstruction” “Bone-Patellar Tendon-Bone Grafting” “Bone Patellar Tendon Bone Grafting”

Pub Med: 9

(((((“Bone-Patellar Tendon-Bone Grafting”[MeSH Terms]) OR (“Anterior Cruciate Ligament Reconstruction”[MeSH Terms])) OR (“Anterior Cruciate Ligament Reconstruction”[Title/Abstract])) OR

("Bone-Patellar Tendon-Bone Grafting"[Title/Abstract])) OR ("Bone Patellar Tendon Bone Grafting"[Title/Abstract])) AND (((((((((((((((("Extracorporeal Shockwave Therapy"[MeSH Terms]) OR ("Extracorporeal Shockwave Therapy"[Title/Abstract])) OR ("Extracorporeal Shockwave Therapies"[Title/Abstract])) OR ("Shockwave Therapy"[tiab] AND extracorporeal[tiab])) OR ("Shockwave Therapies"[tiab] AND extracorporeal[tiab])) OR ("Extracorporeal Shockwave[tiab] And Therapy[tiab])) OR ("Extracorporeal Shockwave[tiab] And Therapies[tiab])) OR ("Extracorporeal Shock Wave Therapy"[Title/Abstract])) OR ("Shock Wave Therapy"[Title/Abstract])) OR ("Shock Wave Therapies"[Title/Abstract])) OR ("Shock Wave" [tiab] AND therapy [tiab])) OR ("Shock Wave" [tiab] AND therapies [tiab])) OR ("Extracorporeal High-Intensity Focused Ultrasound Therapy"[Title/Abstract])) OR ("Extracorporeal High Intensity Focused Ultrasound Therapy"[Title/Abstract])) OR ("High-Intensity Focused Ultrasound Therapy"[Title/Abstract])) OR ("High Intensity Focused Ultrasound Therapy"[Title/Abstract])) OR ("HIFU Therapy"[Title/Abstract])) OR ("HIFU Therapies"[Title/Abstract])) OR (HIFU[tiab] AND Therapy[tiab])) OR (HIFU[tiab] AND Therapies[tiab]))

Scopus: 24

((TITLE-ABS-KEY ("Anterior Cruciate Ligament Reconstruction") OR TITLE-ABS-KEY ("Bone-Patellar Tendon-Bone Grafting") OR TITLE-ABS-KEY ("Bone Patellar Tendon Bone Grafting"))) AND (((TITLE-ABS-KEY ("Extracorporeal Shockwave Therapy") OR TITLE-ABS-KEY ("Extracorporeal Shockwave Therapies") OR TITLE-ABS-KEY ("Extracorporeal Shock Wave Therapy") OR TITLE-ABS-KEY ("Shock Wave Therapy") OR TITLE-ABS-KEY ("Shock Wave Therapies") OR TITLE-ABS-KEY ("Extracorporeal High-Intensity Focused Ultrasound Therapy") OR TITLE-ABS-KEY ("Extracorporeal High Intensity Focused Ultrasound Therapy") OR TITLE-ABS-KEY ("High-Intensity Focused Ultrasound Therapy") OR TITLE-ABS-KEY ("High Intensity Focused Ultrasound Therapy") OR TITLE-ABS-KEY ("HIFU Therapies") OR TITLE-ABS-KEY ("HIFU Therapy")))) OR ((TITLE-ABS-KEY (hifu) AND TITLE-ABS-KEY (therapy))) OR ((TITLE-ABS-KEY (hifu) AND TITLE-ABS-KEY (therapies))) OR ((TITLE-ABS-KEY ("Shock Wave") AND TITLE-ABS-KEY (therapies))) OR ((TITLE-ABS-KEY ("Shock Wave") AND TITLE-ABS-KEY (therapy))) OR ((TITLE-ABS-KEY ("Shockwave Therapy") AND TITLE-ABS-KEY ("extracorporeal"))) OR ((TITLE-ABS-KEY ("Shockwave Therapies") AND TITLE-ABS-KEY ("extracorporeal"))) OR ((TITLE-ABS-KEY ("Extracorporeal Shockwave") AND TITLE-ABS-KEY ("therapies"))) OR ((TITLE-ABS-KEY ("Extracorporeal Shockwave") AND TITLE-ABS-KEY ("therapy"))))

Embase: 77

(((((('bone transplantation'/exp) OR ('anterior cruciate ligament reconstruction'/exp)) OR ('anterior cruciate ligament reconstruction':ti,ab,kw)) OR ('bone-patellar tendon-bone grafting':ti,ab,kw)) OR ('bone patellar tendon bone grafting':ti,ab,kw)) AND (((((((((((((((('shock wave therapy'/exp) OR ('extracorporeal shockwave therapy':ti,ab,kw)) OR ('extracorporeal shockwave therapies':ti,ab,kw)) OR ('shockwave therapy':ti,ab,kw AND

'extracorporeal':ti,ab,kw)) OR ('shockwave therapies':ti,ab,kw AND 'extracorporeal':ti,ab,kw)) OR ('extracorporeal shockwave':ti,ab,kw AND 'therapy':ti,ab,kw)) OR ('extracorporeal shockwave':ti,ab,kw AND 'therapies':ti,ab,kw)) OR ('extracorporeal shock wave therapy':ti,ab,kw)) OR ('shock wave therapy':ti,ab,kw)) OR ('shock wave therapies':ti,ab,kw)) OR ('shock wave':ti,ab,kw AND 'therapy':ti,ab,kw)) OR ('shock wave':ti,ab,kw AND 'therapies':ti,ab,kw)) OR ('extracorporeal high-intensity focused ultrasound therapy':ti,ab,kw)) OR ('extracorporeal high intensity focused ultrasound therapy':ti,ab,kw)) OR ('high-intensity focused ultrasound therapy':ti,ab,kw)) OR ('high intensity focused ultrasound therapy':ti,ab,kw)) OR ('hifu therapy':ti,ab,kw)) OR ('hifu therapies':ti,ab,kw)) OR ('hifu':ti,ab,kw AND 'therapy':ti,ab,kw)) OR ('hifu':ti,ab,kw AND 'therapies':ti,ab,kw))

Cochrane: 6

ID Search Hits

- #1 MeSH descriptor: [Extracorporeal Shockwave Therapy] explode all trees 291
- #2 (“High-Intensity Focused Ultrasound Therapy”):ti,ab,kw (Word variations have been searched) 0
- #3 (“Extracorporeal Shockwave Therapy”):ti,ab,kw (Word variations have been searched) 662
- #4 (“Extracorporeal Shockwave Therapies”):ti,ab,kw (Word variations have been searched) 662
- #5 (“Shockwave Therapy”):ti,ab,kw AND (extracorporeal):ti,ab,kw (Word variations have been searched) 752
- #6 (“Shockwave Therapies”):ti,ab,kw AND (extracorporeal):ti,ab,kw (Word variations have been searched) 702
- #7 (“Extracorporeal Shockwave”):ti,ab,kw AND (therapy):ti,ab,kw (Word variations have been searched) 825
- #8 (“Extracorporeal Shockwave”):ti,ab,kw AND (therapies):ti,ab,kw (Word variations have been searched) 825
- #9 (“Extracorporeal Shock Wave Therapy”):ti,ab,kw (Word variations have been searched) 871
- #10 (“Shock Wave Therapy”):ti,ab,kw (Word variations have been searched) 1477
- #11 (“Shock Wave Therapies”):ti,ab,kw (Word variations have been searched) 1475
- #12 (“Shock Wave”):ti,ab,kw AND (therapy):ti,ab,kw (Word variations have been searched) 2312
- #13 (“Shock Wave”):ti,ab,kw AND (therapies):ti,ab,kw (Word variations have been searched) 2311
- #14 (“Extracorporeal High-Intensity Focused Ultrasound Therapy”):ti,ab,kw (Word variations have been searched) 0
- #15 (“Extracorporeal High Intensity Focused Ultrasound Therapy”):ti,ab,kw (Word variations have been searched) 0
- #16 (“High-Intensity Focused Ultrasound Therapy”):ti,ab,kw (Word variations have been searched) 0
- #17 (“High Intensity Focused Ultrasound Therapy”):ti,ab,kw (Word variations have been searched) 11

#18 ("HIFU Therapy"):ti,ab,kw (Word variations have been searched) 15

#19 ("HIFU Therapies"):ti,ab,kw (Word variations have been searched) 14

#20 (HIFU):ti,ab,kw AND (therapy):ti,ab,kw (Word variations have been searched) 140

#21 (HIFU):ti,ab,kw AND (therapies):ti,ab,kw (Word variations have been searched) 139

#22 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 2690

#23 MeSH descriptor: [Anterior Cruciate Ligament Reconstruction] explode all trees 747

#24 ("Anterior Cruciate Ligament Reconstruction"):ti,ab,kw (Word variations have been searched) 2340

#25 ("Bone-Patellar Tendon-Bone Grafting"):ti,ab,kw (Word variations have been searched) 0

#26 ("Bone Patellar Tendon Bone Grafting"):ti,ab,kw (Word variations have been searched) 134

#27 #23 OR #24 OR #25 OR #26 2362

#28 #22 AND #27 6

Google scholar: 50

Extracorporeal Shockwave Therapy + Anterior Cruciate Ligament Reconstruction

Web of science: 10

1: "Extracorporeal Shockwave Therapy" (Topic) OR "Extracorporeal Shockwave Therapies" (Topic) OR "Extracorporeal Shock Wave Therapy" (Topic) OR "Shock Wave Therapy" (Topic) OR "Shock Wave Therapies" (Topic) OR "Extracorporeal High-Intensity Focused Ultrasound Therapy" (Topic) OR "Extracorporeal High Intensity Focused Ultrasound Therapy" (Topic) OR "High-Intensity Focused Ultrasound Therapy" (Topic) OR "High Intensity Focused Ultrasound Therapy" (Topic) OR "HIFU Therapy" (Topic) OR "HIFU Therapies" (Topic)

2: "Anterior Cruciate Ligament Reconstruction" (Topic) OR "Bone-Patellar Tendon-Bone Grafting" (Topic) OR "Bone Patellar Tendon Bone Grafting" (Topic)

3: "Shockwave Therapy" (Topic) AND extracorporeal (Topic)

4: "Shockwave Therapies" (Topic) AND extracorporeal (Topic)

5: "Extracorporeal Shockwave" (Topic) AND Therapy (Topic)

6: "Extracorporeal Shockwave" (Topic) AND Therapies (Topic)

7: “Shock Wave” (Topic) AND therapy (Topic)

8: “Shock Wave” (Topic) AND therapies (Topic)

9: HIFU (Topic) AND Therapy (Topic)

10: HIFU (Topic) AND Therapies (Topic)

11: #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #1

12: #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #1

13: #12 AND #2

Table 2: Risk of bias assessment of the included RCTs

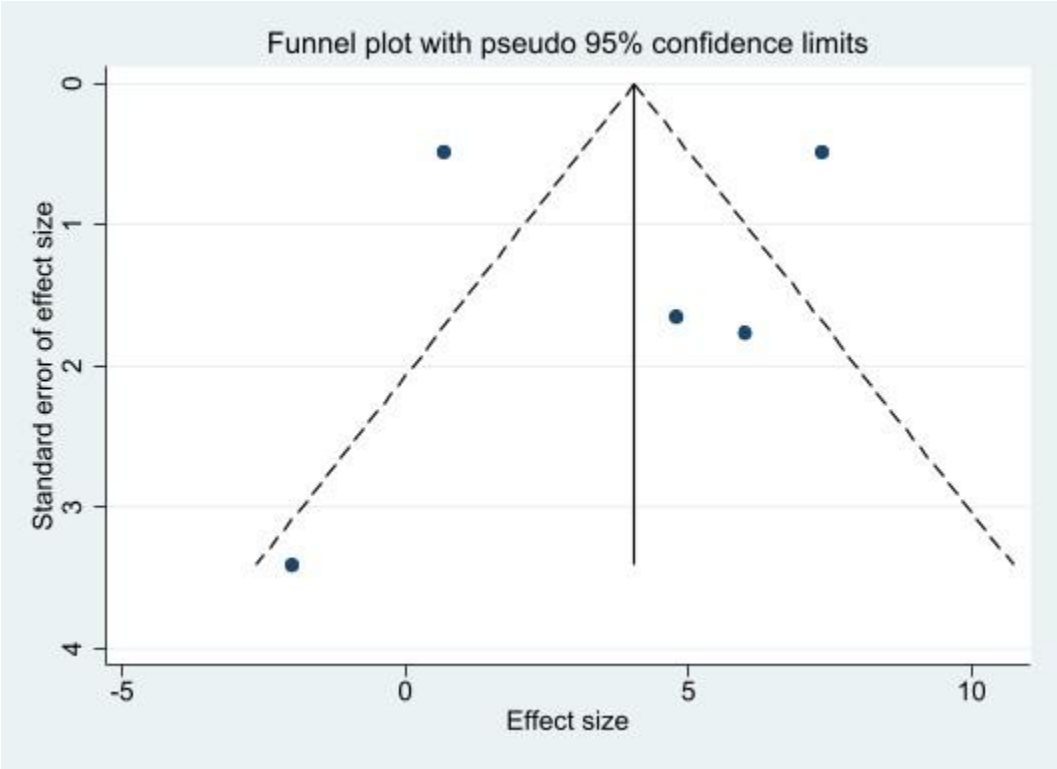
Author year	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Total
Wang 2014	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	High risk
Fang 2022	High risk	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	High risk
Zhang 2022	Low risk of bias	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	Some concerns
Weninger 2023	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	High risk
Song 2024	Some concerns	Some concerns	Low risk of bias	Low risk of bias	Low risk of bias	High risk

Author year	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Domain 7
Rahim 2022							

Table 3: Reason of exclusion of article that entered the full text screening phase

author	title	reason of exclusion
L. Fang; X. Jie; C. Junhua; F. Xiaojun	Effects of divergent extracorporeal shock wave therapy on the function and stability of male knee joint after anterior cruciate ligament reconstruction	included
D. Haisheng	The Impact of Extracorporeal Shock Wave Therapy on Pain and Range of Motion in the Knee Joint	review article
C.-C. Lu; S.-H. Chou; P.-C. Shen; P.-H. Chou; M.-L. Ho; Y.-C. Tien	Extracorporeal shock wave promotes activation of anterior cruciate ligament remnant cells and their paracrine regulation of bone marrow stromal cells' proliferation, migration, collagen synthesis, and differentiation	Not reporting the interested outcome
W. Patrick; E. M. Shady; T. Christoph; K. Ramin; F. Xaver	Advanced Anterior Cruciate Ligament Repair and Reconstruction Techniques for Different Rupture Types	review article
M. Rahim; F. Ooi; M. Shihabudin; C. Chen; A. Musa	The effects of three and six sessions of low energy extracorporeal shockwave therapy on graft incorporation and knee functions post anterior cruciate ligament reconstruction	included
H. Shao; S. Zhang; J. Chen; A. Wen; Z. Wu; M. Huang; W. Yao; Z. Lin; C. Liu; Z. Jin	Radial extracorporeal shockwave therapy reduces pain and promotes proximal tendon healing after rotator cuff repair: Randomized clinical trial	No ACL repair
Y. Song; X. Che; Z. Wang; M. Li; R. Zhang; D. Wang; Q. Shi	A randomized trial of treatment for anterior cruciate ligament reconstruction by radial extracorporeal shock wave therapy	included
B. Tian; M. Zhang; X. Kang	Strategies to promote tendon-bone healing after anterior cruciate ligament reconstruction: Present and future	review article
C.-J. Wang; J.-Y. Ko; W.-Y. Chou; S.-L. Hsu; S.-F. Ko; C.-C. Huang; H.-W. Chang	Shockwave therapy improves anterior cruciate ligament reconstruction	included
P. Weninger; S. El Marto; C. Thallinger; R. Karimi; X. Feichtinger	Advanced anterior cruciate ligament repair and reconstruction techniques for different rupture types	review article
P. Weninger; C. Thallinger; M. Chytilek; Y. Hanel; C. Steffel; R. Karimi; X. Feichtinger	Extracorporeal Shockwave Therapy Improves Outcome after Primary Anterior Cruciate Ligament Reconstruction with Hamstring Tendons	included
S. Zhang; A. Wen; S. Li; W. Yao; C. Liu; Z. Lin; Z. Jin; J. Chen; Y. Hua; S. Chen	Radial extracorporeal shock wave therapy enhances graft maturation at 2-year follow-up after ACL reconstruction: a randomized controlled trial	included
K. Wang	Effect of isokinetic muscle strength training on knee muscle strength, proprioception, and balance ability in athletes with anterior cruciate ligament reconstruction: a randomised control trial	not relevant

Figure 1:Funnel plot of the included studies for Lysholm score



Tests for Publication Bias

Begg's Test

adj. Kendall's Score (P-Q) = 0
Std. Dev. of Score = 4.08
Number of Studies = 5
z = 0.00
Pr > |z| = 1.000
z = -0.24 (continuity corrected)
Pr > |z| = 1.000 (continuity corrected)

Egger's test

Std_Eff	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
-----+-----						
slope	4.191839	3.305487	1.27	0.294	-6.327697	14.71137
bias	-.2331042	4.501539	-0.05	0.962	-14.55901	14.0928