

Supplementary file

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5	#1 AND #4	21,263
6	# 5 AND filters “Humans, English”	14,606
EMBASE (MEDLINE)		
	Query('postoperative care':ab,ti OR 'physical therapy':ab,ti OR 'exercise therapy':ab,ti OR 'pain management index':ab,ti OR 'patient education':ab,ti OR 'weight bearing exercise program':ab,ti OR 'range of motion':ab,ti OR 'treatment outcome':ab,ti OR cryotherapy:ab,ti OR 'movement therapy':ab,ti OR biofeedback:ab,ti OR proprioception:ab,ti OR 'muscle strength':ab,ti OR 'outcome assessment':ab,ti OR plyometrics:ab,ti OR 'resistance training':ab,ti OR rehabilitation:ab,ti OR physiotherapy:ab,ti OR 'preoperative exercise':ab,ti OR 'supervised exercise therapy':ab,ti OR electrotherapy:ab,ti OR 'dry needling':ab,ti OR kinesiotherapy:ab,ti OR 'joint laxity':ab,ti OR stability:ab,ti OR effusion:ab,ti OR balance:ab,ti OR stretching:ab,ti OR 'strengthening exercise':ab,ti OR vibration:ab,ti OR perturbation:ab,ti OR performance:ab,ti OR test:ab,ti OR criteria:ab,ti OR 'cross education':ab,ti OR 'blood flow restriction':ab,ti OR cost:ab,ti OR prevention:ab,ti OR prediction:ab,ti OR 'return to play':ab,ti OR 'return to sport':ab,ti) AND ('anterior cruciate ligament reconstruction':ab,ti OR acl:ab,ti OR 'anterior cruciate ligament':ab,ti) AND 'human'/de AND [english]/lim	13,150
COCHRANE		
	“anterior cruciate ligament reconstruction” OR “ACL” OR “anterior cruciate ligament”	3,487
CINAHL (EBSCO)		
1	“anterior cruciate ligament reconstruction”	7,139
2	“physiotherapy” OR “rehabilitation” OR “exercise” OR “intervention” OR “pain management” OR “training” OR “dry needling” OR “cryotherapy” OR “biofeedback” OR “balance” “treatment” “return to sport”	1,919,720
3	#1 AND #2	4,197
4	#3, Limited to English language, Humans	2,757
SPORTDiscus (EBSCO)		
1	“anterior cruciate ligament reconstruction”	3,717
2	“physiotherapy” OR “rehabilitation” OR “exercise” OR “intervention” OR “pain management” OR “training” OR “dry needling” OR “cryotherapy” OR “biofeedback” OR “balance” “treatment” “return to sport”	65,504
3	#1 AND #2	3,523
4	#3, Limited to English language, Humans	2,349

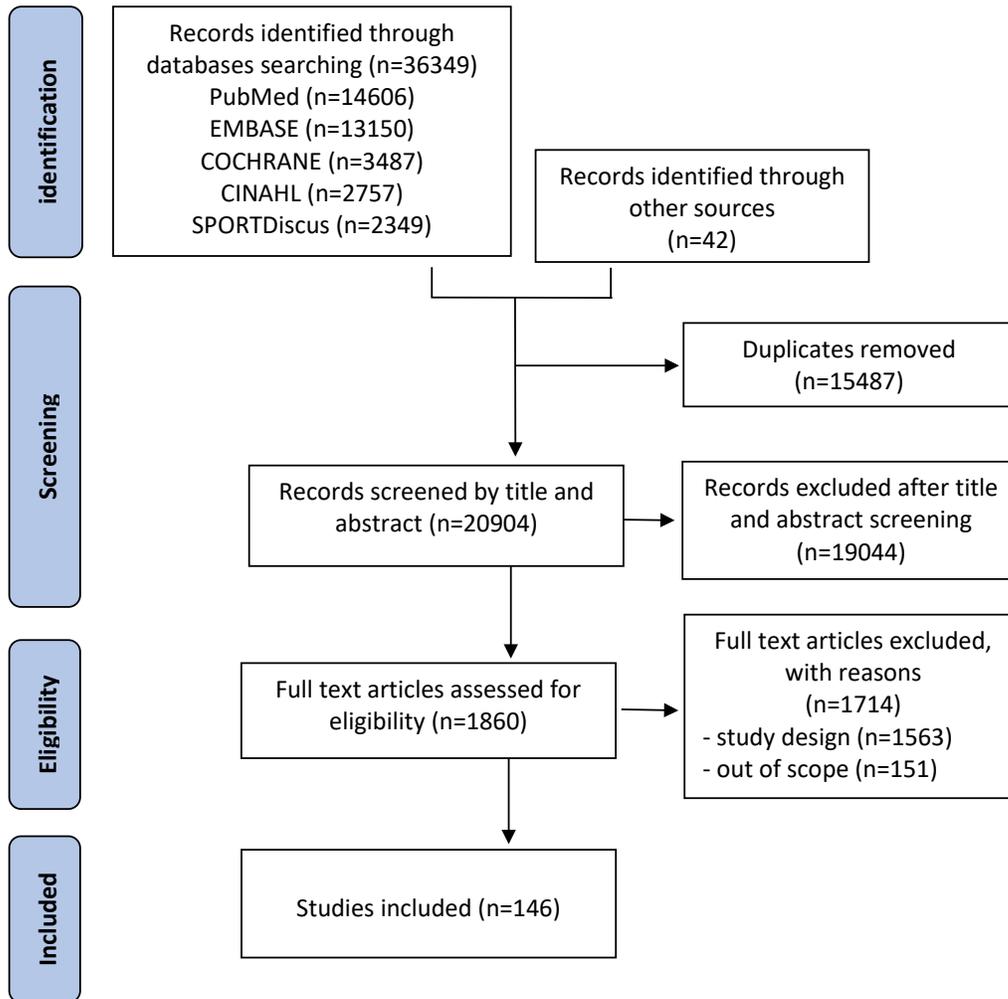
Study selection and criteria

To be included, an article had to meet the following selection criteria:

- Study was of rehabilitation after ACL surgery.
- Study was performed in humans.
- Study design was a systematic review, a meta-analysis, or a randomized controlled trial, peer reviewed in English language.
- Study that compared physical therapy interventions or against no intervention, placebo, or standard care.
- Study results included outcomes of interest: strength, muscle atrophy, pain, range of motion, patient-reported outcome measures (PROMs), swelling, laxity, functional activities, adverse events, return to activity.

The following publications were excluded:

- Animal or laboratory studies
- Studies performed on cadavers.
- Non-randomised trials, observational studies, case series and case reports, analyses of medical records, narrative reviews, editorials, letters, and commentaries
- Studies that did not report on any outcomes of interest.
- Rehabilitation in a paediatric population
- Studies in patients after ACL treated conservatively.
- Studies in patients after completion of their rehabilitation
- Studies reporting only biomechanical results.
- Studies reporting specifics only on other concomitant injuries such as other knee ligament injuries, meniscal or cartilage injuries surgical decisions (e.g., brace), nutritional, and psychological interventions.

PRISMA flow diagram**Figure S1** PRISMA study selection flow chart.

Patient demographics

TIMING AND STRUCTURE OF REHABILITATION

Pre-operative rehabilitation

	Preop						Controls						Total					
	n	M	F	age	graft		n	M	F	age	graft	n	M	F	age	graft		
Shaarani 2013	preop	14	14	0	27.6±7.9	BTB	no preop	9	9	0	32±8.3	BTB	23	23	0	NR	23 BTB	
Kim 2015	preop	40	40	0	NR	NR	no preop	40	40	0	NR	NR	80	80	0	28±6	80 NR	
Reddy 2020	preop	20	19	1	28.2	HS	no preop	21	19	2	27.5	HS	41	38	3	NR	41 HS	
Hartigan 2009	Perturbation + strength	9	6	3	28±10.7	HS or allograft	strength	10	7	3	30±9.4	HS or allograft	19	13	6	NR	19 HS/ALLO	
Hartigan 2010	Perturbation + strength	18	12	6	27.1±10.2	HS or allograft	strength	22	17	5	29.5±10.8	HS or allograft	40	29	11	NR	40 HS/ALLO	
													184	170	14		23 BTB 41 HS 40 HS/ALLO 80 NR	

Unsupervised vs supervised rehabilitation

	Unsupervised						Clinic						Total					
	n	M	F	age	graft		n	M	F	age	graft	n	M	F	age	graft		
Schenck 1997	Unsupervised	22	NR	NR	NR	BTB	Clinic	15	NR	NR	NR	BTB	37	28	9	24.1	37 BTB	
Beard 1998	Unsupervised	13	10	3	27	BTB	Home+ supervised	13	11	2	29	BTB	26	21	5	28 (20-46)	26 BTB	
Fischer 1998	Unsupervised	27	16	11	33 (16-44)	BTB/ALLO	Clinic	27	13	14	28 (15-39)	BTB/ALLO	54	29	25		54 BTB/ALLO	
Grant 2005	Unsupervised	73	47	26	29.1±9.2	BTB	Clinic	72	38	34	29.5±10.2	BTB	145	85	60		145 BTB	
Ugutmen 2008	Unsupervised	52	NR	NR	NR	HS	Clinic	52	NR	NR	NR	HS	104	103	1	31.5 (18-43)	104 HS	
Revenas 2009	Unsupervised	24	15	9	25 (16-40)	16 BTB 8 HS	Clinic	14	11	3	21 (16-35)	7 BTB 7 HS	38	26	12	23 (16-40)	23 BTB 15 HS	
Grant 2010	Unsupervised	40	27	13	30.8±10.1	BTB	Clinic	48	23	25	30.3±11.1	BTB	88	50	38		88 BTB	
Hohmann 2011	Unsupervised	20	14	6	27 (19-35)	BTB	Clinic	20	16	4	28 (20-34)	BTB	40	30	10		40 BTB	
Lim 2019	Unsupervised	15	9	6	38.79±12.58	HS	Clinic	15	10	5	32.25±8.26	HS	30	19	11		30 HS	
													562	391	171		359 BTB 149 HS 54 BTB/ALLO	

Rehabilitation duration

	Accelerated Rehabilitation (19-week)						Controls						Total					
	n	M	F	age	graft		n	M	F	age	graft	n	M	F	age	graft		
Beynnon 2011	ACC	19	13	6	29.7±10.1	BTB	Non-ACC	17	9	8	30.2±9.9	BTB	36	22	14		36 BTB	
Gupta 2017	ACC	20	20	0	26.5±4.7	HS	Non-ACC	20	18	2	28.9±6.3	HS	40	38	2		40 HS	
													106	60	16		36 BTB 40 HS	

MODALITIES

Continuous passive motion (CPM)

	CPM					Controls					Total							
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft			
CPM vs no CPM																		
Anderson 1989	CPM	19	11	8	22.8	HS	No CPM	20	11	9	20.4	HS	39	22	17	NR	39 HS	
Yates 1992	CPM	15	6	9	25.5±10.5	BTB	No CPM	15	9	6	25.3±7.7	BTB	30	15	15	25.4±9.1	30 BTB	
McCarthy 1993a	CPM	10	4	6	25.1±10.5	BTB	No CPM	10	4	6	24.8±8.2	BTB	20	8	12	NR	20 BTB	
McCarthy 1993b	CPM	15	6	9	25.5±10.5	BTB	No CPM	15	9	6	25.3±7.7	BTB	30	15	15	25.4±9.1	30 BTB	
CPM vs active motion																		
Engstrom 1995	CPM+Active	17	NR	NR		BTB	Active	17	NR	NR	NR	BTB	34	25	9	27±8	34 BTB	
Friemert 2005	CPM	30	29	1	NR	12 BTB 18 HS	Active	30	28	2	NR	10 BTB 20 HS	60	57	3	23±3.6	22 BTB 38 HS	
Rosen 1992	CPM	25	20	5	25±8	BTB	Active	25	19	6	29±9	BTB	50	39	11	NR	50 BTB	
Long term vs short term use of CPM																		
Richmond 1991	CPM-14d	9	5	4		BTB	CPM-4d	10	7	3		BTB	19	12	7	NR	19 BTB	
												282	193	89			205 BTB	77 HS

Cryotherapy

	Cryotherapy					Controls					Total									
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft					
Cryotherapy																				
Cohn 1989	Ice	26	17	9	22.9	BTB	No cold	28	15	13	25.1	BTB	54	32	22	NR	54 BTB			
Daniel 1994	Ice pad (5°C)	16	11	5	27	BTB	No cold	42	30	12	26	BTB	58	41	17	NR	58 BTB			
Brandsson 1996	Cold	20	NR	NR	NR	BTB	No cold	10	NR	NR	NR	BTB	30	NR	NR	26	30 BTB			
Konrath 1996	Polar cold	27	*	*	27	BTB	No cold	27	16	11	26	BTB	54	*	*	NR	54 BTB			
Edwards 1996	Ice	26	18	8	28.7	BTB	No cold	24	15	9	28	BTB	50	33	17	NR	50 BTB			
Barber 1998	ice water	51	34	17	NR	BTB	No cold	49	40	9	NR	BTB	100	74	26	34	100 BTB			
Dervin 1998	ice water	40	27	13	30.6±10.2	BTB	No cold	38	27	11	26.9±6.2	BTB	78	54	24	NR	78 BTB			
Ohkoshi 1999	Cold (5°C)	7	NR	NR	NR	HS	No cold	7	NR	NR	NR	HS	14	NR	NR	NR	14 HS			
Koyonos 2014	Cold preop)	27	NR	NR	NR	16 ALLO 11 AUTO	No cold (preop)	26	NR	NR	NR	15 ALLO 11 AUTO	53	30	23	29	31 ALLO 22 AUTO			
Compressive cryotherapy																				
Schroder 1994	cold compression	21	15	6	24.8	BTB	ice	23	18	5	24.2	BTB	44	33	11	NR	44 BTB			
Waterman 2012	cold compression	18	15	3	28.7	8 ALLO 10 AUTO	ice	18	15	3	30.9	10 ALLO 8 AUTO	36	30	6	NR	18 ALLO 18 AUTO			
Ruffilli 2015	cold compression	23	14	9	32.2	HS	ice	24	15	9	31.4	HS	47	29	18	NR	47 HS			
Kijkunasathian 2017	cold compression	20	18	2	25.1	HS	ice	20	18	2	29.6	HS	40	36	4	NR	40 HS			
Dambros 2012	cold compression	10	10	0	31.9	HS	No cold	9	9	0	27.2	HS	19	19	0	NR	19 HS			
												677	411	168			468 BTB	120 HS	49 ALLO	40 AUTO

*Authors report 11 male and 6 female participants

Neuromuscular Electrical Stimulation (NMES)

	NMES					Controls					Total						
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft		
Neuromuscular Electrical Stimulation (NMES)																	
Sisk 1987	NMES	11	6	5	23.4±7.5	HS/ITB	No NMES	11	7	4	23.9±9.2	HS/ITB	22	13	9	NR	22 HS/ITB
Delitto 1988	NMES	10	NR	NR	NR	NR	No NMES	10	NR	NR	NR	NR	20	NR	NR	29 (19-44)	20 NR
Wigerstad-Lossing 1988	NMES	13	11	2	28 (21-45)	BTB	No NMES	10	5	5	26 (21-33)	BTB	23	16	7	28 (21-45)	23 BTB
Snyder-Mackler 1991	NMES	5	NR	NR	NR	NR	No NMES	5	NR	NR	NR	NR	10	6	4	18-28	2 BTB 8 HS
Snyder-Mackler 1995	NMES	31	NR	NR	NR	NR	No NMES	34	NR	NR	NR	NR	65	NR	NR	25	65 NR
Lieber 1996	NMES	20	16	4	28±8.2	NR	No NMES	20	16	4	27.3±8.5	NR	40	32	8	15-44	40 NR
Paternostro-Sluga 1999	NMES	16	9	7	27.8±7.1	BTB	No NMES	17	7	10	28.6±11.3	BTB	33	16	17	NR	33 BTB
Fitzgerald 2003	NMES	21	12	9	29.2±10.1	5 BTB 12 HS 4 ALLO	No NMES	22	14	8	31.9±10.9	5BTB 9HS 8ALLO	43	26	17	NR	10 BTB 21 HS 12 ALLO
Hasegawa 2011	NMES	10	8	2	23.5±9.3	HS	No NMES	10	8	2	29.4±14.1	HS	20	16	4	26.3±11.8	20 HS
Feil 2011	NMES	33	25	8	31.1±1.52	HS	No NMES	34	27	7	31.6±1.36	HS	67	52	15	31.3	67 HS
Ediz 2012	NMES	13	10	3	28.3±9.9	HS	No NMES	13	11	2	27.6±9.6	HS	26	21	5	NR	26 HS
Taradaj 2013	NMES	40	40	0	22.4±5.8	HS	No NMES	40	40	0	21.3±5.7	HS	80	80	0	22±5	80 HS
Wright 2019	NMES	14	9	5	29(17-51)	AUTO/ ALLO	No NMES	11	10	1	32.9(16-54)	AUTO/ ALLO	25	19	6	30.8±11.7	25 AUTO/ ALLO
Toth 2020	NMES	12	5	7	25±2	10 BTB 2 ALLO	Sham	9	4	5	24±3	7BTB 1ALLO 1HS	21	9	12	NR	17 BTB 3 ALLO 1 HS
Functional NMES																	
Ross 2000	NMES+CKC	10	6	4	27.1±4.9	BTB	CKC	10	7	3	28.4±5.9	BTB	20	13	7	NR	20 BTB
Labanca 2018	NMES+sit-to-stand	16	16	0	23.2±4.6	BTB	Usual care	17	17	0	22±3.2	BTB	33	33	0	NR	33 BTB
Moran 2019	NMES+walkin g	10	10	0	20.4±1.1	BTB/HS	NMES	13	13	0	21.6±4.2	BTB/HS	26	26	0	NR	26 BTB/HS
												574	378	111			138 BTB 245 HS 15 ALLO 125 NR 26 BTB/HS 25 AUTO/ ALLO

Electromyographic biofeedback (EMG-BFB)

	EMG-BFB					Controls					Total						
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft		
Draper 1990	EMG-BFB	11	NR	NR	NR	BTB	No EMG-BFB	11	NR	NR	NR	BTB	22	15	7	23 (16-36)	22 BTB
Christanell 2012	EMG-BFB	8	NR	NR	32.9±9.3	BTB	No EMG-BFB	8	NR	NR	27.1±6.2	BTB	16	12	4	30 (20-49)	16 BTB
												38	27	11			38 BTB

Blood flow restriction (BFR)

	BFR					Controls					Total							
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft			
Ohta 2003	BFR	22	13	9	28±9.7	HS	no BFR	22	12	10	30±9.7	HS	44	25	19	44 HS		
Iversen 2016	BFR	12	7	5	24.9±7.4	HS	no BFR	12	7	5	29.8±9.3	HS	24	14	10	24 HS		
Hughes 2019a	BFR	12	7	5	29±7	HS	no BFR	12	10	2	29±7	HS	24	17	7	24 HS		
Hughes 2019b	BFR	12	7	5	29±7	HS	no BFR	12	10	2	29±7	HS	24	17	7	24 HS		
Curran 2020	BFR	18	10	8	15.7±1.3	13 BTB 3 HS 2 QT	no BFR	16	5	11	17.4±3.5	12 BTB 3 HS 1 QT	34	15	19	25 BTB 6 HS 3 QT		
Grapar Zargi 2016	BFR	10	8	2	33±7	HS	sham	10	8	2	34±10	HS	20	16	4	20 HS		
Zargi 2018	BFR	10	8	2	34±6	HS	sham	10	8	2	35±5	HS	20	16	4	20 HS		
												190	120	70	28			25 BTB 162 HS 3 QT

EXERCISED-BASED REHABILITATION

Early phase rehabilitation

	Early					Controls					Total						
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft		
Early mobilisation																	
Haggmark 1979	Brace	8	7	1	28.9±5.7	BTB	Cast	8	7	1	27.8±2.5	BTB	16	14	2	28.3±4.5	16 BTB
Henriksson 2002	Brace	22	18	4	24±5	BTB	Cast	23	16	7	24±6	BTB	45	34	11	NR	45 BTB
Hiemstra 2009	No Imob	44	27	17	29.4±5.8	HS	Imob	44	26	18	27.8±5.8	HS	88	53	35	NR	88 HS
Ito 2007	3 days immobilization	15	10	5	29.2±10	HS	2w immobilization	15	6	9	27.3±10.9	HS	30	16	14	NR	30 HS
Noyes 1987	Early CPM	9	5	4	23.7±9.8	ALLO/BTB	Delayed CPM	9	7	2	22.6±4.3	ALLO/BTB	18	12	6	23.1±7.6	ALLO/BTB
Isberg 2006	Early EXT	11	5	6	25 (16-41)	BTB	Late EXT	11	9	2	21 (17-38)	BTB	22	14	8	NR	22 BTB
Vadala 2007	Early Mob	18	13	5	29 (16-42)	HS	Late Mob	23	17	6	30 (17-44)	HS	45	33	12	NR	45 HS
Christensen 2013	Early Mob +imm WB	19	10	9	30.1±10.5	HS	Late Mob +late WB	17	15	2	33.1±10.9	HS	36	25	11	31.5±10.6	36 HS
Immediate weight bearing																	
Tyler 1998	Early WB	25	NR	NR	NR	BTB	Late WB	20	NR	NR	NR	BTB	45	21	24	30±1	45 BTB
Early open-kinetic chain exercises																	
Heijne 2007	Early OKC-BTB	19	11	8	31±8	BTB	Late OKC-BTB	15	11	4	27±5	BTB	34	22	12	NR	34 BTB
	Early OKC-HS	17	7	10	30±8	HS	Late OKC-HS	17	7	10	31±9	HS	34	14	20	NR	34 HS
Fukuda 2013	Early OKC	23	16	7	26.5±8.5	HS	Late OKC	22	13	9	23.9±5.5	HS	45	29	16	NR	45 HS
Early (quadriceps and hamstring) strengthening																	
Shaw 2005	Early ISOM	55	41	14	28.8±9.3	31 BTB 24 HS	Usual care	48	34	14	28.4±8.1	32 BTB 16 HS	103	75	28	28.6±8.8	63 BTB 40 HS
Kinikli 2014	Early Leg Press	16	NR	NR	33.87±8.19	HS	Usual care	17	NR	NR	32.64±8.21	HS	33	31	2	33.2±8.1	33 HS
Sekir 2010	Early H ISOK	26	26	0	24.8±7.2	BTB	Late H ISOK	22	22	0	25.1±5.3	BTB	48	48	0	NR	48 BTB
Early eccentric training																	
Gerber 2007a	Early ECC	16	9	7	29.4±9.4	6 BTB 10 HS	Usual care	16	9	7	31±9.8	6 BTB 10 HS	32	18	14	NR	12 BTB 20 HS
Gerber 2007b	Early ECC	20	12	8	29.3±8.6	10 BTB 10 HS	Usual care	20	12	8	29.3±9.7	10 BTB 10 HS	40	24	16	NR	20 BTB 20 HS
Gerber 2009	Same as Gerber 2007b																
												682	465	217		293 BTB 371 HS 18 ALLO/BTB	

Strength training

	Resistance					Controls					Total						
	n	M	F	age	graft	n	M	F	age	graft	n	M	F	age	graft		
Open vs closed kinetic chain exercises																	
Bynum 1995	OKC	47	45	2	26	BTB	CKC	50	43	7	27	BTB	97	88	9	97 BTB	
Morrissey 2000	OKC	18	17	1	28±9	BTB	CKC	18	12	6	31±8	BTB	36	29	7	36 BTB	
Mikkelsen 2000	OKC+CKC	22	17	5	NR	BTB	CKC	22	17	5	NR	BTB	44	34	10	18-40	44 BTB
Hooper 2001	OKC	19	16	3	NR	BTB	CKC	18	13	5	NR	BTB	37	29	8	NR	37 BTB
Morrissey 2002	OKC	22	19	3	28±8	BTB	CKC	21	15	6	19±8	BTB	43	34	9	43 BTB	
Perry 2005	OKC	24	17	7	33±7	BTB/HS	CKC	25	20	5	33±8	BTB/HS	49	37	12	49 BTB/HS	
Kang 2012	OKC	18	12	6	29.9±2.3	NR	CKC	18	12	6	29±4	NR	36	24	12	36 NR	
Chrzan 2013	OKC	20	NR	NR	27.3±8.5	18HS 2BTB	CKC	20	NR	NR	26.2±4.2	20HS	40	14	26	26.5	38 HS 2 BTB
Ucar 2014	OKC	28	23	5	28.1±11.9	HS	CKC	30	24	6	27.4±10.5	HS	58	47	11	58 HS	
Eccentric training																	
Friedmann-bette 2018	ECC overload	21	NR	NR	24±4	QT/HS	CON/ECC	16	NR	NR	26±5	QT/HS	37	NR	NR	37 QT/HS	
Milandri 2021	ECC	12	12	0	25.8±6.4	HS	CON	10	10	0	25.2±6	HS	22	22	0	22 HS	
Kasmi 2021	ECC	10	0	10	20.3±3.1	BTB	Usual care	10	0	10	20.3±3.3	BTB	20	0	20	20.3	20 BTB
Isokinetic training																	
Tsaklis 2002	ECC	15	15	0	NR	BTB	CON	15	15	0	NR	BTB	30	30	0	25	30 BTB
Vidmar 2020	ISOK	15	15	0	26.9±5.8	HS	Control	15	15	0	24.3±4.6	HS	30	30	0	30 HS	

Low intensity vs high intensity resistance training																	
Bieler 2014	Low intensity resistance training	26	16	10	29.2±1.1	14BTB 12HS	High intensity resistance training	24	15	9	29.2±1.5	13BTB 11HS	50	31	19	18-45	27 BTB 23 HS
												629	449	143	336 BTB 171 HS 49 BTB/HS 37 QT/HS 36 NR		

Motor control training

	Intervention group	Intervention group					graft	Control group	Control group					graft	Total				
		n	M	F	age				n	M	F	age			n	M	F	age	
Motor control training																			
Cappellino 2012	Neurocognitive exercises	7	7	0	27±6	BTB	No neuro-cognitive exercises	7	7	0	28±4	BTB	14	14	0		14 BTB		
Cho 2013	Unstable surface exercise	14	14	0	28.8±7.2	NR	Stable surface exercises	14	14	0	29.9±5.5	NR	28	28	0		28 NR		
Kaya 2019	Neuromuscular exercises	20	NR	NR	29.4±9.7	ALLO	No neuromuscular exercises	20	NR	NR	31.6±8.5	ALLO	40	36	4		40 ALLO		
Shen 2021	15° treadmill angle backward walking	10	6	4	32.9±11.5	3BTB 5HS 2ALLO	No backward walking	10	7	3	35.5±10.1	2BTB 7HS 1ALLO	20	13	7		5 BTB 12 HS 3 ALLO		
Hajouj 2021	Proprioception training	15	15	0	23.1±3.0	HS	No proprioception training	15	15	0	24.3±3.7	HS	30	30	0		30 HS		
Bartels 2016	SpeedCourt system	28	22	6	31.4±7.5	HS	Regular stabilization training	22	14	8	34.4±12.5	HS	50	36	14		50 HS		
Baltaci 2013	Nintendo Wii Fit	15	15	0	28.6±6.8	HS	Usual care	15	15	0	29.3±5.7	HS	30	30	0		30 HS		
Motor control training vs strength training																			
Liu-ambrose 2003	Balance, agility, perturbation training	5	1	4	25±3.7	HS	Strength training	5	3	2	24.7±2.7	HS	10	4	6		10 HS		
Cooper 2005	Balance training	14	12	2	31.3±7.8	18TB 13HS	Strength training	15	8	7	24.7±5.1	28TB 13HS	29	20	9		3 BTB 26 HS		
												251	211	40	22 BTB 158 HS 43 ALLO 28 NR				

Plyometric and agility training

	Intervention group	Intervention group					graft	Control group	Control group					graft	Total				
		n	M	F	age				n	M	F	age			n	M	F	age	
Plyometric and agility training																			
Risberg 2007	Balance, plyometrics, agility training	39	26	13	27	BTB	Usual care	35	21	14	28.5	BTB	74	47	27		74 BTB		
Risberg 2009	Balance, plyometrics, agility training	39	26	13	NR	BTB	Usual care	35	21	14	NR	BTB	74	47	27		74 BTB		
Souissi 2011	Plyometric and agility training	8	8	0	21.7±3	NR	Usual care	8	8	0	21.5±4.1	NR	16	16	0		16 NR		
Kasmi 2021	Plyometric training	10	0	10	20.3±3.4	BTB	Usual care	10	0	10	20.3±3.1	BTB	20	0	20		20 BTB		
Low intensity vs high intensity plyometric training																			
Chmielewski 2016	Low intensity plyometric training	12	7	5	20.7±4.9	AUTO/ ALLO	High intensity plyometric training	12	8	4	19.3±3.8	AUTO/ ALLO	24	15	9	15-30	24 AUTO/ALLO		
												134	78	56	94 BTB 16 NR 24 AUTO/ALLO				

Summary of critical and important outcomes

	ROM	Swelling	Laxity	PROM	Pain	Balance	Proprioception	Functional	Atrophy	Strength	RTS
Pre-operative rehab			IMPORTANT	CRITICAL				IMPORTANT	CRITICAL	CRITICAL	CRITICAL
Unsupervised rehab	CRITICAL		CRITICAL	CRITICAL	CRITICAL		IMPORTANT	IMPORTANT	CRITICAL	CRITICAL	
Accelerated rehab			CRITICAL	CRITICAL			IMPORTANT	CRITICAL		CRITICAL	
CPM	CRITICAL	CRITICAL	CRITICAL	CRITICAL	CRITICAL		IMPORTANT		IMPORTANT	IMPORTANT	
Cryotherapy	CRITICAL	CRITICAL			CRITICAL						
Compressive cryotherapy	CRITICAL	CRITICAL		CRITICAL	CRITICAL			IMPORTANT	IMPORTANT	IMPORTANT	
NMES	IMPORTANT	IMPORTANT	CRITICAL	CRITICAL	CRITICAL			IMPORTANT	CRITICAL	CRITICAL	
Functional NMES			CRITICAL		CRITICAL	IMPORTANT		IMPORTANT	CRITICAL	CRITICAL	
EMG-Biofeedback	IMPORTANT	IMPORTANT		CRITICAL	CRITICAL					CRITICAL	
BFR	IMPORTANT	CRITICAL	CRITICAL	CRITICAL	CRITICAL	IMPORTANT			CRITICAL	CRITICAL	
Kinesio-tape	CRITICAL	CRITICAL		CRITICAL	CRITICAL	IMPORTANT		IMPORTANT	IMPORTANT	IMPORTANT	
Dry needling	IMPORTANT			CRITICAL	CRITICAL	IMPORTANT					
Whole body vibration	IMPORTANT		CRITICAL	CRITICAL		CRITICAL	CRITICAL	IMPORTANT		CRITICAL	
Local vibration	IMPORTANT			CRITICAL	CRITICAL	CRITICAL		IMPORTANT		CRITICAL	
Early mobilization	CRITICAL	CRITICAL	CRITICAL	CRITICAL	CRITICAL		IMPORTANT	IMPORTANT	IMPORTANT	IMPORTANT	
Immediate WB	CRITICAL		CRITICAL	CRITICAL	CRITICAL						
Early start OKC	CRITICAL		CRITICAL	CRITICAL	CRITICAL	IMPORTANT		IMPORTANT		CRITICAL	
Early isometric	CRITICAL		CRITICAL	CRITICAL	CRITICAL			IMPORTANT		CRITICAL	
Early leg press				CRITICAL				IMPORTANT		CRITICAL	
Early HSs isokinetic				CRITICAL						CRITICAL	
Early ECC		CRITICAL	CRITICAL	CRITICAL	CRITICAL			IMPORTANT	CRITICAL	CRITICAL	
OKC vs CKC	IMPORTANT		CRITICAL	CRITICAL	CRITICAL			IMPORTANT	CRITICAL	CRITICAL	CRITICAL
Eccentric training				CRITICAL		IMPORTANT		IMPORTANT		CRITICAL	
Isokinetic vs isotonic				CRITICAL				IMPORTANT	CRITICAL	CRITICAL	
Low vs high intensity			CRITICAL	CRITICAL				IMPORTANT		CRITICAL	
Motor control vs usual care	IMPORTANT	IMPORTANT	CRITICAL	CRITICAL	CRITICAL	CRITICAL	CRITICAL	IMPORTANT	CRITICAL	CRITICAL	
Motor control vs strength	IMPORTANT			CRITICAL				IMPORTANT		CRITICAL	
Plyometric/agility training			CRITICAL	CRITICAL	CRITICAL	IMPORTANT	IMPORTANT	CRITICAL		CRITICAL	
Cross education				CRITICAL		IMPORTANT	IMPORTANT	IMPORTANT		CRITICAL	
Core stability training	IMPORTANT			CRITICAL	CRITICAL			IMPORTANT			
Aquatic therapy	CRITICAL	CRITICAL	CRITICAL	CRITICAL	CRITICAL	IMPORTANT	IMPORTANT	IMPORTANT	CRITICAL	CRITICAL	

Risk of Bias assessment

Outcome / Author	D1	D2	D3	D4	D5	Overall
Pre-operative rehabilitation						
Strength						
Shaarani 2013	!	!	-	-	-	-
Kim 2015	!	-	-	-	!	-
Atrophy						
Shaarani 2013	!	!	-	+	-	-
Functional activities						
Shaarani 2013	!	!	-	-	!	-
Kim 2015	!	-	-	-	!	-
Patient reported outcomes						
Shaarani 2013	!	!	-	-	!	-
Reddy 2020	!	-	-	-	!	-
Return to sport						
Shaarani 2013	!	!	-	-	!	-
Laxity						
Reddy 2020	!	-	-	!	!	-
<ul style="list-style-type: none"> + Low risk ! Some concerns - High risk 						
<ul style="list-style-type: none"> D1 Randomisation process D2 Deviations from the intended interventions D3 Missing outcome data D4 Measurement of the outcome D5 Selection of the reported result 						
Perturbation in pre-rehabilitation						
Strength						
Hartigen 2010	!	-	!	-	!	-
Patient reported outcomes						
Hartigen 2010	!	-	!	-	!	-
Functional activities						
Hartigen 2009	!	-	-	-	-	-
Hartigen 2010	!	-	!	-	!	-
Unsupervised exercise execution						
Strength						
Grant 2005	+	+	+	+	!	!
Revenas 2009	!	!	-	+	!	-
Grant 2010	+	+	+	+	!	!
Hohmann 2011	+	+	+	+	!	!
Lim 2019	!	-	+	+	!	-
Beard 1998	!	!	+	+	!	!
Range of motion						
Schenck 1997	!	-	+	+	!	-
Fischer 1998	!	-	+	-	!	-
Grant 2005	+	+	+	+	!	!
Ugutmen 2008	!	-	+	-	!	-
Revenas 2009	!	!	-	+	!	-
Grant 2010	+	+	+	+	!	!
Patient reported outcomes						
Schenck 1997	!	-	+	!	!	-
Beard 1998	!	!	+	!	!	!
Fischer 1998	!	-	+	!	!	-
Grant 2005	+	+	+	!	!	!
Ugutmen 2008	!	-	+	!	!	-
Revenas 2009	!	!	-	!	!	-
Grant 2010	+	+	+	!	!	!
Hohmann 2011	+	+	+	!	!	!

Functional activities						
Schenck 1997	!	-	+	+	!	-
Fischer 1998	!	-	+	!	!	-
Revenas 2009	!	!	-	+	!	-
Hohmann 2011	+	+	+	+	!	!
Laxity						
Schenck 1997	!	-	+	+	!	-
Beard 1998	!	!	+	+	!	!
Fischer 1998	!	-	+	+	!	-
Grant 2005	+	+	+	+	!	!
Ugutmen 2008	!	-	+	-	!	-
Grant 2010	+	+	+	+	!	!
Proprioception						
Lim 2019	!	-	+	+	!	-
Pain						
Schenck 1997	!	-	+	!	!	-
Atrophy						
Fischer 1998	!	-	+	-	!	-
Chen 2021	!	-	!	!	!	-
Ugutmen 2008	!	-	+	-	!	-

- + Low risk
 - ! Some concerns
 - High risk
- D1 Randomisation process
 - D2 Deviations from the intended interventions
 - D3 Missing outcome data
 - D4 Measurement of the outcome
 - D5 Selection of the reported result

Lateral slide exercise - unsupervised

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Blanpied 2000	!	+	+	+	!	!
Functional activities						
Blanpied 2000	!	+	+	+	!	!

Rehabilitation duration

Outcome / Author	D1	D2	D3	D4	D5	Overall
Laxity						
Beynnon 2011	!	-	!	+	!	-
Gupta 2017	!	-	-	-	!	-
Patient reported outcomes						
Beynnon 2011	!	-	!	+	!	-
Gupta 2017	!	-	-	-	!	-
Strength						
Beynnon 2011	!	-	!	+	!	-
Functional activities						
Beynnon 2011	!	-	!	+	!	-
Gupta 2017	!	-	-	-	!	-
Proprioception						
Beynnon 2011	!	-	!	+	!	-

Continuous passive motion (CPM) versus no CPM

Outcome / Author	D1	D2	D3	D4	D5	Overall
Range of motion						
Yates 1992	!	-	-	-	!	-
Anderson 1989	!	-	+	!	-	-
Swelling						
Yates 1992	!	-	-	-	!	-
Anderson 1989	!	-	+	-	-	-
Atrophy						
Yates 1992	!	-	-	-	!	-
Anderson 1989	!	-	+	!	-	-

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Anderson 1989	!	!	+	!	!	!
Pain						
McCarthy 1993b	!	!	!	!	!	!
Yates 1992	!	!	!	!	!	!
Pain - Medication use						
McCarthy 1993b	!	!	!	!	!	!
Yates 1992	!	!	!	!	!	!
Laxity						
McCarthy 1993a	!	!	!	!	!	!
Anderson 1989	!	!	+	!	!	!
Atrophy						
Yates 1992	!	!	!	!	!	!
Anderson 1989	!	!	+	!	!	!
Strength						
Anderson 1989	!	!	+	!	!	!

- + Low risk
 - ! Some concerns
 - ! High risk
- D1 Randomisation process
 - D2 Deviations from the intended interventions
 - D3 Missing outcome data
 - D4 Measurement of the outcome
 - D5 Selection of the reported result

CPM vs active motion

Outcome / Author	D1	D2	D3	D4	D5	Overall
Range of motion						
Rosen 1992	!	!	!	!	!	!
Engstrom 1995	!	!	!	!	!	!
Friemert 2006	!	!	!	!	!	!
Swelling						
Friemert 2006	!	!	!	!	!	!
Engstrom 1995	!	!	!	!	!	!
Pain						
Friemert 2006	!	!	!	!	!	!
Laxity						
Rosen 1992	!	!	!	!	!	!
Atrophy						
Engstrom 1995	!	!	!	!	!	!
Patient reported outcomes						
Rosen 1992	!	!	!	!	!	!
Proprioception						
Friemert 2006	!	!	!	!	!	!

Long vs short CPM use

Outcome / Author	D1	D2	D3	D4	D5	Overall
Range of motion						
Richmond 1991	!	!	!	+	!	!
Swelling						
Richmond 1991	!	!	!	+	!	!
Laxity						
Richmond 1991	!	!	!	+	!	!

Cryotherapy vs no cryotherapy

Outcome / Author	D1	D2	D3	D4	D5	Overall
Pain - Medication use						
Cohn 1989	!	!	+	!	!	!
Daniel 1994	!	!	!	!	!	!
Brandsoon 1996	!	+	+	!	!	!
Konrath 1996	!	!	!	!	!	!
Edwards 1996	!	!	!	!	!	!
Barber 1998	!	+	!	!	!	!
Dervin 1998	!	!	!	!	!	!
Ohkoshi 1999	!	!	+	!	!	!
Koyonos 2014	!	+	+	!	!	!

Compressive cryotherapy versus cryotherapy

Outcome / Author	D1	D2	D3	D4	D5	Overall
Pain - VAS						
Daniel 1994	⊖	⊖	⊖	⊖	⚠	⊖
Brandsoon 1996	⚠	⊖	⊕	⊕	⚠	⊖
Edwards 1996	⚠	⊖	⊖	⊖	⚠	⊖
Barber 1998	⚠	⊕	⊖	⊖	⊖	⊖
Dervin 1998	⚠	⊖	⊖	⚠	⚠	⊖
Ohkoshi 1999	⊖	⊖	⊕	⊖	⚠	⊖
Koyonos 2014	⚠	⊕	⊕	⊖	⚠	⊖
Swelling						
Daniel 1994	⊖	⊖	⊖	⊖	⚠	⊖
Barber 1998	⚠	⊕	⊖	⊖	⚠	⊖
Edwards 1996	⚠	⊖	⊖	⚠	⚠	⊖
Dervin 1998	⚠	⊖	⊖	⊖	⚠	⊖
Ohkoshi 1999	⊖	⊖	⊕	⚠	⚠	⊖
Konrath 1996	⊖	⊖	⊖	⊖	⚠	⊖
Range of motion						
Daniel 1994	⊖	⊖	⊖	⊖	⚠	⊖
Edwards 1996	⚠	⊖	⊖	⚠	⚠	⊖
Barber 1998	⚠	⊖	⊖	⊖	⚠	⊖
Konrath 1996	⊖	⊖	⊖	⊖	⚠	⊖
Ohkoshi 1999	⊖	⊖	⊕	⊖	⚠	⊖
Pain - Medication use						
Kijkunasathian 2017	⊕	⊕	⊕	⚠	⚠	⚠
Schroder 1994	⚠	⊖	⊖	⚠	⚠	⊖
Waterman 2011	⚠	⊕	⊖	⊖	⊖	⊖
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Pain						
Dambros 2012	⊕	⊖	⊖	⊖	⚠	⊖
Kijkunasathian 2017	⊕	⊕	⊕	⊖	⚠	⊖
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Schroder 1994	⚠	⊖	⊖	⊖	⚠	⊖
Waterman 2011	⚠	⊖	⊖	⚠	⚠	⊖
Range of motion						
Schroder 1994	⚠	⊖	⊖	⊖	⚠	⊖
Dambros 2012	⊕	⊕	⊖	⊖	⚠	⊖
Kijkunasathian 2017	⊕	⊕	⊕	⚠	⚠	⚠
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Swelling						
Kijkunasathian 2017	⊕	⊕	⊕	⊖	⚠	⊖
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Schroder 1994	⚠	⊖	⊖	⊖	⚠	⊖
Waterman 2011	⚠	⊕	⊖	⊖	⚠	⊖
Patient reported outcomes						
Waterman 2011	⚠	⊕	⊖	⚠	⚠	⊖
Kijkunasathian 2017	⊕	⊕	⊕	⊖	⚠	⊖
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Atrophy						
Schroder 1994	⚠	⊖	⊖	⊖	⚠	⊖
Ruffilli 2015	⚠	⊕	⊕	⊖	⚠	⊖
Strength						
Schroder 1994	⚠	⊖	⊖	⊖	⚠	⊖
Functional activities						
Kijkunasathian 2017	⊕	⊕	⊕	⚠	⚠	⚠

⊕ Low risk
⚠ Some concerns
⊖ High risk
 D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Neuromuscular electrical Stimulation (NMES) versus no NMES						
Strength						
Sisk 1987	!	-	+	+	!	-
Delitto 1988	!	-	+	+	!	-
Wigerstad-Lossing 1988	!	-	+	+	!	-
Snyder-Mackler 1991	!	+	+	+	!	!
Snyder-Mackler 1995	!	+	-	+	!	-
Lieber 1996	!	+	+	-	!	-
Paternostro-Sluga 1999	!	+	+	+	!	!
Fitzgerald 2003	-	!	+	+	!	-
Hasegawa 2011	!	!	+	+	!	!
Feil 2011	!	!	+	+	!	!
Taradaj 2013	+	+	+	+	+	+
Toth 2020	-	+	+	+	!	-
Atrophy						
Wigerstad-Lossing 1988	!	-	+	+	!	-
Hasegawa 2011	!	!	+	+	!	!
Taradaj 2013	+	+	+	+	+	+
Wright 2019	-	!	+	!	!	-
Toth 2020	-	+	+	+	!	-
Ediz 2012	+	+	+	+	!	!
Pain						
Fitzgerald 2003	-	!	+	-	!	-
Ediz 2012	+	+	+	-	!	-
Range of motion						
Toth 2020	-	+	+	+	!	-
Ediz 2012	+	+	+	+	!	!
Patient reported outcomes						
Fitzgerald 2003	-	!	+	-	!	-
Hasegawa 2011	!	!	+	-	!	-
Feil 2011	!	!	+	-	!	-
Toth 2020	-	+	+	-	!	-
Ediz 2012	+	+	+	-	!	-
Functional activities						
Snyder-Mackler 1991	!	+	+	+	!	!
Feil 2011	!	!	+	+	!	!
Toth 2020	-	+	+	+	!	-
Fitzgerald 2003	-	!	+	+	!	-
Laxity						
Snyder-Mackler 1991	!	+	+	+	!	!
Feil 2011	!	!	+	+	!	!
Swelling						
Ediz 2012	+	+	+	+	!	!
Functional NMES versus no functional NMES						
Strength						
Labanca 2018	!	+	!	+	!	!
Moran 2019	-	-	-	+	!	-
Functional activities						
Ross 2000	!	-	+	+	!	-
Labanca 2018	!	+	!	+	!	!
Moran 2019	-	-	-	+	!	-
Laxity						
Ross 2000	!	-	+	+	!	-
Pain						
Labanca 2018	!	+	!	-	!	-

+ Low risk
! Some concerns
- High risk

D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

		D1	D2	D3	D4	D5	Overall
Atrophy							
Labanca 2018		!	+	!	+	!	!
Balance							
Ross 2000		!	-	+	+	!	-
Strength							
Draper 1990		-	-	+	!	!	-
Range of motion							
Draper 1990		-	-	+	!	!	-
Christanelli 2012		-	!	+	+	!	-
Patient reported outcomes							
Christanelli 2012		-	!	+	-	!	-
Pain							
Christanelli 2012		-	!	+	-	!	-
Swelling							
Christanelli 2012		-	!	+	+	!	-

		D1	D2	D3	D4	D5	Overall
Strength							
Ohta 2003		-	+	+	!	!	-
Hughes 2019a		+	!	+	+	+	!
Curran 2020		+	-	+	+	+	-
Atrophy							
Ohta 2003		-	+	+	!	-	-
Iversen 2016		!	+	+	+	!	-
Hughes 2019a		+	!	+	+	+	!
Curran 2020		+	-	+	+	+	-
Pain							
Hughes 2019b		+	+	+	-	!	-
Patient reported outcomes							
Curran 2020		+	-	+	-	+	-
Hughes 2019a		+	!	+	-	+	-
Range of motion							
Ohta 2003		-	+	+	!	!	-
Hughes 2019a		+	!	+	+	+	!
Balance							
Hughes 2019a		+	!	+	+	+	!
Laxity							
Ohta 2003		-	+	+	!	!	-
Hughes 2019a		+	!	+	+	+	!
Swelling							
Hughes 2019a		+	!	+	+	+	!

		D1	D2	D3	D4	D5	Overall
Strength							
Grapar Zargi 2016		-	+	!	+	!	-
Zargi 2018		!	+	+	+	!	!
Atrophy							
Grapar Zargi 2016		-	+	!	+	!	-
Balance							
Grapar Zargi 2016		-	+	!	+	!	-

+ Low risk
! Some concerns
- High risk

D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Kinesio-tape versus no kinesio-tape						
Pain						
Boguszewski 2013	!	-	-	-	-	-
Balki 2016	!	-	+	+	!	-
Chan 2016	!	-	!	-	-	-
Swelling						
Boguszewski 2013	!	-	-	-	!	-
Balki 2016	!	+	+	+	!	-
Chan 2016	!	+	!	-	-	-
Strength						
Balki 2016	!	-	+	-	!	-
Oliveira 2016	-	-	+	!	!	-
Balki 2019	!	+	+	+	-	-
Range of motion						
Boguszewski 2013	!	-	-	-	!	-
Balki 2016	!	-	+	+	!	-
Chan 2016	!	+	!	-	-	-
Patient reported outcomes						
Balki 2016	!	-	+	+	!	-
Chan 2016	!	+	!	-	-	-
Gholami 2020	+	-	+	+	!	-
Balance						
Oliveira 2016	-	-	+	-	!	-
Gholami 2020	+	+	+	+	!	!
Atrophy						
Boguszewski 2013	!	-	-	-	!	-
Functional activities						
Gholami 2020	+	+	+	+	!	!

+ Low risk
! Some concerns
- High risk

D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Dry needling versus no dry needling						
Pain						
Velázquez-Saornil 2017	!	-	+	-	!	-
Patient reported outcomes						
Velázquez-Saornil 2017	!	-	+	-	!	-
Range of motion						
Velázquez-Saornil 2017	!	-	+	+	!	-
Balance						
Velázquez-Saornil 2017	!	-	+	+	!	-

Outcome / Author	D1	D2	D3	D4	D5	Overall
Whole-body vibration (WBV) versus usual care						
Strength						
Berschlin 2014	!	+	+	+	!	!
Pistone 2016	!	+	+	+	!	!
Costantino 2018	!	+	+	+	!	!
Dacosta 2019	+	+	+	+	+	+
Salvarani 2003	!	-	+	+	!	-
Fu 2013	!	+	+	+	!	!
Proprioception						
Moezy 2008	!	+	+	+	!	!
Fu 2013	!	+	+	+	!	!
Balance						
Moezy 2008	!	+	+	+	!	!
Fu 2013	!	+	+	+	!	!
Berschlin 2014	!	+	+	+	!	!
Pistone 2016	!	+	+	+	!	!
Dacosta 2019	+	+	+	+	+	+

Patient reported outcomes						
Berschlin 2014	!	+	+	-	!	-
Pistone 2016	!	+	+	-	!	-
Functional						
Fu 2013	!	+	+	+	!	!
Range of motion						
Berschlin 2014	!	+	+	+	!	!
Laxity						
Fu 2013	!	+	+	+	!	!
Berschlin 2014	!	+	+	+	!	!

● Low risk

! Some concerns

● High risk

D1 Randomisation process

D2 Deviations from the intended interventions

D3 Missing outcome data

D4 Measurement of the outcome

D5 Selection of the reported result

Local vibration versus no local vibration

Outcome / Author	D1	D2	D3	D4	D5	Overall
Balance						
Brunetti 2006	!	-	-	-	!	-
Strength						
Brunetti 2006	!	-	-	+	!	-
Coulondre 2022	!	+	+	+	-	-
Park 2019	!	+	!	+	!	!
Patient reported outcomes						
Brunetti 2006	!	-	-	-	!	-
Park 2019	!	+	!	-	!	-
Functional						
Coulondre 2022	!	+	+	+	-	-
Range of motion						
Park 2019	!	+	!	+	!	!
Pain						
Park 2019	!	+	!	-	!	-

Early mobilisation versus delayed mobilisation

Outcome / Author	D1	D2	D3	D4	D5	Overall
Range of motion						
Haggmark 1979	!	-	-	-	-	-
Henriksson 2002	!	-	!	-	!	-
Hiemstra 2009	+	-	+	-	!	-
Isberg 2006	+	-	+	+	-	-
Christensen 2013	+	-	+	!	!	-
Noyes 1987	!	-	-	-	!	-
Vadala 2007	!	-	!	+	!	-
Pain						
Hiemstra 2009	+	-	+	-	!	-
Pain - Medication used						
Hiemstra 2009	+	-	+	-	!	-
Noyes 1987	!	-	-	-	!	-
Laxity						
Noyes 1987	!	-	-	-	!	-
Henriksson 2002	!	-	!	-	!	-
Ito 2007	-	-	-	!	!	-
Isberg 2006	+	-	+	+	!	-
Vadala 2007	!	-	!	+	!	-
Christensen 2013	+	-	+	+	!	-
Haggmark 1979	!	-	-	-	-	-
Patient reported outcomes						
Henriksson 2002	!	-	!	-	-	-
Ito 2007	-	-	-	-	!	-
Isberg 2006	+	-	+	!	-	-
Christensen 2013	+	-	+	-	!	-

Outcome	Author	D1	D2	D3	D4	D5	Overall
Swelling							
	Noyes 1987	!	-	-	-	-	-
Atrophy							
	Haggmark 1979	!	-	-	-	-	-
	Noyes 1987	!	-	-	-	-	-
Strength							
	Henriksson 2002	!	-	!	-	-	-
	Ito 2007	-	-	-	!	!	-
	Christensen 2013	+	-	+	-	!	-
Functional activities							
	Isberg 2006	+	-	+	+	-	-
Proprioception							
	Ito 2007	-	-	-	-	!	-

- + Low risk
 - ! Some concerns
 - High risk
- D1 Randomisation process
 - D2 Deviations from the intended interventions
 - D3 Missing outcome data
 - D4 Measurement of the outcome
 - D5 Selection of the reported result

Immediate weight-bearing versus delayed weight-bearing

Outcome / Author	D1	D2	D3	D4	D5	Overall
Range of motion						
Tyler 1998	!	-	!	-	!	-
Laxity						
Tyler 1998	!	-	!	-	!	-
Patient reported outcomes						
Tyler 1998	!	-	!	-	-	-
Pain						
Tyler 1998	!	-	!	-	-	-

Early start of OKC versus delayed start of OKC exercises

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Heijne 2007	+	-	-	+	!	-
Fukuda 2013	+	-	!	+	!	-
Laxity						
Heijne 2007	+	-	-	+	!	-
Fukuda 2013	+	-	!	+	!	-
Pain						
Heijne 2007	+	-	-	!	!	-
Fukuda 2013	+	-	!	!	!	-
Patient reported outcomes						
Fukuda 2013	+	-	!	!	!	-
Functional activities						
Fukuda 2013	+	-	!	+	!	-
Balance						
Heijne 2007	+	-	-	+	!	-
Range of motion						
Heijne 2007	+	-	-	+	!	-

Early isometric strengthening versus usual care

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Shaw 2005	!	-	-	-	!	-
Laxity						
Shaw 2005	!	-	-	!	!	-
Range of motion						
Shaw 2005	!	-	-	+	!	-
Patient reported outcomes						
Shaw 2005	!	-	-	-	!	-

		Pain						
Shaw 2005		!	-	-	-	!	-	
		Functional activities						
Shaw 2005		!	-	-	+	!	-	
		+	!					-
		D1	D2	D3	D4	D5	Overall	
Outcome / Author								
Strength								
Kinikli 2014		!	!	!	-	!	-	
Patient reported outcomes								
Kinikli 2014		!	!	!	+	!	-	
Functional activities								
Kinikli 2014		!	!	!	-	!	-	
		D1	D2	D3	D4	D5	Overall	
Outcome / Author <td colspan="6"></td>								
Strength								
Sekir 2010		!	-	-	+	!	-	
Patient reported outcomes								
Sekir 2010		!	-	-	-	!	-	
		D1	D2	D3	D4	D5	Overall	
Outcome / Author <td colspan="6"></td>								
Strength								
Gerber 2007a		-	-	-	-	!	-	
Gerber 2009		-	-	-	!	-	-	
Gerber 2007b		!	-	+	-	!	-	
Atrophy								
Gerber 2009		-	-	-	+	-	-	
Gerber 2007b		!	-	+	-	!	-	
Patient reported outcomes								
Gerber 2007a		-	-	-	-	!	-	
Gerber 2009		-	-	-	!	-	-	
Gerber 2007b		!	-	+	-	!	-	
Laxity								
Gerber 2007a		-	-	-	-	!	-	
Gerber 2009		-	-	-	-	-	-	
Gerber 2007b		!	-	+	-	!	-	
Pain								
Gerber 2007a		-	-	-	-	!	-	
Swelling								
Gerber 2007a		-	-	-	-	!	-	
Functional activities								
Gerber 2007a		-	-	-	-	!	-	
Gerber 2009		-	-	-	!	-	-	
Gerber 2007b		!	-	+	-	!	-	
		D1	D2	D3	D4	D5	Overall	
Outcome / Author <td colspan="6"></td>								
Strength								
Mikkelsen 2000		-	+	+	+	!	-	
Morrissey 2002		!	+	+	+	!	!	
Kang 2012		!	-	+	+	!	-	

Outcome	Author	D1	D2	D3	D4	D5	Overall
Laxity							
	Bynum 1995	+	+	-	+	!	!
	Morrissey 2000	!	+	+	+	!	!
	Mikkelsen 2000	-	+	+	+	!	!
	Perry 2005	!	+	+	+	!	!
Pain							
	Morrissey 2002	!	+	+	!	!	!
	Ucar 2014	!	-	-	!	!	!
Patient reported outcomes							
	Bynum 1995	+	+	-	!	!	!
	Morrissey 2002	!	+	+	!	!	!
	Perry 2005	!	+	+	!	!	!
	Chrzan 2013	-	+	+	!	!	!
	Ucar 2014	!	-	-	!	!	!
	Hooper 2001	!	+	!	!	!	!
Atrophy							
	Ucar 2014	!	-	-	+	!	!
Range of motion							
	Ucar 2014	!	-	-	+	!	!
Functional activities							
	Hooper 2001	!	+	!	+	!	!
	Perry 2005	!	+	-	!	!	!
Return to sport							
	Mikkelsen 2000	-	+	+	!	!	!

- + Low risk
 - ! Some concerns
 - High risk
- D1 Randomisation process
 - D2 Deviations from the intended interventions
 - D3 Missing outcome data
 - D4 Measurement of the outcome
 - D5 Selection of the reported result

Eccentric training versus usual care

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Friedmann-bette 2018	!	+	-	+	!	!
Milandri 2021	+	+	+	+	+	+
Atrophy						
Friedmann-bette 2018	!	+	-	+	!	!
Milandri 2021	+	+	+	+	+	+
Patient reported outcomes						
Milandri 2021	+	+	+	!	+	!
Kasmi 2021	!	+	+	!	!	!
Functional activities						
Kasmi 2021	!	+	+	+	!	!
Balance						
Kasmi 2021	!	+	+	+	!	!

Isokinetic training versus isotonic training

Outcome / Author	D1	D2	D3	D4	D5	Overall
Strength						
Vidmar 2020	+	+	+	+	+	+
Tsaklis 2002	!	-	-	+	!	!
Atrophy						
Vidmar 2020	+	+	+	+	+	+
Tsaklis 2002	!	-	-	+	!	!
Patient reported outcomes						
Vidmar 2020	+	+	+	!	+	!
Functional activities						
Vidmar 2020	+	+	+	+	!	!

Outcome / Author	D1	D2	D3	D4	D5	Overall
Low intensity vs high intensity resistance training						
Strength						
Bieler 2014	!	-	-	+	!	-
Patient reported outcomes						
Bieler 2014	!	-	-	!	!	-
Functional activities						
Bieler 2014	!	-	-	+	!	-
Laxity						
Bieler 2014	!	-	-	+	!	-

+ Low risk
! Some concerns
- High risk

D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Motor control training vs usual care						
Proprioception						
Kaya 2019	!	-	!	+	!	-
Cho 2013	!	-	+	+	!	-
Shen 2021	!	-	+	+	!	-
Hajouj 2021	+	-	+	+	!	-
Baltaci 2013	!	!	+	+	!	!
Balance						
Baltaci 2013	!	!	+	+	!	!
Cappellino 2012	!	-	+	+	!	-
Coordination						
Baltaci 2013	!	!	+	+	!	!
Reactivity						
Baltaci 2013	!	!	+	+	!	!
Bartels 2016	!	-	-	+	!	-
Patient reported outcomes						
Cappellino 2012	!	-	+	!	!	-
Cho 2013	!	-	+	!	!	-
Hajouj 2021	+	-	+	!	!	-
Functional						
Cappellino 2012	!	-	+	+	!	-
Kaya 2019	!	-	!	+	!	-
Bartels 2016	!	-	-	+	!	-
Strength						
Baltaci 2013	!	!	+	+	!	!
Kaya 2019	!	-	!	+	!	-
Atrophy						
Cappellino 2012	!	-	+	+	!	-
Bartels 2016	!	-	-	+	!	-
Pain						
Hajouj 2021	+	-	+	!	!	-
Cappellino 2012	!	-	+	!	!	-
Range of motion						
Cappellino 2012	!	-	+	-	!	-
Bartels 2016	!	-	-	+	!	-
Swelling						
Cappellino 2012	!	-	+	+	!	-
Laxity						
Kaya 2019	!	-	!	+	!	-

Outcome / Author	D1	D2	D3	D4	D5	Overall
Motor control training vs strength training						
Strength						
Liu-ambrose 2003	High risk	Some concerns	Low risk	Low risk	High risk	High risk
Patient reported outcomes						
Liu-ambrose 2003	High risk	Some concerns	Low risk	Some concerns	Some concerns	High risk
Cooper 2005	Low risk	Low risk	Low risk	Some concerns	Some concerns	Some concerns
Functional						
Liu-ambrose 2003	High risk	Some concerns	Low risk	Low risk	Some concerns	High risk
Cooper 2005	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
Range of motion						
Cooper 2005	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns

- Low risk
 - ! Some concerns
 - High risk
- D1 Randomisation process
 - D2 Deviations from the intended interventions
 - D3 Missing outcome data
 - D4 Measurement of the outcome
 - D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Plyometric and agility training versus usual care						
Strength						
Risberg 2009	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
Balance						
Risberg 2007	Low risk	Low risk	Some concerns	Low risk	Some concerns	Some concerns
Kasmi 2021	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
Proprioception						
Risberg 2007	Low risk	Low risk	Some concerns	Low risk	Some concerns	Some concerns
Patient reported outcomes						
Risberg 2007	Low risk	Low risk	Some concerns	Some concerns	Some concerns	Some concerns
Risberg 2009	Low risk	Low risk	Low risk	Some concerns	Some concerns	Some concerns
Kasmi 2021	Some concerns	Low risk	Low risk	Some concerns	Some concerns	Some concerns
Functional						
Risberg 2009	Low risk	Low risk	Low risk	Some concerns	Some concerns	Some concerns
Souissi 2011	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
Kasmi 2021	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
Pain						
Risberg 2009	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns
Risberg 2007	Some concerns	High risk	Low risk	Some concerns	Some concerns	High risk
Laxity						
Risberg 2007	Low risk	Low risk	Some concerns	Low risk	Some concerns	Some concerns
Risberg 2009	Low risk	Low risk	Low risk	Low risk	Some concerns	Some concerns

Outcome / Author	D1	D2	D3	D4	D5	Overall
Plyometric and eccentric training versus usual care						
Balance						
Kasmi 2021	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns
Patient reported outcomes						
Kasmi 2021	Some concerns	Low risk	Low risk	Some concerns	Some concerns	Some concerns
Functional						
Kasmi 2021	Some concerns	Low risk	Low risk	Low risk	Some concerns	Some concerns

Outcome / Author	D1	D2	D3	D4	D5	Overall
Low intensity vs high intensity plyometric training						
Strength						
Chmielewski 2016	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Patient reported outcomes						
Chmielewski 2016	Low risk	Low risk	Low risk	Some concerns	Low risk	Some concerns
Functional activities						
Chmielewski 2016	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Laxity						
Chmielewski 2016	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Pain						
Chmielewski 2016	Low risk	Low risk	Low risk	Some concerns	Low risk	Some concerns

Outcome / Author	D1	D2	D3	D4	D5	Overall
Cross-education versus usual care						
Strength						
Harput 2019	!	+	+	+	-	-
Minshull 2021	+	+	!	+	!	!
Zult 2019	+	!	+	+	+	!
Papandreou 2013	!	-	+	+	!	-
Papandreou 2007	!	-	+	+	!	-
Patient reported outcomes						
Zult 2019	+	!	+	-	+	-
Harput 2019	!	+	+	-	-	-
Minshull 2021	+	-	!	-	!	-
Papandreou 2009	!	+	+	-	+	-
Functional activities						
Zult 2019	+	!	+	+	+	!
Harput 2019	!	+	+	+	-	-
Minshull 2021	+	-	!	-	!	!
Proprioception						
Zult 2018	+	!	+	+	+	!
Balance						
Zult 2018	+	!	+	+	+	!

+ Low risk
! Some concerns
- High risk
 D1 Randomisation process
 D2 Deviations from the intended interventions
 D3 Missing outcome data
 D4 Measurement of the outcome
 D5 Selection of the reported result

Outcome / Author	D1	D2	D3	D4	D5	Overall
Core stability training versus no core stability training						
Range of motion						
Panchal 2017	!	!	+	+	!	!
Li 2019	!	!	+	-	!	-
Patient reported outcomes						
Panchal 2017	!	!	+	-	!	-
Li 2019	!	!	+	-	!	-
Functional activities						
Li 2019	!	!	+	-	!	-
Pain						
Panchal 2017	!	!	+	-	!	-

Outcome / Author	D1	D2	D3	D4	D5	Overall
Aquatic therapy versus no aquatic therapy						
Strength						
Tovin 1994	!	-	+	+	!	-
Range of motion						
Tovin 1994	!	-	+	+	!	-
Zamarioli 2008	!	-	-	+	!	-
Peultier-Celli 2017	+	+	+	+	!	!
Patient reported outcomes						
Tovin 1994	!	-	+	-	!	-
Peultier-Celli 2017	+	+	+	-	!	-
Functional activities						
Peultier-Celli 2017	+	+	+	+	!	!
Laxity						
Tovin 1994	!	-	+	+	!	-
Proprioception						
Peultier-Celli 2017	+	+	+	+	!	!
Pain						
Zamarioli 2008	!	-	-	-	!	-
Peultier-Celli 2017	+	+	+	-	!	-

Balance						
Peultier-Celli 2017	+	+	+	+	!	!
Atrophy						
Tovin 1994	!	-	+	+	!	-
Zamarioli 2008	!	-	-	+	!	-
Swelling						
Tovin 1994	!	-	+	+	!	-
Zamarioli 2008	!	-	-	+	!	-

Risk of Bias assessment for systematic and scoping reviews

Study	Risk of bias				Overall
	D1	D2	D3	D4	
Salem 2021	High	Unclear	High	High	High
Rambaud 2018	Low	High	High	High	High
Losciale 2019	Unclear	Unclear	Low	Unclear	Unclear
Webster 2019	Unclear	High	High	High	High
Ashigbi 2020	Low	Unclear	Unclear	High	High
Hurley 2022	High	High	Unclear	High	High

D1: DOMAIN 1: STUDY ELIGIBILITY CRITERIA
 D2: DOMAIN 2: IDENTIFICATION AND SELECTION OF STUDIES
 D3: DOMAIN 3: DATA COLLECTION AND STUDY APPRAISAL
 D4: DOMAIN 4: SYNTHESIS AND FINDINGS

Judgement
 High
 Unclear
 Low

GRADE Evidence Assessment

Quality assessment domain	Standard downgrade	Reasons for downgrade
Risk of Bias	Serious= -1	"Some concerns", as determined by the RoB2 tool.
	Very Serious= -2	"High risk", as determined by the RoB2 tool
Inconsistency	Serious= -1	40-75% I ²
	Very Serious= -2	>75% I ²
Indirectness	Serious= -1	Indirectness present in one of the four key extraction categories- Population, Intervention, Comparator, Outcome
	Very Serious= -2	Indirectness present in more than one of the four key extraction categories Population, Intervention, Comparator, Outcome
Imprecision	Serious= -1	Total participants <800 95% CI of an SMD extends > 0.5 points in either direction (continuous outcomes) 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25 (dichotomous outcomes)
	Very Serious= -2	Studies not reporting results or SDs

Summary of Findings tables

Pre-operative rehabilitation versus no pre-operative rehabilitation after ACLR

Bibliography: Shaarani 2013, Kim 2015, Reddy 2020

No of studies	Study design	Certainty assessment					No of patients		Effect		Certainty	Importance
		Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	pre-habilitation	no pre-habilitation	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength - Quadriceps CON 60-90°/s (better indicated by higher values) – 3 months post-op												
2 Kim 2015 Shaarani 2013	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	54	49	SMD 0.75 higher (0.35 higher to 1.15 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 3 months post-op												
1 Kim 2015	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	40	SMD 0.42 higher (0.03 lower to 0.86 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 90°/s (better indicated by higher values) – 3 months post-op												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	9	SMD 0.76 higher (0.11 lower to 1.63 higher)	⊕○○○ Very low	CRITICAL	
Atrophy												
1												
Atrophy - Quadriceps cross sectional area (better indicated by higher values) – 3 months post-op												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	9	SMD 0.79 lower (1.67 lower to 0.08 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Vastus Medialis cross sectional area (better indicated by higher values) – 3 months post-op												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	9	SMD 0.47 higher (0.38 lower to 1.32 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Hamstring cross sectional area – 3 months post-op												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	14	9	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL	
Functional activities												
2												
Functional - single hop for distance (better indicated by higher values) – 3 months post-op												
2 Kim 2015 Shaarani 2013	randomised trials	very serious	serious I ² =69%	not serious	very serious ^{a, b}	none	54	49	SMD 0.94 higher (0.01 higher to 1.87 higher)	⊕○○○ Very low	IMPORTANT	
Patient reported outcomes (PROM)												
2												
PROM - Lysholm score – 3 weeks post-op												
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	21	SDs are not reported. The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL	
PROM - Lysholm score – 6 weeks post-op												
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	21	SDs are not reported. The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL	
PROM - Lysholm score – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	pre-habilitation	no pre-habilitation	Relative (95% CI)	Absolute (95% CI)		
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	21	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
PROM - Modified Cincinnati total score (better indicated by higher values) – 3 months post-op												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	9	SMD 0.36 higher (0.49 lower to 1.2 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm score – 6 months post-op												
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	21	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Return to sport												
1												
Time to return to sport (better indicated by lower values)												
1 Shaarani 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	9	SMD 1.11 lower (2.01 lower to 0.2 lower)		⊕○○○ Very low	CRITICAL
Laxity												
1												
Laxity - patients with Lachman grade I – 6 months post-op												
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	19/20 (95.0%)	19/21 (90.5%)	RR 1.05 (0.88 to 1.25)	45 more per 1,000 (from 109 fewer to 226 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with Lachman grade II – 6 months post-op												
1 Reddy 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	1/20 (5.0%)	2/21 (9.5%)	RR 0.53 (0.05 to 5.35)	45 fewer per 1,000 (from 90 fewer to 414 more)	⊕○○○ Very low	CRITICAL
Adverse events												
Shaarani 2013									None reported			CRITICAL
Kim 2015									None reported			CRITICAL
Reddy 2020									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction
c. Not reporting results or SDs
d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Perturbation at pre-habilitation versus no perturbation in rehabilitation after ACLR

Bibliography: Hartigan 2009, Hartigan 2010

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Perturbation+ pre-habilitation	Pre-habilitation	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps ISOM (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.26 lower (0.88 lower to 0.37 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.23 higher (0.40 lower to 0.85 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.05 higher (0.57 lower to 0.67 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - KOS-ADLS (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.12 higher (0.51 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
PROM - Global Rating Scale (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.43 higher (0.2 lower to 1.06 higher)		⊕○○○ Very low	CRITICAL
PROM - KOS-ADLS (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.67 higher (0.03 higher to 1.32 higher)		⊕○○○ Very low	CRITICAL
PROM - Global Rating Scale (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.65 higher (0.01 higher to 1.29 higher)		⊕○○○ Very low	CRITICAL
PROM - KOS-ADLS (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.09 lower (0.71 lower to 0.54 higher)		⊕○○○ Very low	CRITICAL
PROM - Global Rating Scale (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.56 higher (0.08 lower to 1.19 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
2												
Functional - single hop for distance (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.06 higher (0.56 lower to 0.69 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop for distance (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.6 lower (1.23 lower to 0.04 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop (better indicated by higher values) – 3 months post-op												

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Perturbation+pre-habilitation	Pre-habilitation	Relative (95% CI)	Absolute (95% CI)		
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.42 lower (1.05 lower to 0.21 higher)		⊕○○○ Very low	IMPORTANT
Functional - 6-meter timed hop (better indicated by higher values) – 3 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.06 lower (0.68 lower to 0.56 higher)		⊕○○○ Very low	IMPORTANT
Functional - knee excursion at mid-stance of gait at (better indicated by higher values) – 6 months post-op												
1 Hartigan 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	10	SMD 0.5 higher (0.42 lower to 1.42 higher)		⊕○○○ Very low	IMPORTANT
Functional - single hop for distance (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.04 lower (0.66 lower to 0.58 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop for distance (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.28 lower (0.91 lower to 0.35 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.25 lower (0.88 lower to 0.37 higher)		⊕○○○ Very low	IMPORTANT
Functional - 6-meter timed hop (better indicated by higher values) – 6 months post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.54 lower (1.17 lower to 0.1 higher)		⊕○○○ Very low	IMPORTANT
Functional - single hop for distance (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.43 lower (1.06 lower to 0.2 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop for distance (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.47 lower (1.11 lower to 0.16 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.14 lower (0.76 lower to 0.48 higher)		⊕○○○ Very low	IMPORTANT
Functional - 6-meter timed hop (better indicated by higher values) – 1 year post-op												
1 Hartigan 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	22	SMD 0.94 lower (1.6 lower to 0.28 lower)		⊕○○○ Very low	IMPORTANT
Adverse events												
Hartigan 2009									None reported			CRITICAL
Hartigan 2010									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Unsupervised versus supervised rehabilitation after ACLR

Bibliography: Schenck 1997, Beard 1998, Fischer 1998, Grant 2005, Ugutmen 2008, Revenas 2009, Grant 2010, Hohmann 2011, Lim 2019

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Strength												
6												
Strength - Quadriceps ISOM 30° (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.88 higher (0.23 higher to 1.53 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 60°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.42 lower (1.20 lower to 0.36 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 120-180°/s LSI% (better indicated by higher values) – 3 months post-op												
2 Grant 2005 Hohmann 2011	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	83	83	SMD 0.07 higher (0.24 lower to 0.37 higher)	⊕⊕○○ Low		CRITICAL
Strength - Quadriceps ECC 120°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.18 lower (0.8 lower to 0.44 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ISOM 30-60° LSI% (better indicated by higher values) – 6 months post-op												
2 Hohmann 2011 Revenas 2009	randomised trials	very serious	very serious I ² =79%	not serious	very serious ^{a,b}	none	44	34	SMD 0.23 lower (1.23 lower to 0.78 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 60°/s LSI% (better indicated by higher values) – 6 months post-op												
1 Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.51 lower (1.29 lower to 0.28 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps work CON 60°/s (better indicated by higher values) – 6 months post-op												
1 Lim 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	12	SMD 0.97 higher (0.15 higher to 1.79 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 120-180°/s (better indicated by higher values) – 6 months post-op												
2 Hohmann 2011 Lim 2019	randomised trials	very serious	not serious I ² =45%	not serious	very serious ^{a,b}	none	34	32	SMD 0.19 higher (0.48 lower to 0.86 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ECC 120°/s LSI% (better indicated by higher values) – 6 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.81 lower (1.46 lower to 0.16 lower)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ISOM 30° LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.25 lower (0.87 lower to 0.37 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 120°/s LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 1.17 lower (1.84 lower to 0.49 lower)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ECC 120°/s LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.11 lower (0.73 lower to 0.51 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ISOM 30-60° LSI% (better indicated by higher values) – 1 year post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
2 Hohmann 2011 Revenas 2009	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	44	34	SMD 0.41 lower (0.86 lower to 0.05 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 120-180°/s LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.16 lower (0.78 lower to 0.46 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ECC 120°/s LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.42 lower (1.05 lower to 0.2 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s LSI% (better indicated by higher values) – 3 years post-op												
1 Grant 2010	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	26	34	SMD 0.31 lower (0.83 lower to 0.20 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30° LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.01 higher (0.61 lower to 0.63 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.09 lower (0.86 lower to 0.68 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 120-180°/s LSI% (better indicated by higher values) – 3 months post-op												
2 Grant 2005 Hohmann 2011	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	83	86	SMD 0.01 higher (0.29 lower to 0.31 higher)		⊕⊕○○ Low	CRITICAL
Strength - Hamstring ECC 120°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.29 lower (0.91 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30° LSI% (better indicated by higher values) – 6 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.21 higher (0.42 lower to 0.83 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s LSI% (better indicated by higher values) – 6 months post-op												
1 Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.62 lower (1.41 lower to 0.17 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring work CON 60°/s (better indicated by higher values) – 6 months post-op												
1 Lim 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	12	SMD 0.12 higher (0.65 lower to 0.9 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 120-180°/s (better indicated by higher values) – 6 months post-op												
2 Hohmann 2011 Lim 2019	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	34	32	SMD 0.15 lower (0.63 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ECC 120°/s LSI% (better indicated by higher values) – 6 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.29 higher (0.33 lower to 0.92 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30° LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.16 lower (0.78 lower to 0.47 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 120°/s LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.88 lower (1.54 lower to 0.23 lower)		⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Strength - Hamstring ECC 120°/s LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.29 higher (0.33 lower to 0.92 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring ISOM 30° LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.48 lower (1.11 lower to 0.15 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 120-180°/s LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.21 lower (0.83 lower to 0.42 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring ECC 120°/s LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.11 higher (0.51 lower to 0.74 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 60°/s LSI% (better indicated by higher values) – 3 years post-op												
1 Grant 2010	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	26	34	SMD 0.07 higher (0.44 lower to 0.59 higher)	⊕○○○ Very low	CRITICAL	
Range of motion (ROM)												
6												
ROM - knee flexion (better indicated by higher values) – 4-6 weeks post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.26 higher (0.28 lower to 0.79 higher)	⊕○○○ Very low	CRITICAL	
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	52	52	No significant difference between groups	⊕○○○ Very low	CRITICAL	
ROM - knee flexion (better indicated by higher values) – 3 months post-op												
2 Fischer 1998 Grant 2005	randomised trials	very serious	very serious I ² =90%	not serious	serious ^{a,b}	none	90	93	SMD 0.09 lower (1.09 lower to 0.91 higher)	⊕○○○ Very low	CRITICAL	
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	52	52	No significant difference between groups	⊕○○○ Very low	CRITICAL	
ROM - knee flexion (better indicated by higher values) – 6 months post-op												
2 Fischer 1998 Revenas 2009	randomised trials	very serious	serious I ² =53%	not serious	very serious ^{a,b}	none	51	41	SMD 0.35 higher (0.27 lower to 0.97 higher)	⊕○○○ Very low	CRITICAL	
ROM - knee flexion (better indicated by higher values) – 1 year post-op												
1 Revenas 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	24	14	SMD 0.34 lower (1.00 lower to 0.32 higher)	⊕○○○ Very low	CRITICAL	
Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	"Flexion averaged 132° at 1 year (both groups together) and was not significantly different between groups"	⊕○○○ Very low	CRITICAL	
ROM - knee flexion (better indicated by higher values) – 3 years post-op												
1 Grant 2010	randomised trial	serious	not assessable	not serious	serious ^a	none	30	36	SMD 0.20 higher (0.29 lower to 0.68 higher)	⊕⊕○○ Low	CRITICAL	
ROM - knee extension (better indicated by lower values) – 3 months post-op												
1 Grant 2005	randomised trial	serious	not assessable	not serious	serious ^a	none	63	66	SMD 0.41 higher (0.06 higher to 0.76 higher)	⊕⊕○○ Low	CRITICAL	
ROM - knee extension (better indicated by lower values) – 6 months post-op												
1 Revenas 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	24	14	SMD 0.28 lower (0.94 lower to 0.38 higher)	⊕○○○ Very low	CRITICAL	

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
ROM - knee extension (better indicated by lower values) – 1 year post-op												
1	Revenas 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	24	14	SMD 0.60 lower (1.27 lower to 0.08 higher)	⊕○○○ Very low	CRITICAL
ROM - knee extension (better indicated by lower values) – 3 years post-op												
1	Grant 2010	randomised trial	serious	not assessable	not serious	serious ^a	none	30	36	SMD 0.38 lower (0.87 lower to 0.11 higher)	⊕⊕○○ Low	CRITICAL
Patient reported outcomes (PROM)												
9												
PROM - Lysholm (better indicated by higher values) – 3 months post-op												
3	Beard 1998 Fischer 1998 Hohmann 2011	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	60	60	SMD 0.2 higher (0.16 lower to 0.56 higher)	⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 3 months post-op												
1	Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.4 lower (1.03 lower to 0.23 higher)	⊕○○○ Very low	CRITICAL
	Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a, c}	none	13	13	Authors report "no significant difference between groups for both the change of activity level for the study period and the final outcome"	⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 6 months post-op												
4	Beard 1998 Fischer 1998 Hohmann 2011 Revenas 2009	randomised trials	very serious	not serious I ² =40%	not serious	serious ^a	none	84	74	SMD 0.18 lower (0.6 lower to 0.23 higher)	⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 6 months post-op												
3	Beard 1998 Hohmann 2011 Revenas 2009	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	57	47	SMD 0.39 lower (0.79 lower to 0)	⊕○○○ Very low	CRITICAL
PROM - Subjective health status questionnaire (better indicated by higher values) – 6 months post-op												
	Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	No significant difference between groups	⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 9 months post-op												
1	Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.66 lower (1.29 lower to 0.02 lower)	⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 9 months post-op												
1	Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.37 lower (0.99 lower to 0.26 higher)	⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 1 year post-op												
2	Hohmann 2011 Revenas 2009	randomised trials	very serious	very serious I ² =90%	not serious	very serious ^{a, b}	none	44	34	SMD 0.52 higher (1.18 lower to 2.22 higher)	⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	No SDs reported. No difference between groups. "Lysholm data at 1 year was not significantly different between groups, averaging 93.8 in CB patients and 96.2 in HR patients."	⊕○○○ Very low	CRITICAL	
PROM - Tegner (better indicated by higher values) – 1 year post-op												
2 Hohmann 2011 Revenas 2009	randomised trials	very serious	serious I ² =74%	not serious	very serious ^{a,b}	none	44	34	SMD 0.42 lower (1.32 lower to 0.49 higher)	⊕○○○ Very low	CRITICAL	
PROM - sickness impact profile (better indicated by higher values) – 1 year post-op												
1 Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	15	SMD 0.39 higher (0.27 lower to 1.05 higher)	⊕○○○ Very low	CRITICAL	
PROM – Lysholm scale (better indicated by higher values) – last evaluation visit												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	52	52	No significant difference between groups	⊕○○○ Very low	CRITICAL	
PROM - Mean ACL quality of life (better indicated by higher values) – 3 years post-op												
1 Grant 2010	randomised trial	serious	not assessable	not serious	serious ^a	none	40	48	SMD 0.51 higher (0.08 higher to 0.94 higher)	⊕⊕○○ Low	CRITICAL	
Functional activities												
4												
Functional - single leg hop for distance LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.02 higher (0.6 lower to 0.64 higher)	⊕○○○ Very low	IMPORTANT	
Functional - timed hop LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.33 lower (0.95 lower to 0.3 higher)	⊕○○○ Very low	IMPORTANT	
Functional - vertical hop LSI% (better indicated by higher values) – 3 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.39 lower (1.02 lower to 0.23 higher)	⊕○○○ Very low	IMPORTANT	
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op												
2 Hohmann 2011 Revenas 2009	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	44	34	SMD 0.03 higher (0.42 lower to 0.49 higher)	⊕○○○ Very low	IMPORTANT	
Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	No significant difference between groups	⊕○○○ Very low	IMPORTANT	
Functional - timed hop (better indicated by higher values) – 6 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.01 lower (0.63 lower to 0.61 higher)	⊕○○○ Very low	IMPORTANT	
Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	No significant difference between groups	⊕○○○ Very low	IMPORTANT	
Functional - vertical hop LSI% (better indicated by higher values) – 6 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.4 lower (1.03 lower to 0.22 higher)	⊕○○○ Very low	IMPORTANT	
Functional - triple hop for distance (better indicated by higher values) – 6 months post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	No significant difference between groups	⊕○○○ Very low	IMPORTANT	
Functional - crossover hop for distance (better indicated by higher values) – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	No significant difference between groups		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.15 lower (0.77 lower to 0.47 higher)		⊕○○○ Very low	IMPORTANT
Functional - timed hop LSI% (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.26 lower (0.88 lower to 0.37 higher)		⊕○○○ Very low	IMPORTANT
Functional - vertical hop (better indicated by higher values) – 9 months post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.44 higher (0.19 lower to 1.07 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance (better indicated by higher values) – 1 year post-op												
2 Hohmann 2011 Revenas 2009	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	44	34	SMD 0.03 lower (0.48 lower to 0.42 higher)		⊕○○○ Very low	IMPORTANT
Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	Authors reported no significant difference between groups.		⊕○○○ Very low	IMPORTANT
Functional - timed hop LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.16 higher (0.46 lower to 0.78 higher)		⊕○○○ Very low	IMPORTANT
Functional - vertical hop LSI% (better indicated by higher values) – 1 year post-op												
1 Hohmann 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.47 lower (1.1 lower to 0.16 higher)		⊕○○○ Very low	IMPORTANT
Laxity												
5												
Laxity – between limbs difference (better indicated by lower values) – 3 months post-op												
2 Beard 1998 Grant 2005	randomised trials	serious	not serious I ² =3%	not serious	serious ^a	none	76	79	SMD 0.20 higher (0.13 lower to 0.53 higher)		⊕⊕○○ Low	CRITICAL
Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Laxity - between limbs difference (better indicated by lower values) – 6 months post-op												
1 Beard 1998	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.64 higher (0.15 lower to 1.43 higher)		⊕○○○ Very low	CRITICAL
Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Laxity – 1 year post-op												
1 Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Laxity - between limbs difference (better indicated by lower values) – 3 years post-op												
1 Grant 2010	randomised trial	serious	not assessable	not serious	serious ^a	none	30	35	SMD 0.41 lower (0.90 lower to 0.09 higher)		⊕⊕○○ Low	CRITICAL
Proprioception												
1												
Proprioception - overall stability index (better indicated by lower values) – 6 months post-op												
1 Lim 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	12	SMD 0.63 higher (0.16 lower to 1.42 higher)		⊕○○○ Very low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Pain												
1												
Pain – VAS scale – 1 year post-op												
1 Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	Not reported if there is any difference between groups "VAS pain scores averaged 5.1 (range, 2 to 10) preoperatively for both groups and 0.89 (range, 0 to 6) at 1 year"		⊕○○○ Very low	CRITICAL
Atrophy												
3												
Atrophy - thigh circumference (better indicated by lower values) – 6 weeks post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.22 lower (0.75 lower to 0.32 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference (better indicated by lower values) – 3 months post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.17 lower (0.7 lower to 0.37 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference (better indicated by lower values) – 4 months post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.27 lower (0.8 lower to 0.27 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference (better indicated by lower values) – 6 months post-op												
1 Fischer 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.15 lower (0.68 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Atrophy – quadriceps atrophy (method is not reported) – 1 year post-op												
1 Schenck 1997	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	15	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Atrophy - thigh atrophy – at the last examination visit												
Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	52	52	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Laxity												
1												
laxity - patients with Lachman negative – 31 months post-op												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	38/52 (73.1%)	36/52 (69.2%)	RR 1.06 (0.83 to 1.35)	42 more per 1,000 (from 118 fewer to 242 more)	⊕○○○ Very low	CRITICAL
laxity - patients with Lachman grade I – 31 months post-op												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	12/52 (23.1%)	14/52 (26.9%)	RR 0.86 (0.44 to 1.67)	38 fewer per 1,000 (from 151 fewer to 180 more)	⊕○○○ Very low	CRITICAL
laxity - patients with Lachman grade II – 31 months post-op												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	2/52 (3.8%)	2/52 (3.8%)	RR 1.00 (0.15 to 6.83)	0 fewer per 1,000 (from 33 fewer to 224 more)	⊕○○○ Very low	CRITICAL
laxity - patients with Lachman grade III – 31 months post-op												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	serious ^a	none	0/52 (0.0%)	0/52 (0.0%)	Due to zero events in both study arms, an absolute risk reduction was not estimable		⊕○○○ Very low	CRITICAL
laxity - patients with Pivot shift negative – 31 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Unsupervised rehabilitation	Supervised rehabilitation	Relative (95% CI)	Absolute (95% CI)		
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	serious ^a	none	49/52 (94.2%)	49/52 (94.2%)	RR 1.00 (0.91 to 1.10)	0 fewer per 1,000 (from 85 fewer to 94 more)	⊕○○○ Very low	CRITICAL
laxity - patients with Pivot shift positive – 31 months post-op												
1 Ugutmen 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	3/52 (5.8%)	3/52 (5.8%)	RR 1.00 (0.21 to 4.73)	0 fewer per 1,000 (from 46 fewer to 215 more)	⊕○○○ Very low	CRITICAL
Adverse events												
Beard 1998										One patient in the "home" group had complications (range of motion problems, persistent pain) and required further arthroscopic assessment		CRITICAL
Schenck 1997										None reported		CRITICAL
Fischer 1998										None reported		CRITICAL
Grant 2005										Two patients in the clinic group had to undergo a manipulation under anesthesia (MUA) and an extension casting procedure within the 12-week study period (1 patient at 8.5 weeks and 1 patient at 10 weeks postoperatively).		CRITICAL
Ugutmen 2008										Six patients (5.8%) had knee pain after activity, two (1.9%) had flexion deficiency < 10° without impairing their daily and sporting activities, four (3.8%) had swollen knees, two (1.9%) reported persistent 'giving way' and four (3.8%) had paraesthesia around the surgical wound scar. It is not reported how these patients are distributed between groups		CRITICAL
Revenas 2009										None reported		CRITICAL
Grant 2010										Three patients in the physical therapy group required a subsequent procedure in the operating room. There were 2 patients in the home group who required subsequent arthroscopic debridements with partial meniscal resections. Of note, there were also 2 patients in the physical therapy group who required an early manipulation under anesthesia and long leg cast for knee flexion contractures.		CRITICAL
Hohmann 2011										None reported		CRITICAL
Lim 2019										None reported		CRITICAL
Higgins 2020										None reported		CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Rehabilitation duration: accelerated versus non-accelerated rehabilitation protocol after ACLR

Bibliography: Beynnon 2011, Gupta 2017

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Accelerated rehabilitation	Non accelerated rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Laxity												
Laxity - laxity KT-1000 displacement (mm) of the injured limb (better indicated by lower values) – 3 months post-op												
1												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.15 higher (0.49 lower to 0.79 higher)	⊕○○○ Very low	CRITICAL
	Gupta 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	20	Laxity was measured using clinical grading by Lachman test and Pivot Shift test The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL
Laxity - laxity KT-1000 displacement (mm) of the injured limb (better indicated by lower values) – 6 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.06 higher (0.59 lower to 0.71 higher)	⊕○○○ Very low	CRITICAL
	Gupta 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	20	Laxity was measured using clinical grading by Lachman test and Pivot Shift test The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL
Laxity - laxity KT-1000 displacement (mm) of the injured limb (better indicated by lower values) – 1 year post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.08 higher (0.58 lower to 0.73 higher)	⊕○○○ Very low	CRITICAL
Laxity - laxity KT-1000 displacement (mm) of the injured limb (better indicated by lower values) – 2 years post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.34 lower (1 lower to 0.32 higher)	⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
PROM - KOOS pain (better indicated by higher values) – 3 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.52 higher (0.13 lower to 1.17 higher)	⊕○○○ Very low	CRITICAL
PROM - KOOS symptoms (better indicated by higher values) – 3 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.45 higher (0.19 lower to 1.1 higher)	⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 3 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.28 lower (0.92 lower to 0.36 higher)	⊕○○○ Very low	CRITICAL
PROM - KOOS sports and recreation (better indicated by higher values) – 3 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.31 higher (0.34 lower to 0.95 higher)	⊕○○○ Very low	CRITICAL
PROM - KOOS quality of life (better indicated by higher values) – 3 months post-op												
1	Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.3 higher (0.34 lower to 0.94 higher)	⊕○○○ Very low	CRITICAL
PROM - KOOS total (better indicated by higher values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Accelerated rehabilitation	Non accelerated rehabilitation	Relative (95% CI)	Absolute (95% CI)		
1 Gupta 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.89 higher (0.23 higher to 1.54 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS pain (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.08 higher (0.57 lower to 0.73 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS symptoms (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.58 higher (0.09 lower to 1.24 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.09 higher (0.55 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS sports and recreation (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.17 higher (0.47 lower to 0.82 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS quality of life (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.17 higher (0.47 lower to 0.82 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS total (better indicated by higher values) – 6 months post-op												
1 Gupta 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.39 higher (0.23 lower to 1.02 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS pain (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.09 higher (0.57 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS symptoms (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.71 higher (0.03 higher to 1.39 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.2 lower (0.85 lower to 0.46 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS sports and recreation (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.06 lower (0.71 lower to 0.6 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS quality of life (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.33 higher (0.32 lower to 0.99 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS pain (better indicated by higher values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.2 lower (0.86 lower to 0.45 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS symptoms (better indicated by higher values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.31 higher (0.34 lower to 0.97 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.13 lower (0.78 lower to 0.53 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS sports and recreation (better indicated by higher values) – 2 years post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Accelerated rehabilitation	Non accelerated rehabilitation	Relative (95% CI)	Absolute (95% CI)		
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.07 lower (0.73 lower to 0.58 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS quality of life (better indicated by higher values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.37 higher (0.29 lower to 1.03 higher)		⊕○○○ Very low	CRITICAL
Strength												
1												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.45 higher (0.19 lower to 1.1 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.41 higher (0.25 lower to 1.06 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.31 higher (0.35 lower to 0.97 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.54 higher (0.13 lower to 1.21 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
2												
Functional - single leg hop for distance difference between limbs (better indicated by lower values) – 3 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.15 lower (0.79 lower to 0.49 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance difference between limbs (better indicated by lower values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.49 lower (1.15 lower to 0.17 higher)		⊕○○○ Very low	IMPORTANT
Gupta 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	20	20	SDs are not reported. The authors reported no statistically significant difference between the two groups (p=0.254).		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance difference between limbs (better indicated by lower values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.37 higher (0.29 lower to 1.03 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance difference between limbs (better indicated by lower values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.34 lower (1 lower to 0.32 higher)		⊕○○○ Very low	IMPORTANT
Proprioception												
1												
Proprioception - detection of passive knee motion (better indicated by lower values) – 3 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	17	SMD 0.1 higher (0.54 lower to 0.74 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - detection of passive knee motion (better indicated by lower values) – 6 months post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	17	SMD 0.77 lower (1.44 lower to 0.09 lower)		⊕○○○ Very low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Accelerated rehabilitation	Non accelerated rehabilitation	Relative (95% CI)	Absolute (95% CI)		
Proprioception - detection of passive knee motion (better indicated by lower values) – 1 year post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.12 lower (0.78 lower to 0.53 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - detection of passive knee motion (better indicated by lower values) – 2 years post-op												
1 Beynnon 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	19	17	SMD 0.25 higher (0.41 lower to 0.9 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Beynnon 2011									One participant in the nonaccelerated group suffered a re-ear of their graft detected at the 6-month follow-up and this was produced during the same sport (cheerleading) that produced the index injury			CRITICAL
Gupta 2017									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction
c. Not reporting results or SDs

Continuous passive motion (CPM) versus no CPM in rehabilitation after ACLR

Bibliography: Yates 1992, Anderson 1989, McCarthy 1993a, McCarthy 1993b

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	no CPM	Relative (95% CI)	Absolute (95% CI)		
Range of motion (ROM)												
2												
ROM - flexion – 3 days post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported more flexion in the CPM group	⊕○○○ Very low	CRITICAL
ROM - flexion – 1 week post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported more flexion in the CPM group	⊕○○○ Very low	CRITICAL
ROM - flexion – 3 weeks post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	More flexion in CPM group only before physiotherapy but not after	⊕○○○ Very low	CRITICAL
ROM - flexion – 6 months post-op												
1	Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a,c}	none	19	20	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
ROM - extension – 3 days post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
ROM - extension – 7 days post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
ROM - extension – 3 weeks post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
ROM - extension – 6 months post-op												
1	Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a,c}	none	19	20	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
Swelling												
2												
Swelling - swelling mid-patella – 1 day post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported less swelling in the CPM group.	⊕○○○ Very low	CRITICAL
Swelling - swelling mid-patella – 2 days post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported less swelling in the CPM group.	⊕○○○ Very low	CRITICAL
Swelling - swelling mid-patella – 3 days post-op												
1	Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported less swelling in the CPM group.	⊕○○○ Very low	CRITICAL
Swelling - swelling – 6 weeks post-op												
1	Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a,c}	none	19	20	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL
Effusion												
1												
Effusion - effusion sweep test – 3 days post-op												

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	no CPM	Relative (95% CI)	Absolute (95% CI)		
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported that CPM had a significant reduction in hemarthrosis		⊕○○○ Very low	CRITICAL
Effusion - effusion sweep test – 7 days post-op												
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Effusion - effusion sweep test – 3 weeks post-op												
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain												
2												
Medication (morphine) via analgetic pump (better indicated by lower values) – 1 day post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 1.16 lower (1.94 lower to 0.38 lower)		⊕○○○ Very low	CRITICAL
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported less pain medication consumption in the CPM group		⊕○○○ Very low	CRITICAL
Pain - number of times patient pushed the analgetic pump (better indicated by lower values) – 1 day post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.82 lower (1.57 lower to 0.07 lower)		⊕○○○ Very low	CRITICAL
Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	Patients in the CPM group pushed the button half the times than the non-CPM group		⊕○○○ Very low	CRITICAL
Pain - pain oral medication (better indicated by lower values) – 2-3 days post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.74 lower (1.49 lower to 0)		⊕○○○ Very low	CRITICAL
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported less oral medication consumption in the CPM group		⊕○○○ Very low	CRITICAL
Pain - perceived pain score - question 1 – constant pain level (better indicated by lower values) – 3 days post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.21 lower (0.93 lower to 0.51 higher)		⊕○○○ Very low	CRITICAL
Pain - perceived pain score - question 2 – worst level (better indicated by lower values) – 3 days post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.64 lower (1.37 lower to 0.1 higher)		⊕○○○ Very low	CRITICAL
Pain - perceived pain score - question 3 – least level (better indicated by lower values) – 3 days post-op												
1 McCarthy 1993b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.14 higher (0.58 lower to 0.85 higher)		⊕○○○ Very low	CRITICAL
Pain - perceived pain score – 1 day post-op												
Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain - perceived pain score – 2 days post-op												
Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain - perceived pain score – 3 days post-op												
Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity												
2												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	no CPM	Relative (95% CI)	Absolute (95% CI)		
Laxity - laxity (better indicated by lower values) – 1 year post-op												
1 McCarthy 1993a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0 (0.88 lower to 0.88 higher)		⊕○○○ Very low	CRITICAL
Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a, c}	none	19	20	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity - pivot shift test (better indicated by lower values) – 1 year post-op												
1 McCarthy 1993a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.38 lower (1.27 lower to 0.5 higher)		⊕○○○ Very low	CRITICAL
Atrophy												
2												
Atrophy - 10cm above patella – 1 day post-op												
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported less atrophy in the non-CPM group.		⊕○○○ Very low	IMPORTANT
Atrophy - 10cm above patella – 2 days post-op												
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported less atrophy in the non-CPM group.		⊕○○○ Very low	IMPORTANT
Atrophy - 10cm above patella – 3 days post-op												
1 Yates 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported less atrophy in the non-CPM group.		⊕○○○ Very low	IMPORTANT
Atrophy - 15cm above patella – 6 weeks post-op												
Anderson 1989	randomised trial	very serious	not assessable	serious	very serious ^{a, c}	none	19	20	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Strength												
1												
Strength - Quadriceps strength– 1 year post-op												
Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a, c}	none	19	20	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Strength - Hamstring strength– 1 year post-op												
Anderson 1989	randomised trial	very serious	not assessable	serious ^d	very serious ^{a, c}	none	19	20	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Adverse events												
Yates 1992									"The only complication occurred in a patient who had a temporary sensory palsy, which was thought to be related to tourniquet pressure and which resolved itself within 3 months". It was not specified the group of this patient			CRITICAL
McCarthy 1993b									None reported			CRITICAL
McCarthy 1993a									None reported			CRITICAL
Anderson 1989									Manipulation in the immobilised group (non-CPM)			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs
- d. Conclusions based on indirect comparisons

Continuous passive motion (CPM) versus active motion in rehabilitation after ACLR

Bibliography: Friemert 2006, Rosen 1992, Engstrom 1995

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	Active motion	Relative (95% CI)	Absolute (95% CI)		
Range of motion (ROM)												
3												
ROM - flexion (better indicated by higher values) – 1 week post-op												
Friemert 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.38 lower (0.89 lower to 0.13 higher)	⊕○○○ Very low		CRITICAL
Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - flexion – 4 weeks post-op												
Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 6 weeks post-op												
1 Engstrom 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	17	SMD 0.24 lower (0.92 lower to 0.43 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion – 2 months post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - flexion – 6 months post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - extension – 7 days post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - extension – 4 weeks post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - extension (better indicated by lower values) – 6 weeks post-op												
1 Engstrom 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	17	SMD 0.14 lower (0.82 lower to 0.53 higher)	⊕○○○ Very low		CRITICAL
ROM - extension – 2 months post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - extension – 6 months post-op												
1 Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	25	25	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
Swelling												
2												
Swelling - swelling ultrasonography – 7 days post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance	
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	Active motion	Relative (95% CI)	Absolute (95% CI)			
1	Friemert 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	30	30	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Swelling - swelling (better indicated by lower values) – 6 weeks post-op													
1	Engstrom 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	17	SMD 0.71 lower (1.41 lower to 0.01 lower)		⊕○○○ Very low	CRITICAL
Pain													
1													
Pain - perceived pain score – 1 week post-op													
1	Friemert 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	30	30	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity													
1													
Laxity - patients with <3mm difference between limbs – 1 month post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	23/25 (92.0%)	21/25 (84.0%)	RR 1.10 (0.89 to 1.35)	84 more per 1,000 (from 92 fewer to 294 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with 3-5mm difference between limbs – 2 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	0/25 (0.0%)	2/25 (8.0%)	RR 0.20 (0.01 to 3.97)	64 fewer per 1,000 (from 79 fewer to 238 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with <3mm difference between limbs at 89N – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	19/25 (76.0%)	21/25 (84.0%)	RR 0.90 (0.68 to 1.20)	84 fewer per 1,000 (from 269 fewer to 168 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with 3-5mm difference between limbs at 89N – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	4/25 (16.0%)	3/25 (12.0%)	RR 1.33 (0.33 to 5.36)	40 more per 1,000 (from 80 fewer to 523 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with >5mm difference between limbs at 89N – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	0/25 (0.0%)	1/25 (4.0%)	RR 0.33 (0.01 to 7.81)	27 fewer per 1,000 (from 40 fewer to 272 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with <3mm difference between limbs at max – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	15/25 (60.0%)	19/25 (76.0%)	RR 0.79 (0.54 to 1.16)	160 fewer per 1,000 (from 350 fewer to 122 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with 3-5mm difference between limbs at max – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	1/25 (4.0%)	1/25 (4.0%)	RR 1.00 (0.07 to 15.12)	0 fewer per 1,000 (from 37 fewer to 565 more)	⊕○○○ Very low	CRITICAL
Laxity - patients with >5mm difference between limbs at max – 6 months post-op													
1	Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^a	none	2/25 (8.0%)	0/25 (0.0%)	RR 5.00 (0.25 to 99.16)	NA ^e	⊕○○○ Very low	CRITICAL
Atrophy													
1													
Atrophy - 7.5cm above patella (better indicated by lower values) – 6 weeks post-op													
1	Engstrom 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	17	SMD 0.06 higher (0.61 lower to 0.74 higher)		⊕○○○ Very low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	CPM	Active motion	Relative (95% CI)	Absolute (95% CI)		
Atrophy - 15cm above patella (better indicated by lower values) – 6 weeks post-op												
1 Engstrom 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	17	SMD 0 (0.67 lower to 0.67 higher)		⊕○○○ Very low	IMPORTANT
PROM												
1												
PROM - IKDC score (better indicated by higher values) – 6 months post-op												
Rosen 1992	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	25	25	SMD 0.12 higher (0.44 lower to 0.67 higher)		⊕○○○ Very low	CRITICAL
Proprioception												
1												
Proprioception - joint position sense (better indicated by lower values) – 1 week post-op												
1 Friemert 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 1.54 higher (0.96 higher to 2.12 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Rosen 1992									17% complained about loss of sleep. During hospitalisation the CPM was used at least 20h/day. 4 patients needed manipulation. These patients were split relatively evenly across their 3 groups. At 6 months, 3 more patient had manipulation. All patients had an area on numbness around the incision.			CRITICAL
Engstrom 1995									None reported			CRITICAL
Friemert 2006									None reported			CRITICAL
Cost												
Rosen 1992									The cost of physical therapy for 1 month, based on three sessions a week for 4 weeks at \$70 per session, was \$840. The cost of CPM rental for 1 month was \$1800.			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs
- d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25
- e. Due to zero events in the comparator arm, an absolute risk reduction was not estimable

Long-use CPM (14 days) versus short-use CPM (4 days) in rehabilitation after ACLR

Bibliography: Richmond 1991

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Long-use CPM	Short-use CPM	Relative (95% CI)	Absolute (95% CI)		
Range of motion (ROM)												
1												
ROM - flexion (better indicated by higher values) – 1 week post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 1.11 higher (0.13 higher to 2.1 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 2 weeks post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 0.94 higher (0.02 lower to 1.91 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 6 weeks post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 0.15 lower (1.05 lower to 0.75 higher)	⊕○○○ Very low		CRITICAL
ROM - extension (better indicated by lower values) – 1 week post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 2.63 lower (3.93 lower to 1.33 lower)	⊕○○○ Very low		CRITICAL
ROM - extension (better indicated by lower values) – 2 weeks post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 1.31 lower (2.32 lower to 0.29 lower)	⊕○○○ Very low		CRITICAL
ROM - extension (better indicated by lower values) – 6 months post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 2.31 lower (3.53 lower to 1.09 lower)	⊕○○○ Very low		CRITICAL
ROM - extension (better indicated by lower values) – 6 weeks post-op												
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 3.1 lower (4.53 lower to 1.68 lower)	⊕○○○ Very low		CRITICAL
Swelling												
1												
Swelling - (better indicated by lower values) – 1 week post-op												
1 Richmond 1991	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 1.48 lower (2.52 lower to 0.44 lower)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 2 weeks post-op												
1 Richmond 1991	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 2.4 lower (3.64 lower to 1.16 lower)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 4 weeks post-op												
1 Richmond 1991	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 0.51 higher (0.41 lower to 1.43 higher)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 6 weeks post-op												
1 Richmond 1991	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 1.27 lower (2.27 lower to 0.26 lower)	⊕○○○ Very low		CRITICAL
Laxity												
1												
Laxity KT-1000 (better indicated by lower values) – 6 weeks post-op												

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Long-use CPM	Short-use CPM	Relative (95% CI)	Absolute (95% CI)		
1 Richmond 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	9	10	SMD 1.03 lower (2.01 lower to 0.06 lower)		⊕○○○ Very low	CRITICAL
Adverse events												
Richmond 1991									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Cryotherapy versus no cryotherapy in rehabilitation after ACLR

Bibliography: Cohn 1989, Daniel 1994, Brandsson 1996, Konrath 1996, Edwards 1996, Barber 1998, Dervin 1998, Ohkoshi 1999, Koyonos 2014

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cryotherapy	No cryotherapy	Relative (95% CI)	Absolute (95% CI)		
Pain - Medication use												
9												
Medication use - medication use Demerol (better indicated by lower values)												
1 Cohn 1989	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	28	SMD 0.82 lower (1.37 lower to 0.26 lower)	⊕○○○ Very low	CRITICAL	
Medication use - medication use Vicodin (better indicated by lower values)												
1 Cohn 1989	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	28	SMD 0.28 higher (0.26 lower to 0.82 higher)	⊕○○○ Very low	CRITICAL	
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. Noncold patients' average postoperative Vicodin use was always greater than the cold patients' use (P =0.013) varying from 125% more on day 2 (P=0.001) to 5% more on day 7.	⊕○○○ Very low	CRITICAL	
Medication use - medication use Vistaril (better indicated by lower values)												
1 Cohn 1989	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	28	SMD 0.84 lower (1.40 lower to 0.28 lower)	⊕○○○ Very low	CRITICAL	
Medication use - medication use Meperidine (better indicated by lower values)												
1 Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	42	SMD 0.21 higher (0.37 lower to 0.79 higher)	⊕○○○ Very low	CRITICAL	
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL	
Medication use - medication use Codeine (better indicated by lower values)												
4 Daniel 1994 Brandsson 1996 Edwards 1996 Dervin 1998	randomised trials	very serious	very serious I ² =91%	not serious	very serious ^{a, b}	none	102	114	SMD 0.86 lower (1.93 lower to 0.21 higher)	⊕○○○ Very low	CRITICAL	
Medication use - medication use Morphine (better indicated by lower values)												
3 Brandsson 1996 Edwards 1996 Dervin 1998	randomised trials	very serious	very serious I ² =94%	not serious	very serious ^{a, b}	none	86	72	SMD 1.04 lower (2.53 lower to 0.46 higher)	⊕○○○ Very low	CRITICAL	
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL	
Medication use - medication use Hydrocodone (better indicated by lower values)												
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups	⊕○○○ Very low	CRITICAL	
Medication use - medication use Acetaminophen (better indicated by lower values)												
1 Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	24	SMD 0.06 higher (0.49 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
Medication use - medication use Diclofenac sodium												

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Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cryotherapy	No cryotherapy	Relative (95% CI)	Absolute (95% CI)		
1 Ohkoshi 1999	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	7	7	SMD 0.31 lower (1.36 lower to 0.75 higher)		⊕○○○ Very low	CRITICAL
Medication use - medication use Paracetamol												
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Medication use - medication use Percocet												
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	26	SDs are not reported. The authors reported 23% less medication used on the day of surgery and 26% less medication used on postoperative day 1. There was no significant difference in medication use between the groups during days 2 to 4.		⊕○○○ Very low	CRITICAL
Pain												
7												
Pain - VAS scale (better indicated by lower values) – 1 hour post-op												
1 Brandsoon 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	10	SMD 4.13 lower (5.49 lower to 2.78 lower)		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	26	SDs are not reported. The authors reported 22% lower pain compared to the non-cryotherapy group		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 hours post-op												
1 Brandsoon 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	10	SMD 4.37 lower (5.78 lower to 2.96 lower)		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 4 hours post-op												
1 Brandsoon 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	10	SMD 3.25 lower (4.41 lower to 2.09 lower)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 6-8 hours post-op												
1 Brandsoon 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	10	SMD 3.41 lower (4.6 lower to 2.21 lower)		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 12 hours post-op												
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported 22% lower pain compared to the non-cryotherapy group		⊕○○○ Very low	CRITICAL
Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	26	24	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 1 day post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cryotherapy	No cryotherapy	Relative (95% CI)	Absolute (95% CI)		
3 Brandsoon 1996 Ohkoshi 1999 Dervin 1998	randomised trials	very serious	very serious I ² =94%	not serious	very serious ^{a, b}	none	67	55	SMD 1.24 lower (3.34 lower to 0.86 higher)		⊕○○○ Very low	CRITICAL
Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	26	24	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	26	SDs are not reported. The authors reported 26% lower pain compared to the non-cryotherapy group		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 days post-op												
2 Brandsoon 1996 Ohkoshi 1999	randomised trials	very serious	very serious I ² =96%	not serious	very serious ^{a, b}	none	27	17	SMD 1.51 lower (5.61 lower to 2.59 higher)		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no statistically significant difference between the two groups. Noncold patients' average VAS pain was 25% more in the first postoperative day than the cold patients' VAS pain (P=.059)		⊕○○○ Very low	CRITICAL
Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	26	24	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	26	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 3 days post-op												
1 Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	42	SMD 0.24 lower (0.82 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	26	24	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Koyonos 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	26	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 6 days post-op												
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Patient satisfaction with their postoperative pain relief – 2 days post-op												
Brandsoon 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	16/20 (80.0%)	3/10 (30.0%)	RR 2.67 (1.01 to 7.05)	501 more per 1,000 (from 3 more to 1,000 more)	⊕○○○ Very low	CRITICAL
Swelling												
6												
Swelling - knee circumference – 3 days post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cryotherapy	No cryotherapy	Relative (95% CI)	Absolute (95% CI)		
1 Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Swelling - knee circumference – 7 days post-op												
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	51	49	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Swelling - knee circumference – 12 days post-op												
1 Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Swelling - drainage volume (better indicated by lower values)												
3 Dervin 1998 Edwards 1996 Ohkoshi 1999	randomised trials	very serious	serious I ² =65%	not serious	very serious ^{a, b}	none	73	69	SMD 0.33 lower (0.98 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
5												
ROM - flexion – 2-3 days post-op												
Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
Konrath 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	27	27	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Edwards 1996	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	26	24	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
ROM - flexion (better indicated by higher values) – 7 days post-op												
1 Barber 1998	randomised trial	very serious	not assessable	not serious	serious ^a	none	51	49	SMD 0.42 higher (0.02 higher to 0.82 higher)		⊕○○○ Very low	CRITICAL
ROM - flexion (better indicated by higher values) – 12 days post-op												
Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
ROM - days to 120° of flexion												
1 Ohkoshi 1999	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	7	7	SMD 0.95 lower (2.08 lower to 0.17 higher)		⊕○○○ Very low	CRITICAL
ROM - extension deficit – 3 days post-op												
Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
ROM - extension deficit – 12 days post-op												
Daniel 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	16	42	SDs are not reported. The authors reported no significant difference.		⊕○○○ Very low	CRITICAL
ROM - extension deficit – number of patients who failed full extension by 5° – 7 days post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cryotherapy	No cryotherapy	Relative (95% CI)	Absolute (95% CI)		
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	27/51 (52.9%)	24/49 (49.0%)	RR 1.08 (0.74 to 1.59)	39 more per 1,000 (from 127 fewer to 289 more)	⊕○○○ Very low	CRITICAL
ROM - extension deficit – number of patients who failed full extension by 10° – 7 days post-op												
Barber 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	13/51 (25.5%)	11/49 (22.4%)	RR 1.14 (0.56 to 2.29)	31 more per 1,000 (from 99 fewer to 290 more)	⊕○○○ Very low	CRITICAL
Adverse events												
Cohn 1989									There were no peroneal nerve palsies in the Hot/Ice patients. There was a transient peroneal nerve palsy in a 27-year-old female patient in the non-Hot/Ice group. Upon examination the morning following surgery, the patient was unable to dorsiflex her foot. There were no signs of pressure caused by the brace being too tight. Fortunately, the palsy resolved within 24 hours. Although it is difficult to be certain, our suspicion is that the palsy was caused by the ice bag being left on the knee for too long a period of time. In this case the ice bag had been left for nearly 40 minutes while the patient was in the recovery room.			CRITICAL
Koyonos 2014									None reported			CRITICAL
Barber 1998									None reported			CRITICAL
Konrath 1996									None reported			CRITICAL
Daniel 1994									None reported			CRITICAL
Brandsoon 1996									None reported			CRITICAL
Edwards 1996									None reported			CRITICAL
Dervin 1998									None reported			CRITICAL
Ohkoshi 1999									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Compressive cryotherapy versus cryotherapy alone in rehabilitation after ACLR

Bibliography: Schroder 1994, Ruffilli 2015, Kijkunasathian 2017, Waterman 2011, Dambros 2012

Certainty assessment							N ^o of patients		Effect		Certainty	Importance
N ^o of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Compressive cryotherapy	Cryotherapy	Relative (95% CI)	Absolute (95% CI)		
Pain - medication use												
4												
Medication use - medication use Bupivacaine (better indicated by lower values)												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	23	SMD 0.46 higher (0.14 lower to 1.06 higher)		⊕○○○ Very low	CRITICAL
Medication use - medication use Tramadol (better indicated by lower values)												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	23	SMD 0.23 higher (0.36 lower to 0.83 higher)		⊕○○○ Very low	CRITICAL
Ruffilli 2015	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	23	24	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Medication use - medication use Tilidine (better indicated by lower values)												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	23	SMD 0.67 lower (1.26 lower to 0.06 lower)		⊕○○○ Very low	CRITICAL
Medication use - medication use Pethidine (better indicated by lower values)												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	23	SMD 0.47 lower (1.07 lower to 0.13 higher)		⊕○○○ Very low	CRITICAL
Medication use - medication use Piritramide (better indicated by lower values)												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	23	SMD 0.74 lower (1.35 lower to 0.12 lower)		⊕○○○ Very low	CRITICAL
Medication use - medication use Morphine (better indicated by lower values)												
Kijkunasathian 2017	randomised trial	serious	not assessable	not serious	very serious ^{a, c}	none	19	19	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Medication use – number of patients that discontinued the use of all pain medication at 6 weeks post-op												
1 Waterman 2011	randomised trial	very serious	not assessable	not serious	serious ^a	none	15/18 (83.3%)	5/18 (27.8%)	RR 3.00 (1.38 to 6.50)	556 more per 1,000 (from 106 more to 1,000 more)	⊕○○○ Very low	CRITICAL
Pain												
5												
Pain - VAS scale (better indicated by lower values) – 1 day post-op												
3 Dambros 2012 Ruffilli 2015 Schroder 1994	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	54	56	SMD 0.84 lower (1.24 lower to 0.45 lower)		⊕○○○ Very low	CRITICAL
Kijkunasathian 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	19	19	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 days post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	40	42	SMD 0.3 lower (0.9 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Compressive cryotherapy	Cryotherapy	Relative (95% CI)	Absolute (95% CI)		
Kijkunasathian 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	19	19	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 3 days post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.35 lower (0.95 lower to 0.24 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 1 week post-op												
2 Schroder 1994 Waterman 2011	randomised trials	very serious	very serious $I^2=81\%$	not serious	very serious ^{a,b}	none	39	41	SMD 0.23 lower (1.26 lower to 0.8 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 weeks post-op												
2 Schroder 1994 Waterman 2011	randomised trials	very serious	not serious $I^2=0\%$	not serious	serious ^a	none	39	41	SMD 0.11 lower (0.55 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 4-6 weeks post-op												
2 Schroder 1994 Waterman 2011	randomised trials	very serious	not serious $I^2=3\%$	not serious	serious ^a	none	39	41	SMD 0.31 lower (0.76 lower to 0.14 higher)		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
4												
ROM - flexion (better indicated by higher values) – 1-2 days post-op												
4 Dambros 2012 Kijkunasathian 2017 Ruffilli 2015 Schroder 1994	randomised trials	very serious	very serious $I^2=84\%$	not serious	very serious ^{a,b}	none	73	75	SMD 0.59 higher (0.28 lower to 1.46 higher)		⊕○○○ Very low	CRITICAL
ROM - flexion (better indicated by higher values) – 1 week post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 1.36 higher (0.7 higher to 2.03 higher)		⊕○○○ Very low	CRITICAL
ROM - flexion (better indicated by higher values) – 2 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.76 higher (0.14 higher to 1.37 higher)		⊕○○○ Very low	CRITICAL
ROM - flexion (better indicated by higher values) – 1 month post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.96 higher (0.33 higher to 1.59 higher)		⊕○○○ Very low	CRITICAL
ROM - extension deficit (better indicated by lower values) – 1-2 days post-op												
2 Dambros 2012 Schroder 1994	randomised trials	very serious	not serious $I^2=0\%$	not serious	serious ^a	none	31	32	SMD 0.10 higher (0.39 lower to 0.60 higher)		⊕○○○ Very low	CRITICAL
ROM - extension deficit (better indicated by lower values) – 3 days post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.2 lower (0.79 lower to 0.40 higher)		⊕○○○ Very low	CRITICAL
ROM - extension deficit (better indicated by lower values) – 6 days post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.27 lower (0.87 lower to 0.32 higher)		⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Compressive cryotherapy	Cryotherapy	Relative (95% CI)	Absolute (95% CI)		
ROM - extension deficit (better indicated by lower values) – 2 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.42 lower (1.01 lower to 0.18 higher)		⊕○○○ Very low	CRITICAL
ROM - extension deficit (better indicated by lower values) – 1 month post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 1.09 lower (1.73 lower to 0.45 lower)		⊕○○○ Very low	CRITICAL
ROM – patients with limited extension – 2 days post-op												
1 Kijkunasathian 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,d}	none	4/19 (21.0%)	6/19 (31.0%)	RR 0.68 (0.42 to 1.09)	99 fewer per 1,000 (from 180 fewer to 28 more)	⊕○○○ Very low	CRITICAL
Swelling												
4												
Swelling - knee circumference (better indicated by lower values) – 1 day post-op												
2 Ruffilli 2015 Schroder 1994	randomised trials	very serious	serious I ² =54%	not serious	very serious ^{a,b}	none	44	47	SMD 0.28 lower (0.89 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Swelling - knee circumference (better indicated by lower values) – 2 days post-op												
2 Kijkunasathian 2017 Schroder 1994	randomised trials	very serious	serious I ² =50%	not serious	very serious ^{a,b}	none	40	42	SMD 0.21 higher (0.41 lower to 0.83 higher)		⊕○○○ Very low	CRITICAL
Swelling - knee circumference (better indicated by lower values) – 3 days post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.18 lower (0.78 lower to 0.41 higher)		⊕○○○ Very low	CRITICAL
Swelling - knee circumference (better indicated by lower values) – 1 week post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.57 lower (1.18 lower to 0.03 higher)		⊕○○○ Very low	CRITICAL
Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	18	18	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Swelling - knee circumference (better indicated by lower values) – 2 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.3 lower (0.9 lower to 0.29 higher)		⊕○○○ Very low	CRITICAL
Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	18	18	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Swelling - knee circumference (better indicated by lower values) – 4-6 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.34 lower (0.94 lower to 0.25 higher)		⊕○○○ Very low	CRITICAL
Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	18	18	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Swelling - drainage volume (better indicated by lower values)												
2 Ruffilli 2015 Schroder 1994	randomised trials	very serious	very serious I ² =81%	not serious	very serious ^{a,b}	none	44	47	SMD 0.66 lower (1.66 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcome measures (PROM)												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Compressive cryotherapy	Cryotherapy	Relative (95% CI)	Absolute (95% CI)		
3												
PROM - SF-36 score (better indicated by higher values) – 1 week post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.09 higher (0.56 lower to 0.75 higher)	⊕○○○ Very low	CRITICAL
PROM - Lysholm score (better indicated by higher values) – 1 week post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.53 lower (1.2 lower to 0.14 higher)	⊕○○○ Very low	CRITICAL
PROM - SF-36 score (better indicated by higher values) – 2 weeks post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.01 lower (0.67 lower to 0.64 higher)	⊕○○○ Very low	CRITICAL
PROM - Lysholm score (better indicated by higher values) – 2 weeks post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.09 lower (0.74 lower to 0.56 higher)	⊕○○○ Very low	CRITICAL
PROM - SF-36 score (better indicated by higher values) – 6 weeks post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.1 higher (0.56 lower to 0.75 higher)	⊕○○○ Very low	CRITICAL
PROM - Lysholm score (better indicated by higher values) – 6 weeks post-op												
1	Waterman 2011	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.1 lower (0.75 lower to 0.56 higher)	⊕○○○ Very low	CRITICAL
PROM - Patient satisfaction – 2 days post-op												
Kijkunasathian 2017	randomised trial	very serious	not assessable	not serious	serious ^a	none	7/19 (36.8%)	19/19 (100%)	RR 0.38 (0.22 to 0.68)	620 fewer per 1,000 (from 780 fewer to 320 fewer)	⊕○○○ Very low	CRITICAL
Ruffilli 2015	randomised trial	very serious	not assessable	not serious	serious ^a	none	23	24	The subjective evaluation of the Hilotherm was generally positive. Nine patients (39 %) considered the device very comfortable, 13 (57 %) rated the device quite comfortable, and only one (4 %) patient complained about the lack of comfort. Five patients (22 %) found Hilotherm very useful, 13 cases (57 %) had positive opinions ("quite satisfying"), three (13 %) patients were quite dissatisfied, and two (9 %) patients were completely dissatisfied.		⊕○○○ Very low	CRITICAL
Atrophy												
2												
Atrophy - thigh - 10cm proximal to superior patellar pole circumference (better indicated by lower values) – 1 day post-op												
1	Ruffilli 2015	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	23	24	SMD 0.21 lower (0.78 lower to 0.37 higher)	⊕○○○ Very low	IMPORTANT
Atrophy - calf - girth difference - at maximum girth of calf (better indicated by higher values) – 2 days post-op												
1	Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.99 higher (0.36 higher to 1.62 higher)	⊕○○○ Very low	IMPORTANT
Atrophy - calf - girth difference - at maximum girth of calf (better indicated by higher values) – 3 days post-op												
1	Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 1.05 higher (0.41 higher to 1.68 higher)	⊕○○○ Very low	IMPORTANT
Atrophy - calf - girth difference - at maximum girth of calf (better indicated by higher values) – 6 days post-op												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Compressive cryotherapy	Cryotherapy	Relative (95% CI)	Absolute (95% CI)		
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.53 higher (0.07 lower to 1.13 higher)		⊕○○○ Very low	IMPORTANT
Atrophy - calf - girth difference - at maximum girth of calf (better indicated by higher values) – 2 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.66 higher (0.05 higher to 1.27 higher)		⊕○○○ Very low	IMPORTANT
Atrophy - calf - girth difference - at maximum girth of calf (better indicated by higher values) – 4 weeks post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.97 higher (0.34 higher to 1.6 higher)		⊕○○○ Very low	IMPORTANT
Strength												
1												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.09 lower (0.69 lower to 0.50 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hamstring CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Schroder 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	21	23	SMD 0.07 lower (0.66 lower to 0.52 higher)		⊕○○○ Very low	IMPORTANT
Functional activities												
1												
Number of patients able to perform active quads contraction for 5 sec and repeat 3 times – 2 days post-op												
1 Kijkunasathian 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	8/19 (45.0%)	18/19 (95.0%)	RR 0.47 (0.38 to 0.59)	503 fewer per 1,000 (from 589 fewer to 390 fewer)	⊕⊕○○ Low	IMPORTANT
Number of patients able to perform active straight leg test and hold for 5 sec – 2 days post-op												
1 Kijkunasathian 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	6/19 (30.0%)	10/19 (55.0%)	OR 0.35 (0.20 to 0.63)	250 fewer per 1,000 (from 354 fewer to 115 fewer)	⊕⊕○○ Low	IMPORTANT
Adverse events												
Schroder 1994									None reported			CRITICAL
Waterman 2011									None reported			CRITICAL
Dambros 2012									None reported			CRITICAL
Ruffilli 2015									None reported			CRITICAL
Kijkunasathian 2017									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Neuromuscular electrical Stimulation (NMES) versus no NMES in rehabilitation after ACLR

Bibliography: Sisk 1987, Delitto 1988, Wigerstad-Lossing 1988, Snyder-Mackler 1991, Snyder-Mackler 1995, Lieber 1996, Paternostro-Sluga 1999, Fitzgerald 2003, Hasegawa 2011, Feil 2011, Ediz 2012, Taradaj 2013, Wright 2019, Toth 2020

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
Strength - quadriceps												
13												
Strength - Quadriceps ISOM 30-90° (better indicated by higher values) – 4-7 weeks post-op												
5 Delitto 1988 Wigerstad-Lossing 1988 Hasegawa 2011 Sisk 1987 Paternostro-Sluga 1999	randomised trials	very serious	serious I ² =51%	not serious	very serious ^{a, b}	none	59	56	SMD 0.67 higher (0.11 higher to 1.23 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 45-90° (better indicated by higher values) – 2-3 months post-op												
5 Fitzgerald 2003 Hasegawa 2011 Lieber 1996 Paternostro-Sluga 1999 Sisk 1987	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	78	80	SMD 0.25 higher (0.06 lower to 0.56 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 45-90° (better indicated by higher values) – >6 months post-op												
3 Lieber 1996 Paternostro-Sluga 1999 Toth 2020	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	45	44	SMD 0.03 higher (0.38 lower to 0.45 higher)		⊕○○○ Very low	CRITICAL
Taradaj 2013	randomised trial	not serious	not assessable	not serious	very serious ^{a, c}	none	40	40	No SDs are reported. Authors reported a significant difference in favour of the intervention (p=0.002)		⊕⊕○○ Low	CRITICAL
Strength - Quadriceps CON 60-90°/s (better indicated by higher values) – 1-2 months post-op												
4 Feil 2011 Hasegawa 2011 Paternostro-Sluga 1999 Snyder-Mackler 1991	randomised trials	serious	not serious I ² =35%	not serious	serious ^a	none	64	66	SMD 0.51 higher (0.03 higher to 1 higher)		⊕⊕○○ Low	CRITICAL
Snyder-Mackler 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	31	34	No SDs are reported. Authors reported at least 70% recovery of the quadriceps by six weeks after the operation with the addition of high-intensity neuromuscular electrical stimulation.		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180-210°/s (better indicated by higher values) – 2 months post-op												
2 Feil 2011 Snyder-Mackler 1991	randomised trials	serious	serious I ² =73%	not serious	very serious ^{a, b}	none	38	39	SMD 1.50 higher (0.41 higher to 3.40 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
3 Feil 2011 Hasegawa 2011 Paternostro-Sluga 1999	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	59	61	SMD 0.5 higher (0.14 higher to 0.87 higher)		⊕⊕○○ Low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.78 higher (0.29 higher to 1.28 higher)		⊕⊕○○ Low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – >6 months post-op												
3 Feil 2011 Paternostro-Sluga 1999 Toth 2020	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	58	58	SMD 0.48 higher (0.11 higher to 0.85 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 6 months post-op												
2 Feil 2011 Toth 2020	randomised trials	very serious	not serious I ² =31%	not serious	very serious ^{a,b}	none	42	41	SMD 0.62 higher (0.01 higher to 1.22 higher)		⊕○○○ Very low	CRITICAL
Strength - hamstring												
3												
Strength - Hamstring ISOM (better indicated by higher values) – 6 weeks post-op												
1 DeLitto 1988	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 2.79 higher (1.49 higher to 4.09 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON (better indicated by higher values) – 6-8 weeks post-op												
2 Paternostro-Sluga 1999 Snyder-Mackler 1991	randomised trials	serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	21	22	SMD 0.32 higher (0.28 lower to 0.93 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON (better indicated by higher values) – 3 months post-op												
1 Paternostro-Sluga 1999	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	16	17	SMD 0.05 higher (0.63 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON (better indicated by higher values) – 1 year post-op												
1 Paternostro-Sluga 1999	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	16	17	SMD 0.04 lower (0.73 lower to 0.64 higher)		⊕○○○ Very low	CRITICAL
Atrophy												
6												
Atrophy - Quadriceps cross sectional area (better indicated by higher values) – 3-6 weeks post-op												
2 Toth 2020 Wigerstad-Lossing 1988	randomised trials	very serious	serious I ² =75%	not serious	very serious ^{a,b}	none	22	17	SMD 0.19 higher (1.14 lower to 1.52 higher)		⊕○○○ Very low	CRITICAL
Atrophy - Quadriceps cross sectional area (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	7	SMD 0.43 lower (1.43 lower to 0.57 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference difference between limbs (better indicated by lower values) – 2 months post-op												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.47 lower (1.25 lower to 0.32 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference difference between limbs (better indicated by lower values) – 3 months post-op												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	13	13	SMD 0.22 lower (0.99 lower to 0.56 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference difference between limbs (better indicated by lower values) – 5-6 months post-op												
2 Wright 2019 Ediz 2012	randomised trials	very serious	very serious I ² =94%	not serious	very serious ^{a,b}	none	27	24	SMD 1.20 higher (1.51 lower to 3.90 higher)		⊕○○○ Very low	CRITICAL
Taradaj 2013	randomised trial	not serious	not assessable	not serious	very serious ^{a,c}	none	40	40	No SDs are reported. Authors reported a significant difference in favour of the intervention (p=0.04)		⊕⊕○○ Low	CRITICAL
Atrophy - rectus femoris thickness (mm) using ultrasound (better indicated by higher values) – 4 weeks post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
1	Hasegawa 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.69 higher (0.22 lower to 1.6 higher)	⊕○○○ Very low	CRITICAL
Atrophy - rectus femoris thickness (mm) using ultrasound (better indicated by higher values) – 3 months post-op												
1	Hasegawa 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.54 higher (0.36 lower to 1.43 higher)	⊕○○○ Very low	CRITICAL
Atrophy - vastus lateralis thickness (mm) using ultrasound (better indicated by higher values) – 4 weeks post-op												
1	Hasegawa 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.41 higher (0.48 lower to 1.3 higher)	⊕○○○ Very low	CRITICAL
Atrophy - vastus lateralis thickness (mm) using ultrasound (better indicated by higher values) – 3 months post-op												
1	Hasegawa 2011	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.34 higher (0.55 lower to 1.22 higher)	⊕○○○ Very low	CRITICAL
Pain												
2												
Pain – VAS score (better indicated by lower values) – 2 months post-op												
1	Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.79 lower (1.59 lower to 0.01 higher)	⊕○○○ Very low	CRITICAL
Pain – VAS score (better indicated by lower values) – 3 months post-op												
2	Ediz 2012 Fitzgerald 2003	randomised trials	very serious	very serious I ² =80%	not serious	very serious ^{a, b}	none	34	35	SMD 0.36 lower (1.49 lower to 0.76 higher)	⊕○○○ Very low	CRITICAL
Pain – VAS score (better indicated by lower values) – 6 months post-op												
1	Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.08 higher (0.69 lower to 0.85 higher)	⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
2												
ROM - knee flexion (better indicated by higher values) – 6 months post-op												
1	Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0 (0.93 lower to 0.93 higher)	⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (better indicated by lower values) – 2 months post-op												
1	Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.32 lower (1.09 lower to 0.45 higher)	⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (better indicated by lower values) – 3 months post-op												
1	Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.41 lower (1.19 lower to 0.37 higher)	⊕○○○ Very low	IMPORTANT
ROM - knee extension (better indicated by lower values) – 6 months post-op												
2	Toth 2020 Ediz 2012	randomised trials	very serious	not serious I ² =0%	not serious	very serious ^{a, b}	none	23	21	SMD 0.27 lower (0.87 lower to 0.32 higher)	⊕○○○ Very low	IMPORTANT
Patient reported outcome measures (PROM)												
5												
PROM - Lysholm scale (better indicated by higher values) – 3 months post-op												
1	Feil 2011	randomised trial	very serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.19 higher (0.29 lower to 0.67 higher)	⊕○○○ Very low	CRITICAL
PROM - IKDC scale (better indicated by higher values) – 3 months post-op												
1	Ediz 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.66 higher (0.14 lower to 1.45 higher)	⊕○○○ Very low	CRITICAL
PROM - Activity of daily living (better indicated by higher values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	22	SMD 0.64 higher (0.03 higher to 1.26 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 6 months post-op												
2 Feil 2011 Hasegawa 2011	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	43	44	SMD 0.24 higher (0.18 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS Symptoms (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.17 lower (1.11 lower to 0.76 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS stiffness (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.31 higher (0.62 lower to 1.25 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS pain (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.39 lower (1.33 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS function sports (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.75 lower (1.72 lower to 0.22 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.16 higher (0.78 lower to 1.09 higher)		⊕○○○ Very low	CRITICAL
PROM - IKDC scale (better indicated by higher values) – 6 months post-op												
1 Toth 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	8	SMD 0.24 lower (1.17 lower to 0.7 higher)		⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 6 months post-op												
1 Feil 2011	randomised trial	very serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.78 higher (0.28 higher to 1.28 higher)		⊕○○○ Very low	CRITICAL
Laxity												
2												
Laxity – laxity difference between limbs – 2 months post-op												
Snyder-Mackler 1991	randomised trial	serious	not assessable	not serious	very serious ^{a, c}	none	5	5	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity – laxity difference between limbs (better indicated by lower values) – 3 months post-op												
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.04 lower (0.51 lower to 0.44 higher)		⊕⊕○○ Low	CRITICAL
Laxity – laxity difference between limbs (better indicated by lower values) – 6 months post-op												
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.04 lower (0.52 lower to 0.44 higher)		⊕⊕○○ Low	CRITICAL
Swelling												
1												
Swelling - difference between limbs (better indicated by lower values) – 2 months post-op												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 1.93 lower (2.89 lower to 0.97 higher)		⊕○○○ Very low	IMPORTANT
Swelling - difference between limbs (better indicated by lower values) – 3 months post-op												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.68 lower (1.48 lower to 0.11 higher)		⊕○○○ Very low	IMPORTANT
Swelling - difference between limbs (better indicated by lower values) – 6 months post-op												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.61 lower (1.40 lower to 0.18 higher)		⊕○○○ Very low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
Functional activities												
4												
Functional - stance time during gait (better indicated by higher values) – 2 months post-op												
1 Snyder-Mackler 1991	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 3.59 higher (1.22 higher to 5.96 higher)	⊕○○○ Very low	IMPORTANT	
Functional - cadence gait (better indicated by higher values) – 2 months post-op												
1 Snyder-Mackler 1991	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 3.22 higher (1.03 higher to 5.42 higher)	⊕○○○ Very low	IMPORTANT	
Functional - walking velocity (better indicated by higher values) – 2 months post-op												
1 Snyder-Mackler 1991	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 4.91 higher (1.88 higher to 7.94 higher)	⊕○○○ Very low	IMPORTANT	
Functional - shuttle run (time to cover 6.3m) (better indicated by lower values) – 3 months post-op												
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.52 lower (1.01 lower to 0.03 lower)	⊕⊕○○ Low	IMPORTANT	
Functional - single leg hop for distance (better indicated by higher values) – 3 months post-op												
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.67 higher (0.18 higher to 1.17 higher)	⊕⊕○○ Low	IMPORTANT	
Functional - shuttle run (time to cover 6.3m) (better indicated by lower values) – 6 months post-op												
1 Feil 2011	randomised trial	serious	not assessable	not serious	serious ^a	none	33	34	SMD 0.43 lower (0.91 lower to 0.06 higher)	⊕⊕○○ Low	IMPORTANT	
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op												
2 Feil 2011 Toth 2020	randomised trials	very serious	very serious I ² =82%	not serious	very serious ^{a,b}	none	43	42	SMD 0.01 higher (1.25 lower to 1.27 higher)	⊕○○○ Very low	IMPORTANT	
Functional - patients with ambulation without crutches 4w												
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	20/21 (95.2%)	18/22 (81.8%)	RR 1.16 (0.94 to 1.45)	131 more per 1,000 (from 49 fewer to 368 more)	⊕○○○ Very low	IMPORTANT
Functional - patients with ambulation without crutches 8w												
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	21/21 (100.0%)	20/22 (90.9%)	RR 1.10 (0.94 to 1.28)	91 more per 1,000 (from 55 fewer to 255 more)	⊕○○○ Very low	IMPORTANT
Functional – number of subjects achieving progression to treadmill running at 3 months post-op												
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	13/21 (61.9%)	10/22 (45.5%)	RR 1.36 (0.77 to 2.40)	164 more per 1,000 (from 105 fewer to 636 more)	⊕○○○ Very low	IMPORTANT
Functional - number of subjects achieving progression to treadmill running at 4 months post-op												
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	18/21 (85.7%)	15/22 (68.2%)	RR 1.26 (0.90 to 1.76)	177 more per 1,000 (from 68 fewer to 518 more)	⊕○○○ Very low	IMPORTANT
Functional - number of subjects achieving progression to agility training at 4 months post-op												
1 Fitzgerald 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	13/21 (61.9%)	7/22 (31.8%)	RR 1.95 (0.97 to 3.91)	302 more per 1,000 (from 10 fewer to 926 more)	⊕○○○ Very low	IMPORTANT
Activity level												
Tegner - patients with Tegner score 0-3 6m												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	NMES	no NMES	Relative (95% CI)	Absolute (95% CI)		
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, d}	none	2/13 (15.4%)	2/13 (15.4%)	RR 1.00 (0.16 to 6.07)	0 fewer per 1,000 (from 129 fewer to 780 more)	⊕○○○ Very low	CRITICAL
Tegner - patients with Tegner score 4-6 6m												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, d}	none	9/13 (69.2%)	8/13 (61.5%)	RR 1.13 (0.64 to 1.97)	80 more per 1,000 (from 222 fewer to 597 more)	⊕○○○ Very low	CRITICAL
Tegner - patients with Tegner score 7-10 6m												
1 Ediz 2012	randomised trial	serious	not assessable	not serious	very serious ^{a, d}	none	2/13 (15.4%)	3/13 (23.1%)	RR 0.67 (0.13 to 3.35)	76 fewer per 1,000 (from 201 fewer to 542 more)	⊕○○○ Very low	CRITICAL
Adverse events												
Sisk 1987									None reported			CRITICAL
Delitto 1988									None reported			CRITICAL
Wigerstad-Lossing 1988									None reported			CRITICAL
Snyder-Mackler 1991									None reported			CRITICAL
Lieber 1996									None reported			CRITICAL
Paternostro-Sluga 1999									None reported			CRITICAL
Fitzgerald 2003									None reported			CRITICAL
Hasegawa 2011									None reported			CRITICAL
Feil 2011									None reported			CRITICAL
Ediz 2012									None reported			CRITICAL
Taradaj 2013									None reported			CRITICAL
Wright 2019									None reported			CRITICAL
Toth 2020									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs
- d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Functional NMES versus no functional NMES in rehabilitation after ACLR

Bibliography: Ross 2000, Labanca 2018, Moran 2019

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Functional NMES	No functional NMES	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength - Quadriceps ISOM LSI% (better indicated by higher values) – 1 month post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	13	SMD 1.54 higher (0.58 higher to 2.50 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM LSI% (better indicated by higher values) – 2 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 1.30 higher (0.54 higher to 2.06 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM LSI% (better indicated by higher values) – 6 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.85 higher (0.13 higher to 1.56 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM LSI% (better indicated by higher values) – 2 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.08 higher (0.6 lower to 0.77 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM LSI% (better indicated by higher values) – 6 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0 (0.68 lower to 0.69 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
3												
Functional - gait speed (measured using the 10-m walk test) at a self-selected speed (better indicated by higher values) – 1 month post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	13	SMD 0.65 higher (0.2 lower to 1.5 higher)		⊕○○○ Very low	IMPORTANT
Functional - gait stance percentage of gait cycle (better indicated by higher values) – 1 month post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	13	SMD 0.78 higher (0.08 lower to 1.64 higher)		⊕○○○ Very low	IMPORTANT
Functional – peak knee flexion during unilateral squat (better indicated by higher values) – 6 weeks post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.34 higher (0.54 lower to 1.23 higher)		⊕○○○ Very low	IMPORTANT
Functional - number of repetitions performed in a 15-s time frame on a 0.10-m step during a lateral step-up test (better indicated by higher values) – 6 weeks post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.62 higher (0.29 lower to 1.52 higher)		⊕○○○ Very low	IMPORTANT
Functional - peak vertical forces during sit-to-stand LSI% (better indicated by higher values) – 2 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 1 higher (0.27 higher to 1.73 higher)		⊕○○○ Very low	IMPORTANT
Functional - peak vertical forces during sit-to-stand LSI% (better indicated by higher values) – 6 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.92 higher (0.19 higher to 1.64 higher)		⊕○○○ Very low	IMPORTANT
Laxity												
1												
Laxity - absolute displacement using KT-1000 joint arthrometer in mm – (better indicated by lower values) – 6 weeks post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.06 lower (0.94 lower to 0.82 higher)		⊕○○○ Very low	CRITICAL
Pain												
Pain - Percentage of patients reporting pain more than 4/10 with maximum voluntary isometric contraction of quads at 30° – 2 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Functional NMES	No functional NMES	Relative (95% CI)	Absolute (95% CI)		
1 Labanca 2018	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	18/100 (18.0%)	32/100 (32.0%)	RR 0.56 (0.34 to 0.93)	141 fewer per 1,000 (from 211 fewer to 22 fewer)	⊕○○○ Very low	CRITICAL
Pain - Percentage of patients reporting pain more than 4/10 with maximum voluntary isometric contraction of quads at 90° – 2 months post-op												
1 Labanca 2018	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	35/100 (35.0%)	53/100 (53.0%)	RR 0.66 (0.48 to 0.91)	180 fewer per 1,000 (from 276 fewer to 48 fewer)	⊕○○○ Very low	CRITICAL
Pain - Percentage of patients reporting pain more than 4/10 with maximum voluntary isometric contraction of quads at 30° – 6 months post-op												
1 Labanca 2018	randomised trial	very serious	not assessable	not serious	serious ^a	none	0/100 (0.0%)	18/100 (18.0%)	RR 0.03 (0.00 to 0.44)	175 fewer per 1,000 (from 180 fewer to 101 fewer)	⊕○○○ Very low	CRITICAL
Pain - Percentage of patients reporting pain more than 4/10 with maximum voluntary isometric contraction of quads at 90° – 6 months post-op												
1 Labanca 2018	randomised trial	very serious	not assessable	not serious	serious ^a	none	0/100 (0.0%)	17/100 (17.0%)	RR 0.03 (0.00 to 0.47)	165 fewer per 1,000 (from 170 fewer to 90 fewer)	⊕○○○ Very low	CRITICAL
Atrophy												
1												
Atrophy - mid-thigh circumference difference between limbs (better indicated by lower values) – 2 months post-op												
1 Labanca 2018	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.3 lower (0.99 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Atrophy - mid-thigh circumference difference between limbs (better indicated by lower values) – 6 months post-op												
1 Labanca 2018	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.4 lower (1.09 lower to 0.29 higher)		⊕○○○ Very low	CRITICAL
Balance												
1												
Balance - Anterior reach test (cm) (better indicated by higher values) – 6 weeks post-op												
1 Ross 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.07 higher (0.81 lower to 0.95 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Ross 2000									None reported			CRITICAL
Labanca 2018									None reported			CRITICAL
Moran 2019									Very high drop-out rate (almost 50%), with most needing additional surgery for meniscal repair.No other adverse effects noted.			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction
c. Not reporting results or SDs
d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Electromyographic Biofeedback (EMG-BFB) versus no EMG-BFB in rehabilitation after ACLR

Bibliography: Draper 1990, Christanell 2012

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Biofeedback	No biofeedback	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps CON 45, 60, 90°/s – 3 months post-op												
1 Draper 1990	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	11	11	SDs are not reported. The authors report significant improved strength in the intervention group.		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
2												
ROM - knee flexion – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	8	8	SDs are not reported. The authors reported no significant difference between groups.		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using goniometer) (better indicated by lower values) – 1 week post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.26 lower (1.25 lower to 0.72 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using goniometer) (better indicated by lower values) – 2 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.73 lower (1.75 lower to 0.29 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using goniometer) (better indicated by lower values) – 4 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 1.06 lower (2.13 lower to 0.01 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using goniometer) (better indicated by lower values) – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 2.77 lower (4.24 lower to 1.29 lower)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using high-heel-distance) (better indicated by lower values) – 1 week post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.17 lower (1.15 lower to 0.82 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using high-heel-distance) (better indicated by lower values) – 2 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.10 lower (1.08 lower to 0.88 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using high-heel-distance) (better indicated by lower values) – 4 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.35 lower (1.34 lower to 0.64 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (using high-heel-distance) (better indicated by lower values) – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 1.37 lower (2.50 lower to 0.25 lower)		⊕○○○ Very low	IMPORTANT
ROM - knee extension – days to full recovery (better indicated by lower values)												
1 Draper 1990	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	11	SMD 0.94 lower (1.83 lower to 0.05 lower)		⊕○○○ Very low	IMPORTANT
Patients reported outcomes (PROM)												
1												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Biofeedback	No biofeedback	Relative (95% CI)	Absolute (95% CI)		
PROM – IKDC – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	8	8	SDs are not reported. The authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Pain												
1												
Pain VAS – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	8	8	SDs are not reported. The authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Swelling												
1												
Swelling – 6 weeks post-op												
1 Christanell 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	8	8	SDs are not reported. The authors reported no significant difference between groups.		⊕○○○ Very low	IMPORTANT
Adverse events												
Draper 1990									None reported			CRITICAL
Christanell 2012									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Blood flow restriction (BFR) versus no BFR in rehabilitation after ACLR

Bibliography: Ohta 2003, Iversen 2016, Hughes 2019a, Hughes 2019b, Curran 2020

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	BFR	no BFR	Relative (95% CI)	Absolute (95% CI)		
Strength - quadriceps												
3												
Quadriceps strength CON 60°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.43 higher (0.38 lower to 1.24 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength CON 150°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.62 higher (0.2 lower to 1.44 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength CON 300°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.76 higher (0.07 lower to 1.6 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength (measured using 10RM at leg press (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.55 higher (0.27 lower to 1.36 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength ISOM 60 (better indicated by higher values) – 4-5 months post-op												
2 Ohta 2003 Curran 2020	randomised trials	very serious	very serious I ² = 85%	not serious	very serious ^{a, b}	none	40	38	SMD 0.48 higher (0.70 lower to 1.67 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength CON 60°/s (better indicated by higher values) – 4-5 months post-op												
1 Ohta 2003 Curran 2020	randomised trials	very serious	very serious I ² = 83%	not serious	very serious ^{a, b}	none	40	38	SMD 0.66 higher (0.49 lower to 1.82 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength CON 180°/s; values reported as LSI% (better indicated by higher values) – 4 months post-op												
1 Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	22	22	SMD 0.91 higher (0.28 higher to 1.53 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength ISOM 60° (better indicated by higher values) – at the time to return to activity, approx. 9.5 months post-op												
1 Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	16	SMD 0.01 higher (0.66 lower to 0.63 higher)	⊕○○○ Very low		CRITICAL
Quadriceps strength CON 60°/s (better indicated by higher values) – at the time to return to activity, approx. 9.5 months post-op												
1 Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	16	SMD 0.25 higher (0.43 lower to 0.93 higher)	⊕○○○ Very low		CRITICAL
Strength - hamstring												
Hamstring strength CON 60°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.96 higher (0.11 higher to 1.82 higher)	⊕○○○ Very low		CRITICAL
Hamstring strength CON 150°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.26 higher (0.37 higher to 2.16 higher)	⊕○○○ Very low		CRITICAL
Hamstring strength CON 300°/s (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.37 higher (0.46 higher to 2.27 higher)	⊕○○○ Very low		CRITICAL
Hamstring strength ISOM 60° (better indicated by higher values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	BFR	no BFR	Relative (95% CI)	Absolute (95% CI)		
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.78 higher (0.16 higher to 1.4 higher)	⊕○○○ Very low	CRITICAL
Hamstring strength CON 60°/s (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.61 higher (0 to 1.21 higher)	⊕○○○ Very low	CRITICAL
Hamstring strength CON 180°/s (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.64 higher (0.03 higher to 1.25 higher)	⊕○○○ Very low	CRITICAL
Atrophy												
4												
Atrophy - Knee extensors cross-sectional area (cm²) using MRI at 40% the femur length (better indicated by higher values) – 16 days post-op												
1	Iversen 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.51 higher (0.3 lower to 1.33 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Knee extensors cross-sectional area (cm²) using MRI at 50% the femur length (better indicated by higher values) – 16 days post-op												
1	Iversen 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.75 higher (0.08 lower to 1.58 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Vastus lateralis muscle thickness (cm) using ultrasound at 50% of the femur, reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1	Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.38 lower (1.19 lower to 0.43 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Vastus lateralis pennation angle (°) using ultrasound at 50% of the femur, reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1	Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.36 higher (0.45 lower to 1.17 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Vastus lateralis fascicle length (cm) using ultrasound at 50% of the femur, reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1	Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.03 lower (0.83 lower to 0.77 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Knee extensors cross-sectional area (cm²) using MRI at 15cm proximal to the patella (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.77 higher (0.15 higher to 1.38 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Knee flexors+adductors cross-sectional area (cm²) using MRI at 15cm proximal to the patella (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.14 higher (0.45 lower to 0.73 higher)	⊕○○○ Very low	CRITICAL
Atrophy - single muscle fiber diameter type I of Vastus lateralis; reported as preoperative/postoperative ratio (%); (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.72 higher (0.3 lower to 1.74 higher)	⊕○○○ Very low	CRITICAL
Atrophy - single muscle fiber diameter type II of Vastus lateralis; reported as preoperative/postoperative ratio (%); (better indicated by higher values) – 4 months post-op												
1	Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.63 higher (0.38 lower to 1.64 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Rectus femoris muscle volume (cm³) using ultrasound at 10-15cm superior to the patella (better indicated by higher values) – 5 months post-op												
1	Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	16	SMD 0.31 higher (0.37 lower to 0.99 higher)	⊕○○○ Very low	CRITICAL
Atrophy - Rectus femoris muscle volume (cm³) using ultrasound at 10-15cm superior to the patella; (better indicated by higher values) – at the time to return to activity, approx. 9.5 months post-op												
1	Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	16	SMD 0.05 higher (0.62 lower to 0.73 higher)	⊕○○○ Very low	CRITICAL
Pain												
1												
Pain - VAS scale, session knee pain (better indicated by lower values) – 2 months post-op												
1	Hughes 2019b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 1.84 lower (2.83 lower to 0.86 lower)	⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	BFR	no BFR	Relative (95% CI)	Absolute (95% CI)		
Pain - VAS scale, 24h post training knee pain (better indicated by lower values) – 2 months post-op												
1 Hughes 2019b	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.75 lower (2.72 lower to 0.78 lower)		⊕○○○ Very low	CRITICAL
Pain - VAS scale, muscle pain (better indicated by lower values) – 2 months post-op												
1 Hughes 2019b	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 2.04 higher (1.02 higher to 3.06 higher)		⊕○○○ Very low	CRITICAL
Patient-reported outcome measures (PROM)												
2												
IKDC reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.49 higher (0.57 higher to 2.42 higher)		⊕○○○ Very low	CRITICAL
LEFS (Lower extremity function scale) (reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.89 higher (0.05 higher to 1.74 higher)		⊕○○○ Very low	CRITICAL
Lysholm scale reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.08 higher (0.21 higher to 1.95 higher)		⊕○○○ Very low	CRITICAL
KOOS-pain reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.74 higher (0.78 higher to 2.71 higher)		⊕○○○ Very low	CRITICAL
KOOS-symptoms reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.77 higher (0.06 lower to 1.61 higher)		⊕○○○ Very low	CRITICAL
KOOS-ADL reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 1.16 higher (0.28 higher to 2.04 higher)		⊕○○○ Very low	CRITICAL
KOOS-QOL reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.65 higher (0.18 lower to 1.47 higher)		⊕○○○ Very low	CRITICAL
IKDC (better indicated by higher values) – 5 months post-op												
1 Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	16	SMD 0.35 lower (1.03 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
IKDC (better indicated by higher values) – at the time to return to activity, approx. 9.5 months post-op												
1 Curran 2020	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	16	SMD 0.42 lower (1.1 lower to 0.26 higher)		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
2												
Flexion deficit reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 2.35 higher (1.27 higher to 3.43 higher)		⊕○○○ Very low	IMPORTANT
Flexion - knee flexion (better indicated by higher values) – 4 months post-op												
1 Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	22	22	SMD 0.4 lower (0.99 lower to 0.2 higher)		⊕○○○ Very low	IMPORTANT
Extension deficit side to side difference (°) reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	BFR	no BFR	Relative (95% CI)	Absolute (95% CI)		
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0.1 higher (0.7 lower to 0.9 higher)		⊕○○○ Very low	IMPORTANT
Extension deficit (better indicated by lower values) – 4 months post-op												
1 Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.32 lower (0.92 lower to 0.27 higher)		⊕○○○ Very low	IMPORTANT
Balance												
2												
Balance - Star excursion balance test anterior; reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 1.78 higher (0.81 higher to 2.76 higher)		⊕○○○ Very low	IMPORTANT
Balance - Star excursion balance test posteromedial; reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 1.47 higher (0.55 higher to 2.39 higher)		⊕○○○ Very low	IMPORTANT
Balance - Star excursion balance test posterolateral; reported as difference from pre-intervention values (better indicated by higher values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 1.6 higher (0.66 higher to 2.54 higher)		⊕○○○ Very low	IMPORTANT
Laxity												
2												
Laxity (Knee ligament laxity (mm) using the KT-1000 arthrometer; reported as difference from pre-intervention values; better indicated by higher values – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 0 (0.8 lower to 0.8 higher)		⊕○○○ Very low	CRITICAL
Laxity (Knee ligament laxity (mm) using the KT-2000 arthrometer; better indicated by lower values – 4 months post-op												
1 Ohta 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0 (0.59 lower to 0.59 higher)		⊕○○○ Very low	CRITICAL
Swelling												
1												
Swelling - reported as difference from pre-intervention values (better indicated by lower values) – 2 months post-op												
1 Hughes 2019a	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	12	12	SMD 1.56 lower (2.49 lower to 0.62 lower)		⊕○○○ Very low	CRITICAL
Adverse events												
Ohta 2003									2 patients dropped out because of discomfort or a dull pain in the lower limb.			CRITICAL
Iversen 2016									None reported			CRITICAL
Hughes 2018									None reported			CRITICAL
Hughes 2019a									None reported			CRITICAL
Hughes 2019b									None reported			CRITICAL
Curran 2020									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Blood flow restriction (BFR) pre-operatively versus no BFR in rehabilitation after ACLR

Bibliography: Grapar Zargi 2016, Zargi 2018

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	BFR	no BFR	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength Quadriceps ISOM 60° (better indicated by higher values) – 3 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.41 higher (0.21 lower to 1.04 higher)	⊕○○○ Very low		CRITICAL
Muscle endurance - Time of contraction (s) – 3 months post-op												
1	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.14 higher (0.74 lower to 1.02 higher)	⊕○○○ Very low		CRITICAL
Atrophy												
1												
Atrophy - Rectus femoris muscle volume (cm³) using MRI (better indicated by higher values) – 1 month post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 1.07 higher (0.12 higher to 2.02 higher)	⊕○○○ Very low		CRITICAL
Atrophy - Rectus femoris muscle volume (cm³) using MRI (better indicated by higher values) – 3 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.97 higher (0.03 higher to 1.91 higher)	⊕○○○ Very low		CRITICAL
Atrophy - Vastii muscle volume (cm³) using MRI (better indicated by higher values) – 1 month post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.38 higher (0.51 lower to 1.26 higher)	⊕○○○ Very low		CRITICAL
Atrophy - Vastii muscle volume (cm³) using MRI (better indicated by higher values) – 3 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.35 higher (0.54 lower to 1.23 higher)	⊕○○○ Very low		CRITICAL
Balance												
1												
Balance - Star excursion balance test anterior deficit (cm) compared to the uninjured (better indicated by lower values) – 3 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.23 lower (1.11 lower to 0.65 higher)	⊕○○○ Very low		IMPORTANT
Adverse events												
Grapar Zargi 2016									None reported			CRITICAL
Zargi 2018									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

a. Total participants <800

b. 95% CI of an SMD extends > 0.5 points in either direction

Kinesio-tape versus no kinesio-tape in rehabilitation after ACLR

Bibliography: Boguszewski 2013, Balki 2016, Oliveira 2016, Balki 2019, Chan 2017, Gholami 2020

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Kinesio-tape	No kinesio-tape	Relative (95% CI)	Absolute (95% CI)		
Pain												
3												
Pain – VAS scale (better indicated by lower values) – 2 weeks post-op												
1 Chan 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.63 lower (1.15 lower to 0.11 lower)	⊕○○○ Very low		CRITICAL
Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors report significant decrease in pain intensity in the intervention group.	⊕○○○ Very low		CRITICAL
Pain - VAS scale (better indicated by lower values) – 4-6 weeks post-op												
1 Chan 2017	randomised trials	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.31 higher (0.2 lower to 0.82 higher)	⊕○○○ Very low		CRITICAL
Boguszewski 2013	randomised trials	very serious	not assessable	not serious	very serious ^c	none	NR	NR	SDs are not reported. The authors report significant decrease in pain intensity in the intervention group.	⊕○○○ Very low		CRITICAL
Swelling												
3												
Swelling - (better indicated by lower values) – 2 weeks post-op												
1 Chan 2017	randomised trials	very serious	not assessable	not serious	serious ^a	none	30	30	SMD 0.02 higher (0.49 lower to 0.52 higher)	⊕○○○ Very low		CRITICAL
Balki 2016	randomised trials	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	Authors reported significant improvement in swelling in the experimental group.	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 4 weeks post-op												
1 Boguszewski 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	NR	NR	SDs are not reported. The authors report significant decrease in swelling in the intervention group.	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 6 weeks post-op												
1 Chan 2017	randomised trial	very serious	not assessable	not serious	serious ^a	none	30	30	SMD 0.17 lower (0.67 lower to 0.34 higher)	⊕○○○ Very low		CRITICAL
Strength												
3												
Strength - Quadriceps ISOM 30° (better indicated by higher values) – 9 days post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.36 higher (0.36 lower to 1.08 higher)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps ISOM 30° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.48 higher (0.25 lower to 1.2 higher)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 months post-op												
1 Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.63 lower (1.36 lower to 0.11 higher)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps ECC 60°/s (better indicated by higher values) – 4 months post-op												
1 Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.74 lower (1.48 lower to 0)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps power CON 60°/s (better indicated by higher values) – 4 months post-op												
1 Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.76 lower (1.5 lower to 0.02 lower)	⊕○○○ Very low		IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Kinesio-tape	No kinesio-tape	Relative (95% CI)	Absolute (95% CI)		
Strength - Quadriceps power ECC 60°/s (better indicated by higher values) – 4 months post-op												
1 Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.71 lower (1.45 lower to 0.03 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hamstring ISOM 30° (better indicated by higher values) – 9 days post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.79 higher (0.05 higher to 1.54 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hamstring ISOM 30° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 1.01 higher (0.24 higher to 1.78 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip flexion ISOM 30° (better indicated by higher values) – 9 days post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.58 higher (0.21 lower to 1.37 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip extension ISOM 30° (better indicated by higher values) – 9 days post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.55 higher (0.24 lower to 1.33 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip abductors ISOM 20° (better indicated by higher values) – 9 days post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.55 higher (0.24 lower to 1.33 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip adductors ISOM 0° (better indicated by higher values) – 9 days post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.99 higher (0.17 higher to 1.81 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip flexion ISOM30° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.89 higher (0.08 higher to 1.71 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip extension ISOM 30° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.78 higher (0.03 lower to 1.58 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip abductors ISOM 20° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 0.64 higher (0.15 lower to 1.43 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hip adductors ISOM 0° (better indicated by higher values) – 2 weeks post-op												
1 Balki 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	13	13	SMD 1.17 higher (0.32 higher to 2.01 higher)		⊕○○○ Very low	IMPORTANT
Range of motion (ROM)												
3												
ROM - knee flexion (better indicated by higher values) – 9 days post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.72 higher (0.02 lower to 1.46 higher)		⊕○○○ Very low	CRITICAL
ROM - knee flexion (better indicated by higher values) – 2 weeks post-op												
2 Balki 2016 Chan 2017	randomised trials	very serious	very serious ^I ² = 88%	not serious	very serious ^{a, b}	none	45	45	SMD 0.6 higher (0.75 lower to 1.95 higher)		⊕○○○ Very low	CRITICAL
ROM - knee flexion (better indicated by higher values) – 4-6 weeks post-op												
1 Chan 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.26 lower (0.77 lower to 0.24 higher)		⊕○○○ Very low	CRITICAL
1 Boguszewski 2013	randomised trial	very serious	not assessable	not serious	very serious ^c	none	NR	NR	SDs are not reported. The authors reported significantly better results in the experimental group in measurements 2 and 3 compared to the controls.		⊕○○○ Very low	CRITICAL
ROM - knee extension deficit (better indicated by lower values) – 9 days post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Kinesio-tape	No kinesio-tape	Relative (95% CI)	Absolute (95% CI)		
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.24 higher (0.48 lower to 0.96 higher)		⊕○○○ Very low	CRITICAL
ROM - knee extension deficit (better indicated by lower values) – 2 weeks post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.21 higher (0.51 lower to 0.93 higher)		⊕○○○ Very low	CRITICAL
ROM - knee extension – 1 month post-op												
1 Boguszewski 2013	randomised trial	very serious	not assessable	not serious	very serious ^c	none	NR	NR	SDs are not reported. The authors reported significantly better results in the experimental group in measurements 2 and 3 compared to the controls. The full range of knee extension was regained faster among patients from the experimental group.		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
3												
PROM - Lysholm (better indicated by higher values) – 2 weeks post-op												
1 Chan 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.21 higher (0.3 lower to 0.72 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 4-6 weeks post-op												
2 Balki 2016 Chan 2017	randomised trials	very serious	not serious <i>I² = 0%</i>	not serious	serious ^a	none	45	45	SMD 0.15 lower (0.56 lower to 0.26 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 3 months post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.29 lower (1.01 lower to 0.43 higher)		⊕○○○ Very low	CRITICAL
PROM - modified Cincinnati (better indicated by higher values) – 1 month post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.61 lower (1.35 lower to 0.12 higher)		⊕○○○ Very low	CRITICAL
PROM - modified Cincinnati (better indicated by higher values) – 3 months post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.42 higher (0.31 lower to 1.14 higher)		⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 1 month post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.12 higher (0.6 lower to 0.84 higher)		⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 3 months post-op												
1 Balki 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.17 lower (0.88 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
PROM - Kinesiophobia-Tampa (better indicated by lower values) –at the time to return to sport after 10min of kinesio-tape application												
1 Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.76 lower (1.67 lower to 0.16 higher)		⊕○○○ Very low	CRITICAL
PROM - Kinesiophobia-Tampa (better indicated by lower values) –at the time to return to sport after 2 days of kinesio-tape application												
1 Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 1.06 lower (2.01 lower to 0.11 lower)		⊕○○○ Very low	CRITICAL
Balance												
2												
Balance - postural balance antero-posterior (mm) (better indicated by lower values) – 4 months post-op												
1 Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.45 lower (1.18 lower to 0.27 higher)		⊕○○○ Very low	IMPORTANT
Balance - postural balance latero-lateral (mm) (better indicated by lower values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Kinesio-tape	No kinesio-tape	Relative (95% CI)	Absolute (95% CI)		
1	Oliveira 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.33 lower (1.05 lower to 0.39 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Anterior reach) (better indicated by higher values) –at the time to return to sport after 10min of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.62 higher (0.28 lower to 1.52 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Posteromedial reach) (better indicated by higher values) –at the time to return to sport after 10min of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.22 lower (1.1 lower to 0.66 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Postero-lateral reach) (better indicated by higher values) –at the time to return to sport after 10min of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.01 lower (0.89 lower to 0.87 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Anterior reach) (better indicated by higher values) –at the time to return to sport after 2 days of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.01 higher (0.86 lower to 0.89 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Posteromedial reach) (better indicated by higher values) –at the time to return to sport after 2 days of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0 (0.88 lower to 0.88 higher)	⊕○○○ Very low	IMPORTANT
Balance - Y balance test (Postero-lateral reach) (better indicated by higher values) –at the time to return to sport after 2 days of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.21 higher (0.67 lower to 1.09 higher)	⊕○○○ Very low	IMPORTANT
Atrophy												
1												
Atrophy - femoral measurement II - 10cm above patella – 1 month post-op												
1	Boguszewski 2013	randomised trial	very serious	not assessable	not serious	very serious ^c	none	NR	NR	SDs are not reported. The authors reported that "patients from the experimental group regained their muscle mass slightly faster".	⊕○○○ Very low	IMPORTANT
Functional												
1												
Functional - single leg hop for distance (better indicated by higher values) –at the time to return to sport after 10min of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.02 higher (0.85 lower to 0.9 higher)	⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance (better indicated by higher values) –at the time to return to sport after 2 days of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.02 higher (0.86 lower to 0.9 higher)	⊕○○○ Very low	IMPORTANT
Functional - 10 Yard Test (better indicated by higher values) –at the time to return to sport after 10min of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.42 higher (0.47 lower to 1.31 higher)	⊕○○○ Very low	IMPORTANT
Functional - 10 Yard Test (better indicated by higher values) –at the time to return to sport after 2 days of kinesio-tape application												
1	Gholami 2020	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.15 higher (0.73 lower to 1.03 higher)	⊕○○○ Very low	IMPORTANT
Adverse events												
Boguszewski 2013										None reported		CRITICAL
Balki 2016										None reported		CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Kinesio-tape	No kinesio-tape	Relative (95% CI)	Absolute (95% CI)		
Oliveira 2016									None reported			CRITICAL
Balki 2019									None reported			CRITICAL
Chan 2017									None reported			CRITICAL
Gholami 2020									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs

Dry needling versus no dry needling in rehabilitation after ACLR

Bibliography: Velázquez-Saornil 2017

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Dry needling	No dry needling	Relative (95% CI)	Absolute (95% CI)		
Pain												
1												
Pain – VAS scale (better indicated by lower values) – 2 weeks post-op – 1 hour after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 1.37 higher (0.69 higher to 2.05 higher)		⊕○○○ Very low	CRITICAL
Pain – VAS scale (better indicated by lower values) – 2 weeks post-op – 1 day after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	CRITICAL
Pain – VAS scale (better indicated by lower values) – 3 weeks post-op – 1 week after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.34 lower (0.95 lower to 0.27 higher)		⊕○○○ Very low	CRITICAL
Pain – pain VAS scale (better indicated by lower values) – 7 weeks post-op – 5 weeks after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.47 lower (1.08 lower to 0.14 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM – WOMAC (better indicated by lower values) – 2 weeks post-op – 1 hour after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.35 higher (0.26 lower to 0.96 higher)		⊕○○○ Very low	CRITICAL
PROM – WOMAC (better indicated by lower values) – 2 weeks post-op – 1 day after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.81 lower (1.44 lower to 0.18 lower)		⊕○○○ Very low	CRITICAL
PROM – WOMAC (better indicated by lower values) – 3 weeks post-op – 1 week after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.75 lower (1.38 lower to 0.12 lower)		⊕○○○ Very low	CRITICAL
PROM – WOMAC (better indicated by lower values) – 7 weeks post-op – 5 weeks after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 1.16 lower (1.82 lower to 0.5 lower)		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
1												
ROM – knee flexion (better indicated by higher values) – 2 weeks post-op – 1 hour after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 1.04 higher (0.39 higher to 1.69 higher)		⊕○○○ Very low	CRITICAL
ROM – knee flexion (better indicated by higher values) – 2 weeks post-op – 1 day after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 1.5 higher (0.81 higher to 2.2 higher)		⊕○○○ Very low	CRITICAL

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Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Dry needling	No dry needling	Relative (95% CI)	Absolute (95% CI)		
ROM - knee flexion (better indicated by higher values) – 3 weeks post-op – 1 week after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 1.5 higher (0.8 higher to 2.19 higher)		⊕○○○ Very low	CRITICAL
ROM - knee flexion (better indicated by higher values) – 7 weeks post-op – 5 weeks after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.63 higher (0.01 higher to 1.25 higher)		⊕○○○ Very low	CRITICAL
Balance												
1												
Balance – star excursion balance test (better indicated by higher values) – 3 weeks post-op – 1 week after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.01 lower (0.62 lower to 0.59 higher)		⊕○○○ Very low	IMPORTANT
Balance - star excursion balance test (better indicated by higher values) – 7 weeks post-op – 5 weeks after intervention												
1 Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	21	SMD 0.44 higher (0.17 lower to 1.05 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Velázquez-Saornil 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	3/22 (13.6%)	0/22 (0.0%)	RR 7.00 (0.38 to 128.02)	NA ^e	⊕○○○ Very low	CRITICAL
Adverse events												
Velázquez-Saornil 2017									Three patients suffered hemorrhage after TrP-DN, one of which was lost to follow-up because of this adverse effect. Nevertheless, differences in the adverse effects between groups did not reach statistical significance (P=.073)			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25
- Due to zero events in the comparator arm, an absolute risk reduction was not estimable.

Whole-body vibration (WBV) versus usual care in rehabilitation after ACLR

Bibliography: Salvarani 2003, Moezy 2008, Fu 2013, Berschin 2014, Pistone 2016, Costantino 2018, da Costa 2019

No of studies	Study design	Certainty assessment					No of patients		Effect		Certainty	Importance
		Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
6												
Strength - Quadriceps ISOM 25-60° (better indicated by higher values) – 5-6 weeks post-op												
2 Berschin 2014 Salvarani 2003	randomised trials	very serious	not serious I ² =37%	not serious	very serious ^{a,b}	none	30	30	SMD 0.32 higher (0.36 lower to 1 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps ISOM 25-90° (better indicated by higher values) – 2 months post-op												
3 Berschin 2014 Pistone 2016 Salvarani 2003	randomised trials	very serious	serious I ² =42%	not serious	very serious ^{a,b}	none	47	47	SMD 0.15 higher (0.4 lower to 0.7 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 2 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.05 lower (0.67 lower to 0.57 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps ISOM 60-90°/s (better indicated by higher values) – 3 months post-op												
2 Berschin 2014 Pistone 2016	randomised trials	serious	very serious I ² =89%	not serious	very serious ^{a,b}	none	37	37	SMD 0.14 lower (1.59 lower to 1.31 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.27 higher (0.35 lower to 0.9 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 300°/s (better indicated by higher values) – 3 months post-op												
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.34 higher (0.23 lower to 0.91 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps Work (better indicated by higher values) – 4 months post-op												
1 da Costa 2019	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.59 lower (1.2 lower to 0.01 higher)	⊕⊕○○ Low	CRITICAL	
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4-6 months post-op												
3 Costantino 2018 da Costa 2019 Fu 2013	randomised trials	serious	very serious I ² =92%	serious	very serious ^{a,b}	none	65	66	SMD 0.66 higher (0.69 lower to 2.02 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps power CON 60°/s (better indicated by higher values) – 5 months post-op												
1 Costantino 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	19	20	SMD 1.57 higher (0.84 higher to 2.29 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps power CON 180°/s (better indicated by higher values) – 5 months post-op												
1 Costantino 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	19	20	SMD 3.29 higher (2.3 higher to 4.28 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 5-6 months post-op												
2 Costantino 2018 Fu 2013	randomised trials	serious	very serious I ² =85%	not serious	very serious ^{a,b}	none	43	44	SMD 0.98 higher (0.21 lower to 2.17 higher)	⊕○○○ Very low	CRITICAL	

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Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength - Quadriceps CON 300°/s (better indicated by higher values) – 6 months post-op												
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.44 higher (0.14 lower to 1.01 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 60° (better indicated by higher values) – 5 weeks post-op												
1	Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0 (0.62 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 60-90° (better indicated by higher values) – 2 months post-op												
2	Berschin 2014 Pistone 2016	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	37	37	SMD 0.34 higher (0.12 lower to 0.8 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 2 months post-op												
1	Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.13 lower (0.75 lower to 0.49 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 60-90° (better indicated by higher values) – 3 months post-op												
2	Berschin 2014 Pistone 2016	randomised trials	serious	serious I ² =48%	not serious	very serious ^{a,b}	none	37	37	SMD 0.43 higher (0.22 lower to 1.07 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 3 months post-op												
1	Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.36 higher (0.27 lower to 0.98 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 300°/s (better indicated by higher values) – 3 months post-op												
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.39 higher (0.18 lower to 0.96 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring power CON 60°/s (better indicated by higher values) – 5 months post-op												
1	Costantino 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	19	20	SMD 4.4 higher (3.2 higher to 5.61 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring power CON180°/s (better indicated by higher values) – 5 months post-op												
1	Costantino 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	19	20	SMD 5.22 higher (3.85 higher to 6.59 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 5-6 months post-op												
2	Costantino 2018 Fu 2013	randomised trials	serious	very serious I ² =94%	not serious	very serious ^{a,b}	none	43	44	SMD 1.32 higher (0.84 lower to 3.49 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 5-6 months post-op												
2	Costantino 2018 Fu 2013	randomised trials	serious	very serious I ² =95%	not serious	very serious ^{a,b}	none	43	44	SMD 1.39 higher (0.87 lower to 3.64 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 300°/s (better indicated by higher values) – 6 months post-op												
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.43 higher (0.14 lower to 1.01 higher)	⊕○○○ Very low	CRITICAL
Proprioception												
2												
Proprioception - Angular error 30° (better indicated by lower values) – 3-4 months post-op												
2	Fu 2013 Moezy 2008	randomised trials	serious	very serious I ² =87%	not serious	very serious ^{a,b}	none	34	34	SMD 0.80 lower (2.46 lower to 0.86 higher)	⊕○○○ Very low	CRITICAL
Proprioception - Angular error 60° (better indicated by lower values) – 3-4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)		
2 Fu 2013 Moezy 2008	randomised trials	serious	not serious I ² =28%	not serious	very serious ^{a,b}	none	34	34	SMD 0.25 lower (0.85 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Proprioception - Angular error 30° (better indicated by lower values) – 6 months post-op												
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.27 lower (0.84 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL
Proprioception - Angular error 60° (better indicated by lower values) – 6 months post-op												
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.27 lower (0.84 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL
Balance												
5												
Balance – open eyes stability index (better indicated by lower values) – 5 weeks post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.51 lower (1.14 lower to 0.12 higher)		⊕○○○ Very low	CRITICAL
Balance - open eyes stability index (better indicated by lower values) – 2 months post-op												
2 Pistone 2016 Berschin 2014	randomised trials	serious	not serious I ² =32%	not serious	very serious ^{a,b}	none	37	37	SMD 0.5 lower (1.07 lower to 0.06 higher)		⊕○○○ Very low	CRITICAL
Balance - open eyes stability index (better indicated by lower values) – 3-4 months post-op												
4 Fu 2013 Moezy 2008 Pistone 2016 Berschin 2014	randomised trials	serious	serious I ² =74%	not serious	very serious ^{a,b}	none	71	71	SMD 1.03 lower (1.75 lower to 0.31 lower)		⊕○○○ Very low	CRITICAL
Balance - Open eyes anterior-posterior stability index (better indicated by lower values) – 3-4 months post-op												
2 Fu 2013 Moezy 2008	randomised trials	serious	serious I ² =60%	not serious	very serious ^{a,b}	none	34	34	SMD 0.52 lower (1.38 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Balance - Open eyes medial-lateral stability index (better indicated by lower values) – 3-4 months post-op												
2 Fu 2013 Moezy 2008	randomised trials	serious	very serious I ² =82%	not serious	very serious ^{a,b}	none	34	34	SMD 1.22 lower (2.72 lower to 0.28 higher)		⊕○○○ Very low	CRITICAL
Balance - Closed eyes stability index (better indicated by lower values) – 3-4 months post-op												
3 Fu 2013 Moezy 2008 Pistone 2016	randomised trials	serious	serious I ² =50%	not serious	very serious ^{a,b}	none	51	51	SMD 0.97 lower (1.59 lower to 0.35 lower)		⊕○○○ Very low	CRITICAL
Balance - Closed eyes anterior-posterior stability index (better indicated by lower values) – 3-4 months post-op												
2 Fu 2013 Moezy 2008	randomised trials	serious	serious I ² =70%	not serious	very serious ^{a,b}	none	34	34	SMD 1.36 lower (2.51 lower to 0.21 lower)		⊕○○○ Very low	CRITICAL
Balance - Closed eye medial-lateral stability index (better indicated by lower values) – 3-4 months post-op												
2 Fu 2013 Moezy 2008	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	34	34	SMD 0.79 lower (1.29 lower to 0.29 lower)		⊕⊕○○ Low	CRITICAL
Balance - anterior-posterior velocity (better indicated by lower values) – 4 months post-op												
1 da Costa 2019	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 1.13 higher (0.49 higher to 1.77 higher)		⊕⊕○○ Low	CRITICAL
Balance - medial-lateral velocity (better indicated by lower values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance	
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)			
1	da Costa 2019	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 1.76 lower (2.47 lower to 1.05 lower)		⊕⊕○○ Low	CRITICAL
Balance - Open eyes overall stability (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.49 lower (1.06 lower to 0.09 higher)		⊕○○○ Very low	CRITICAL
Balance - Open eyes anterior-posterior stability index (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.05 lower (0.62 lower to 0.51 higher)		⊕○○○ Very low	CRITICAL
Balance - Open eye medial-lateral stability index (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.46 lower (1.03 lower to 0.12 higher)		⊕○○○ Very low	CRITICAL
Balance - Closed eyes overall stability (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.19 lower (0.75 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Balance - Closed eyes anterior-posterior stability index (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.51 lower (1.09 lower to 0.07 higher)		⊕○○○ Very low	CRITICAL
Balance - Closed eye medial-lateral stability index (better indicated by lower values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.47 lower (1.04 lower to 0.11 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcome measures (PROM)													
2													
PROM - Lysholm (better indicated by higher values) – 1 month post-op													
	Berschin 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	20	20	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 2 months post-op													
1	Pistone 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	17	SMD 1.6 higher (0.81 higher to 2.38 higher)		⊕○○○ Very low	CRITICAL
	Berschin 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	20	20	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 3 months post-op													
1	Pistone 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	17	SMD 2.22 higher (1.34 higher to 3.1 higher)		⊕○○○ Very low	CRITICAL
	Berschin 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	20	20	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Functional activities													
1													
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.33 higher (0.24 lower to 0.9 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop for distance (better indicated by higher values) – 6 months post-op													
1	Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.29 higher (0.28 lower to 0.86 higher)		⊕○○○ Very low	IMPORTANT
Functional - shuttle run (better indicated by higher values) – 6 months post-op													

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.3 lower (0.87 lower to 0.27 higher)		⊕○○○ Very low	IMPORTANT
Functional - carioca (better indicated by higher values) – 6 months post-op												
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0.1 lower (0.67 lower to 0.46 higher)		⊕○○○ Very low	IMPORTANT
Range of motion (ROM)												
1												
ROM - flexion deficit (better indicated by lower values) – 5 weeks post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.22 lower (0.84 lower to 0.4 higher)		⊕○○○ Very low	IMPORTANT
ROM - flexion deficit (better indicated by lower values) – 2 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.2 lower (0.82 lower to 0.43 higher)		⊕○○○ Very low	IMPORTANT
ROM - flexion deficit (better indicated by lower values) – 3 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.24 lower (0.86 lower to 0.39 higher)		⊕○○○ Very low	IMPORTANT
ROM - extension deficit (better indicated by lower values) – 5 weeks post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.5 lower (1.13 lower to 0.13 higher)		⊕○○○ Very low	IMPORTANT
ROM - extension deficit (better indicated by lower values) – 2 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.18 lower (0.8 lower to 0.44 higher)		⊕○○○ Very low	IMPORTANT
ROM - extension deficit (better indicated by lower values) – 3 months post-op												
1 Berschin 2014	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.44 lower (1.07 lower to 0.19 higher)		⊕○○○ Very low	IMPORTANT
Laxity												
2												
Laxity – laxity difference between limbs (better indicated by lower values) – 3 months post-op												
2 Berschin 2014 Fu 2013	randomised trials	serious	not serious <i>I²=0%</i>	not serious	serious ^a	none	44	44	SMD 0.06 lower (0.48 lower to 0.35 higher)		⊕⊕○○ Low	CRITICAL
Laxity - laxity difference between limbs (better indicated by lower values) – 6 months post-op												
1 Fu 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	24	24	SMD 0 (0.57 lower to 0.57 higher)		⊕○○○ Very low	CRITICAL
Adverse events												
Salvarani 2003									None reported			CRITICAL
Moezy 2008									None reported			CRITICAL
Fu 2013									None reported			CRITICAL
Berschin 2014									Minor complications such as pain or swelling during or after muscle exercise occurred in 12/20 (60%) in the WBV group and 14/20 (70%) in the control group up to the 6th week.			CRITICAL
Pistone 2016									None reported			CRITICAL
Costantino 2018									None reported			CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Whole-body vibration	Usual care	Relative (95% CI)	Absolute (95% CI)		
da Costa 2019									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Local vibration versus no local vibration in rehabilitation after ACLR

Bibliography: Brunetti 2006, Park 2019, Coulondre 2022

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Local vibration	No local vibration	Relative (95% CI)	Absolute (95% CI)		
Balance												
1												
Balance - open eyes center of pressure speed – 4 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - open eyes center of pressure speed – 10 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - closed eyes center of pressure speed – 4 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - closed eyes center of pressure speed 10 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - open eyes elliptic area – 4 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - open eyes elliptic area 10 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - closed eyes elliptic area – 4 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Balance - closed eyes elliptic area 10 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported statistically significant improvement in balance in the intervention group.		⊕○○○ Very low	CRITICAL
Strength												
3												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 weeks post-op												
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	11	13	SMD 0.64 higher (0.18 lower to 1.47 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 8 weeks post-op												
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	11	13	SMD 1.51 higher (0.58 higher to 2.44 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 90° (better indicated by higher values) – 10 weeks post-op												
1 Coulondre 2022	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	12	SMD 1.13 higher (0.24 higher to 2.02 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Local vibration	No local vibration	Relative (95% CI)	Absolute (95% CI)		
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 3.8 higher (2.54 higher to 5.05 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 10 months post-op												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 3.11 higher (2 higher to 4.21 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 4 weeks post-op												
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	11	13	SMD 1.58 higher (0.64 higher to 2.52 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 8 weeks post-op												
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	11	13	SMD 1.08 higher (0.21 higher to 1.95 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcome measures (PROM)												
2												
PROM - IKDC 4m												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported better scores in the intervention group.		⊕○○○ Very low	CRITICAL
PROM - IKDC 10m												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported better scores in the intervention group.		⊕○○○ Very low	CRITICAL
PROM – SF-36 4m												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported better scores in the intervention group.		⊕○○○ Very low	CRITICAL
PROM - SF-36 10m												
1 Brunetti 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported better scores in the intervention group.		⊕○○○ Very low	CRITICAL
PROM - anxiety (VAS) (better indicated by lower values) – 8 weeks post-op												
1 Park 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	11	SMD 0.59 lower (1.45 lower to 0.27 higher)		⊕○○○ Very low	IMPORTANT
PROM - symptoms (VAS) (better indicated by lower values) – 8 weeks post-op												
1 Park 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	11	SMD 1.48 lower (2.44 lower to 0.51 lower)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - Timed Up and Go test (s) (better indicated by lower values) – 10 weeks post-op												
1 Coulondre 2022	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	12	SMD 0.24 lower (1.06 lower to 0.59 higher)		⊕○○○ Very low	IMPORTANT
Functional – Six Minute Walk Test (m) (better indicated by higher values) – 10 weeks post-op												
1 Coulondre 2022	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	11	12	SMD 0.2 lower (1.02 lower to 0.62 higher)		⊕○○○ Very low	IMPORTANT
Range of motion (ROM)												
1												
ROM - knee range of motion (better indicated by higher values) – 4 weeks post-op												
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	11	13	SMD 1.92 higher (0.92 higher to 2.92 higher)		⊕○○○ Very low	IMPORTANT
ROM – knee range of motion (better indicated by higher values) – 8 weeks post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Local vibration	No local vibration	Relative (95% CI)	Absolute (95% CI)		
1 Park 2019	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	11	13	SMD 1.55 higher (0.61 higher to 2.48 higher)		⊕○○○ Very low	IMPORTANT
Pain												
1												
Pain - pain (VAS) (better indicated by lower values) – 8 weeks post-op												
1 Park 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	11	11	SMD 2.04 lower (3.11 lower to 0.97 lower)		⊕○○○ Very low	CRITICAL
Adverse events												
Brunetti 2006									"Patients receiving vibration did not report any signs of discomfort during the treatment and, in 16 out of 20 subjects"			CRITICAL
Park 2019									None reported			CRITICAL
Coulondre 2022									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

Inconsistency $I^2 > 75\%$ serious

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Early mobilisation versus delayed mobilisation in rehabilitation after ACLR

Bibliography: Haggmark 1979, Henriksson 2002, Hiemstra 2009, Ito 2007, Noyes 1987, Isberg 2006, Vadala 2007, Christensen 2013

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
Range of motion (ROM)												
7												
ROM - flexion (better indicated by higher values) – 1 week post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	9	SMD 0.37 higher (0.57 lower to 1.3 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 2 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	9	SMD 0.72 higher (0.24 lower to 1.68 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 3 weeks post-op												
2 Noyes 1987 Hiemstra 2009	randomised trials	very serious	very serious I ² =85%	not serious	very serious ^{a, b}	none	49	51	SMD 0.34 higher (1.09 lower to 1.77 higher)	⊕○○○ Very low		CRITICAL
ROM - flexion (better indicated by higher values) – 1 month post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	9	SMD 0.93 higher (0.05 lower to 1.92 higher)	⊕○○○ Very low		CRITICAL
ROM - knee flexion difference between limbs (better indicated by lower values) – 3 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	16	SMD 0.08 lower (0.76 lower to 0.6 higher)	⊕○○○ Very low		CRITICAL
ROM - knee flexion difference between limbs (better indicated by lower values) – 6 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	16	SMD 0.01 higher (0.67 lower to 0.7 higher)	⊕○○○ Very low		CRITICAL
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	24	24	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	11	11	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - knee flexion – 1 year post-op												
Haggmark 1979	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	8	8	"Patients with a movable cast brace regained full range of motion of the knee joint faster than did the group with a cylinder cast. The group with a cylinder cast regained full range of motion at a slower pace. On an average, it took 16 weeks for this group to achieve the same range of motion as the group with a cast brace had obtained within 8 weeks."	⊕○○○ Very low		CRITICAL
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	23	24	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - knee flexion – 2 years post-op												
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	22	23	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	11	11	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
ROM - extension (better indicated by lower values) – 1 week post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.38 lower (1.31 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
ROM - extension (better indicated by lower values) – 2 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 1.18 lower (2.2 lower to 0.16 lower)		⊕○○○ Very low	CRITICAL
ROM - extension (better indicated by lower values) – 3 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.5 lower (1.44 lower to 0.44 higher)		⊕○○○ Very low	CRITICAL
ROM - extension (better indicated by lower values) – 1 month post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.34 lower (1.28 lower to 0.59 higher)		⊕○○○ Very low	CRITICAL
ROM - knee extension difference between limbs (better indicated by lower values) – 3 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	16	SMD 0.53 lower (1.22 lower to 0.17 higher)		⊕○○○ Very low	CRITICAL
ROM - knee extension difference between limbs (better indicated by lower values) – 6 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	16	SMD 0.56 lower (1.26 lower to 0.13 higher)		⊕○○○ Very low	CRITICAL
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	23	24	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	11	11	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
ROM-flexion achieved full flexion at 10m												
1 Vadala 2007	randomised trial	very serious	not assessable	not serious	serious ^a	none	17/18 (94.4%)	21/23 (91.3%)	RR 1.03 (0.87 to 1.22)	27 more per 1,000 (from 119 fewer to 201 more)	⊕○○○ Very low	CRITICAL
ROM - knee extension – 1 year post-op												
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	23	24	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
ROM - knee extension – 2 years post-op												
Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	33	34	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	11	11	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain												
2												
Pain - VAS scale (better indicated by lower values) – 1 hour post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0.04 higher (0.4 lower to 0.47 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 12 hours post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.07 higher (0.37 lower to 0.5 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 24 hours post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.21 lower (0.65 lower to 0.22 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 36 hours post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.16 higher (0.28 lower to 0.59 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.23 lower (0.67 lower to 0.2 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2.5 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	42	42	SMD 0.12 higher (0.31 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 7 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.09 lower (0.52 lower to 0.35 higher)		⊕○○○ Very low	CRITICAL
Pain - VAS scale (better indicated by lower values) – 2 weeks post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.08 higher (0.36 lower to 0.51 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral opioids (better indicated by lower values) – 12 hour post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.06 lower (0.49 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral anti-inflammatory (better indicated by lower values) – 12 hour post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.12 lower (0.55 lower to 0.32 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral opioids (better indicated by lower values) – 1 day post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.41 lower (0.85 lower to 0.03 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral anti-inflammatory (better indicated by lower values) – 1 day post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.12 lower (0.55 lower to 0.31 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used Tylenol (better indicated by lower values) – 1 day post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.21 higher (0.22 lower to 0.65 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral opioids (better indicated by lower values) – 2 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.22 lower (0.66 lower to 0.21 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral anti-inflammatory (better indicated by lower values) – 2 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.06 lower (0.49 lower to 0.37 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used Tylenol (better indicated by lower values) – 2 days post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious *	none	40	42	SMD 0.22 higher (0.21 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used – frequency of pain medication during hospital stay (3d)												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	9	9	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain - medication used oral opioids (better indicated by lower values) – 1 week post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0.19 higher (0.24 lower to 0.62 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral anti-inflammatory (better indicated by lower values) – 1 week post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0 (0.43 lower to 0.43 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used Tylenol (better indicated by lower values) – 1 week post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0.29 lower (0.72 lower to 0.15 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral opioids (better indicated by lower values) – 2 weeks post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^b	none	40	42	SMD 0.07 higher (0.37 lower to 0.5 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used oral anti-inflammatory (better indicated by lower values) – 2 weeks post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0.16 lower (0.6 lower to 0.27 higher)		⊕○○○ Very low	CRITICAL
Pain - medication used Tylenol (better indicated by lower values) – 2 weeks post-op												
1 Hiemstra 2009	randomised trial	very serious	not assessable	not serious	serious ^a	none	40	42	SMD 0.36 lower (0.80 lower to 0.07 higher)		⊕○○○ Very low	CRITICAL
Laxity												
7												
Laxity - laxity (better indicated by lower values) – 3 months post-op												
2 Christensen 2013 Ito 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	32	31	SMD 0.29 higher (0.21 lower to 0.79 higher)		⊕○○○ Very low	CRITICAL
Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	9	9	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity - (better indicated by lower values) – 6 months post-op												
3 Henriksson 2002 Isberg 2006 Ito 2007	randomised trials	very serious	very serious I ² =83%	not serious	very serious ^{a, b}	none	50	50	SMD 0.25 lower (1.28 lower to 0.77 higher)		⊕○○○ Very low	CRITICAL
Laxity – laxity using radiostereometric analysis (better indicated by lower values) – 6 months post-op												
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	11	11	SMD 0.50 higher (0.35 lower to 1.35 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity (better indicated by lower values) – 1 year post-op												
2 Henriksson 2002 Ito 2007	randomised trials	very serious	not serious I ² =2%	not serious	serious ^a	none	38	39	SMD 0.37 higher (0.09 lower to 0.83 higher)		⊕○○○ Very low	CRITICAL
Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	9	9	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Stability - stability O'Donoghue – 9-12 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
1 Haggmark 1979	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	8	8	SMD 0.16 higher (0.82 lower to 1.14 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity (better indicated by lower values) – 2 years post-op												
2 Henriksson 2002 Isberg 2006	randomised trials	very serious	not serious I ² =4%	not serious	serious ^a	none	33	34	SMD 0.32 higher (0.18 lower to 0.82 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity using radiostereometric analysis (better indicated by lower values) – 2 years post-op												
Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	11	11	SMD 0.23 higher (0.61 lower to 1.07 higher)		⊕○○○ Very low	CRITICAL
laxity - laxity femoral tunnel diameter (better indicated by lower values) – 10 months post-op												
1 Vadala 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	23	SMD 0.81 higher (0.17 higher to 1.45 higher)		⊕○○○ Very low	CRITICAL
laxity - laxity tibial tunnel diameter (better indicated by lower values) – 10 months post-op												
1 Vadala 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	18	23	SMD 0.78 higher (0.13 higher to 1.42 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
4												
PROM – Lysholm scale – 3 months post-op												
1 Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale – 3 months post-op												
1 Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - IKDC scale (better indicated by higher values) – 3 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	16	SMD 0.97 higher (0.25 higher to 1.7 higher)		⊕○○○ Very low	CRITICAL
PROM - IKDC scale (better indicated by higher values) – 6 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	17	16	SMD 0.71 higher (0.01 higher to 1.42 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 1 year post-op												
1 Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	23	24	SMD 0.17 higher (0.4 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Tegner scale (better indicated by higher values) – 1 year post-op												
1 Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	23	24	SMD 0.31 higher (0.26 lower to 0.89 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 2 years post-op												
2 Henriksson 2002 Isberg 2006	randomised trials	very serious	serious I ² =71%	not serious	very serious ^{a, b}	none	33	34	SMD 0.12 higher (0.83 lower to 1.07 higher)		⊕○○○ Very low	CRITICAL
PROM – Tegner scale (better indicated by higher values) – 2 years post-op												
2 Henriksson 2002 Isberg 2006	randomised trials	very serious	not serious I ² =25%	not serious	very serious ^{a, b}	none	33	34	SMD 0.08 lower (0.65 lower to 0.49 higher)		⊕○○○ Very low	CRITICAL
Swelling												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
1												
Swelling - (better indicated by lower values) – 1 week post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.07 higher (0.86 lower to 0.99 higher)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 2 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.29 lower (1.22 lower to 0.64 higher)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 3 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.52 lower (1.47 lower to 0.42 higher)	⊕○○○ Very low		CRITICAL
Swelling - (better indicated by lower values) – 4 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.56 lower (1.51 lower to 0.38 higher)	⊕○○○ Very low		CRITICAL
Atrophy												
2												
atrophy - thigh circumference difference 15cm above patella (better indicated by lower values) – 1 week post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.21 higher (0.72 lower to 1.14 higher)	⊕○○○ Very low		IMPORTANT
atrophy - thigh circumference difference 15cm above patella (better indicated by lower values) – 2 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.37 higher (0.56 lower to 1.31 higher)	⊕○○○ Very low		IMPORTANT
atrophy - thigh circumference difference 15cm above patella (better indicated by lower values) – 3 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.3 higher (0.63 lower to 1.23 higher)	⊕○○○ Very low		IMPORTANT
atrophy - thigh circumference difference 15cm above patella (better indicated by lower values) – 4 weeks post-op												
1 Noyes 1987	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	9	9	SMD 0.36 higher (0.58 lower to 1.29 higher)	⊕○○○ Very low		IMPORTANT
atrophy - vastus lateralis cross-sectional area difference (better indicated by lower values) – 5 weeks post-op												
1 Haggmark 1979	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 1.53 lower (2.68 lower to 0.37 lower)	⊕○○○ Very low		IMPORTANT
Strength												
3												
Strength - leg press isometric test difference between limbs (better indicated by higher values) – 3 months post-op												
1 Christensen 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	16	SMD 0.64 higher (0.06 lower to 1.35 higher)	⊕○○○ Very low		IMPORTANT
Strength – Quadriceps CON 60°/s (better indicated by higher values) – 6 months post-op												
2 Henriksson 2002 Ito 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	39	39	SMD 0.23 higher (0.22 lower to 0.68 higher)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 1 year post-op												
2 Henriksson 2002 Ito 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	38	39	SMD 0.08 higher (0.37 lower to 0.53 higher)	⊕○○○ Very low		IMPORTANT
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 2 years post-op												
1 Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	23	SMD 0.13 higher (0.45 lower to 0.72 higher)	⊕○○○ Very low		IMPORTANT
Strength - Hamstring CON 60°/s (better indicated by higher values) – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early mobilisation	Delayed mobilisation	Relative (95% CI)	Absolute (95% CI)		
2 Henriksson 2002 Ito 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	39	39	SMD 0.09 higher (0.35 lower to 0.53 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hamstring CON 60°/s (better indicated by higher values) – 1 year post-op												
2 Henriksson 2002 Ito 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	38	39	SMD 0.02 lower (0.46 lower to 0.43 higher)		⊕○○○ Very low	IMPORTANT
Strength - Hamstring CON 60°/s (better indicated by higher values) – 2 years post-op												
1 Henriksson 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	22	23	SMD 0.14 higher (0.45 lower to 0.72 higher)		⊕○○○ Very low	IMPORTANT
Functional activities												
1												
Functional - single leg hop for distance (better indicated by higher values) – 2 years post-op												
1 Isberg 2006	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	11	11	SMD 0.16 higher (0.68 lower to 1 higher)		⊕○○○ Very low	IMPORTANT
Proprioception												
1												
Proprioception – joint position sense – 3 months post-op												
1 Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Proprioception - joint position sense – 6 months post-op												
1 Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	15	15	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Proprioception - joint position sense (better indicated by lower values) – 1 year post-op												
1 Ito 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.08 higher (0.64 lower to 0.8 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Hiemstra 2009									Six patients (7.3%) were documented as experiencing a complication postoperatively. Five patients (4 immobilizer, 1 nonimmobilizer) were seen by an emergency or family physician with diagnosed cellulitis/periostitis and were treated with antibiotics with resolution of their symptoms. One patient (nonimmobilizer) presented with a hematoma at the harvest site that resolved with time.			CRITICAL
Haggmark 1979									None reported			CRITICAL
Henriksson 2002									None reported			CRITICAL
Ito 2007									None reported			CRITICAL
Noyes 1987									None reported			CRITICAL
Isberg 2006									None reported			CRITICAL
Vadala 2007									None reported			CRITICAL
Christensen 2013									None reported			CRITICAL

CI: confidence interval; **SMD:** standardised mean difference; **RR:** risk ratio

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs
- d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Immediate weight-bearing versus delayed weight-bearing in rehabilitation after ACLR

Bibliography: Tyler 1998

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Immediate weight-bearing	Delayed weight-bearing	Relative (95% CI)	Absolute (95% CI)		
ROM												
1												
ROM - flexion loss at follow-up (better indicated by lower values) – 1 year post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	25	20	SMD 0.12 lower (0.71 lower to 0.47 higher)		⊕○○○ Very low	CRITICAL
ROM - number of patients with knee extension deficit >5° at 2 weeks post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	10/27 (37.0%)	17/22 (77.3%)	RR 0.48 (0.28 to 0.82)	402 fewer per 1,000 (from 556 fewer to 139 fewer)	⊕○○○ Very low	CRITICAL
ROM - number of patients with knee extension deficit at 1 year post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	5/25 (20%)	3/20 (15%)	RR 1.33 (0.36 to 4.92)	50 more per 1,000 (from 96 fewer to 588 more)	⊕○○○ Very low	CRITICAL
Laxity												
1												
Laxity – laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 1 year post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	25	20	SMD 0.03 higher (0.55 lower to 0.62 higher)		⊕○○○ Very low	CRITICAL
Lachman – clinical examination at follow-up – 1 year post-op												
Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	25	20	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pivot shift – clinical examination at follow-up – 1 year post-op												
Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	25	20	SDs are not reported. The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM – Lysholm scale (better indicated by higher values) – 1 year post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	25	20	SMD 0.31 higher (0.28 lower to 0.90 higher)		⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 1 year post-op												
1 Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	25	20	SMD 0.49 lower (1.09 lower to 0.11 higher)		⊕○○○ Very low	CRITICAL
Anterior knee pain – number of patients that reported knee pain at 1 year post-op												
Tyler 1998	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	2/25 (8.0%)	7/20 (35%)	RR 0.23 (0.05 to 0.98)	269 fewer per 1,000 (from 332 fewer to 7 fewer)	⊕○○○ Very low	CRITICAL
Adverse events												
Tyler 1998									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction
c. Not reporting results or SDs
d. 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Early start of OKC versus delayed start of OKC exercises in rehabilitation after ACLR

Bibliography: Heijne 2007, Fukuda 2013

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early start of OKC	Late start of OKC	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength – Quadriceps ISOM 60° (better indicated by higher values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.03 lower (0.69 lower to 0.64 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps CON 90°/s (better indicated by higher values) – 3 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	34	28	SMD 0.47 lower (0.97 lower to 0.04 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps ISOM 60° (better indicated by higher values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.37 higher (0.30 lower to 1.04 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps CON 90°/s (better indicated by higher values) – 5 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	29	26	SMD 0.18 lower (0.71 lower to 0.35 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps ISOM 60° (better indicated by higher values) – 7 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.39 higher (0.28 lower to 1.06 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps CON 90°/s (better indicated by higher values) – 7 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.05 higher (0.48 lower to 0.58 higher)		⊕○○○ Very low	CRITICAL
Strength – Quadriceps ISOM 60° (better indicated by higher values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.46 higher (0.21 lower to 1.14 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring ISOM 60° (better indicated by higher values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.25 lower (0.92 lower to 0.41 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring CON 90°/s (better indicated by higher values) – 3 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	34	28	SMD 0.11 higher (0.39 lower to 0.61 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring ISOM 60° (better indicated by higher values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.37 lower (1.04 lower to 0.30 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring CON 90°/s (better indicated by higher values) – 5 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	29	26	SMD 0.12 higher (0.41 lower to 0.65 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring ISOM 60° (better indicated by higher values) – 7 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.19 lower (0.85 lower to 0.48 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring CON 90°/s (better indicated by higher values) – 7 months post-op												
1 Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	27	27	SMD 0.16 higher (0.38 lower to 0.69 higher)		⊕○○○ Very low	CRITICAL
Strength – Hamstring ISOM 60° (better indicated by higher values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.49 lower (1.17 lower to 0.18 higher)		⊕○○○ Very low	CRITICAL
Laxity												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early start of OKC	Late start of OKC	Relative (95% CI)	Absolute (95% CI)		
2												
Laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 3 months post-op												
2 Fukuda 2013 Heijne 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	52	45	SMD 0.29 higher (0.11 lower to 0.69 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 5 months post-op												
2 Fukuda 2013 Heijne 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	47	43	SMD 0.37 higher (0.05 lower to 0.79 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 7 months post-op												
2 Fukuda 2013 Heijne 2007	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	45	44	SMD 0.24 higher (0.18 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.49 lower (1.16 lower to 0.19 higher)		⊕○○○ Very low	CRITICAL
Pain												
2												
Pain VAS scale (better indicated by lower values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.81 lower (1.5 lower to 0.12 lower)		⊕○○○ Very low	CRITICAL
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	34	28	The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain VAS scale (better indicated by lower values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.25 lower (0.92 lower to 0.41 higher)		⊕○○○ Very low	CRITICAL
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	34	28	The authors reported no statistically significant difference between the two groups		⊕○○○ Very low	CRITICAL
Pain VAS scale (better indicated by lower values) – 7 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.29 higher (0.38 lower to 0.96 higher)		⊕○○○ Very low	CRITICAL
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	34	28	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain VAS scale (better indicated by lower values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.33 higher (0.34 lower to 1 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - Lysholm scale (better indicated by higher values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.12 lower (0.78 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.12 higher (0.54 lower to 0.78 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 6 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.16 higher (0.51 lower to 0.82 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale (better indicated by higher values) – 17 months post-op												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early start of OKC	Late start of OKC	Relative (95% CI)	Absolute (95% CI)		
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.51 lower (1.19 lower to 0.16 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - single leg hop for distance scale (better indicated by higher values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.2 higher (0.46 lower to 0.87 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop scale (better indicated by higher values) – 3 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.2 higher (0.47 lower to 0.86 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance scale (better indicated by higher values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.06 higher (0.6 lower to 0.73 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop scale (better indicated by higher values) – 5 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.33 higher (0.33 lower to 1 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance scale (better indicated by higher values) – 7 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.34 lower (1.01 lower to 0.33 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop scale (better indicated by higher values) – 7 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.21 higher (0.46 lower to 0.87 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance scale (better indicated by higher values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.22 higher (0.45 lower to 0.88 higher)		⊕○○○ Very low	IMPORTANT
Functional - crossover hop scale (better indicated by higher values) – 17 months post-op												
1 Fukuda 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	17	SMD 0.34 higher (0.33 lower to 1.01 higher)		⊕○○○ Very low	IMPORTANT
Balance												
1												
Balance – postural sway – 3 months post-op												
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	34	28	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Balance - postural sway – 5 months post-op												
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	29	26	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Balance - postural sway – 7 months post-op												
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
ROM												
1												
Knee flexion and extension												
Heijne 2007	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	27	27	No significant group differences were found in terms of knee extension and knee flexion 3, 5 and 7 months postoperatively.		⊕○○○ Very low	CRITICAL
Adverse events												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early start of OKC	Late start of OKC	Relative (95% CI)	Absolute (95% CI)		
Heijne 2007									None reported			CRITICAL
Fukuda 2013									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Early isometric strengthening versus usual care in rehabilitation after ACLR

Bibliography: Shaw 2005

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early isometric strengthening	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 6 months post-op												
1	Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.13 lower (0.52 lower to 0.26 higher)	⊕○○○ Very low	CRITICAL
Strength - Quadriceps ECC 60°/s (better indicated by higher values) – 6 months post-op												
1	Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.15 lower (0.54 lower to 0.24 higher)	⊕○○○ Very low	CRITICAL
Laxity												
Laxity – KT1000 mean difference – 3 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	55	48	Authors reported no significant difference between groups.		⊕○○○ Very low	CRITICAL
Laxity – KT1000 mean difference – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	55	48	Authors reported that a significantly greater proportion of subjects in the "no quadriceps" exercise group demonstrated abnormal laxity at 6 months.		⊕○○○ Very low	CRITICAL
Laxity - KT1000 15lb - subjects who displayed abnormal laxity >3mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	3/47 (6.4%)	12/44 (27.3%)	RR 0.23 (0.07 to 0.77)	210 fewer per 1,000 (from 254 fewer to 63 fewer)	⊕○○○ Very low	CRITICAL
Laxity - KT1000 15lb - subjects who displayed abnormal laxity >5mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	0/47 (0.0%)	2/44 (4.5%)	RR 0.19 (0.01 to 3.80)	37 fewer per 1,000 (from 45 fewer to 127 more)	⊕○○○ Very low	CRITICAL
Laxity - KT1000 20lb - subjects who displayed abnormal laxity >3mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	10/47 (21.3%)	13/44 (29.5%)	RR 0.72 (0.35 to 1.47)	83 fewer per 1,000 (from 192 fewer to 139 more)	⊕○○○ Very low	CRITICAL
Laxity - KT1000 20lb - subjects who displayed abnormal laxity >5mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	1/47 (2.1%)	7/44 (15.9%)	RR 0.13 (0.02 to 1.04)	138 fewer per 1,000 (from 156 fewer to 6 more)	⊕○○○ Very low	CRITICAL
Laxity - KT1000 max manual - subjects who displayed abnormal laxity >3mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	17/47 (36.2%)	16/44 (36.4%)	RR 0.99 (0.58 to 1.72)	4 fewer per 1,000 (from 153 fewer to 262 more)	⊕○○○ Very low	CRITICAL
Laxity - KT1000 max manual - subjects who displayed abnormal laxity >5mm difference between limbs – 6 months post-op												
Shaw 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a,d}	none	1/47 (2.1%)	9/44 (20.5%)	RR 0.10 (0.01 to 0.79)	184 fewer per 1,000 (from 203 fewer to 43 fewer)	⊕○○○ Very low	CRITICAL
ROM												
1												
ROM - active knee flexion (better indicated by higher values) – 2 weeks post-op												

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early isometric strengthening	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.2 higher (0.19 lower to 0.59 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee flexion (better indicated by higher values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.43 higher (0.04 higher to 0.82 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee flexion (better indicated by higher values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.12 lower (0.51 lower to 0.26 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee flexion (better indicated by higher values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.14 lower (0.52 lower to 0.25 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee extension (better indicated by lower values) – 2 weeks post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.44 higher (0.05 higher to 0.83 higher)		⊕○○○ Very low	CRITICAL
ROM - passive knee extension (better indicated by lower values) – 2 weeks post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0 (0.39 lower to 0.39 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee extension (better indicated by lower values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.48 higher (0.09 higher to 0.87 higher)		⊕○○○ Very low	CRITICAL
ROM - passive knee extension (better indicated by lower values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.26 higher (0.13 lower to 0.65 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee extension (better indicated by lower values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.07 higher (0.32 lower to 0.45 higher)		⊕○○○ Very low	CRITICAL
ROM - passive knee extension (better indicated by lower values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.12 lower (0.5 lower to 0.27 higher)		⊕○○○ Very low	CRITICAL
ROM - active knee extension (better indicated by lower values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.19 lower (0.58 lower to 0.2 higher)		⊕○○○ Very low	CRITICAL
ROM - passive knee extension (better indicated by lower values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.24 lower (0.63 lower to 0.15 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - Cincinnati symptoms (better indicated by higher values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.1 higher (0.29 lower to 0.49 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.31 higher (0.08 lower to 0.7 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati symptoms (better indicated by higher values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.09 lower (0.47 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.22 higher (0.17 lower to 0.61 higher)		⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early isometric strengthening	Usual care	Relative (95% CI)	Absolute (95% CI)		
PROM - Cincinnati symptoms (better indicated by higher values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.6 higher (0.21 higher to 1 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.29 higher (0.1 lower to 0.68 higher)		⊕○○○ Very low	CRITICAL
Pain												
1												
Pain - pain at rest (better indicated by lower values) – 2 weeks post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.17 higher (0.22 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
Pain - pain with exercise (better indicated by lower values) – 2 weeks post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.35 higher (0.04 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
Pain - pain at rest (better indicated by lower values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0 (0.39 lower to 0.39 higher)		⊕○○○ Very low	CRITICAL
Pain - pain with exercise (better indicated by lower values) – 1 month post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.23 lower (0.62 lower to 0.16 higher)		⊕○○○ Very low	CRITICAL
Pain - pain at rest (better indicated by lower values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.14 lower (0.53 lower to 0.25 higher)		⊕○○○ Very low	CRITICAL
Pain - pain with exercise (better indicated by lower values) – 3 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.15 higher (0.24 lower to 0.53 higher)		⊕○○○ Very low	CRITICAL
Pain - pain at rest (better indicated by lower values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0 (0.39 lower to 0.39 higher)		⊕○○○ Very low	CRITICAL
Pain - pain with exercise (better indicated by lower values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.05 lower (0.44 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
Functional												
1												
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.18 higher (0.2 lower to 0.57 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop for distance (better indicated by higher values) – 6 months post-op												
1 Shaw 2005	randomised trial	very serious	not assessable	not serious	serious ^a	none	55	48	SMD 0.15 higher (0.24 lower to 0.54 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Shaw 2005									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Early leg press strengthening versus usual care in rehabilitation after ACLR

Bibliography: Kinikli 2014

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early CON/ECC strengthening	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.03 lower (0.71 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.53 higher (0.17 lower to 1.23 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.45 higher (0.24 lower to 1.14 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.46 higher (0.23 lower to 1.15 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - Lysholm scale (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 1.14 higher (0.4 higher to 1.89 higher)		⊕○○○ Very low	CRITICAL
PROM - ACL-QOL (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 1.61 higher (0.81 higher to 2.41 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - Single leg hop for distance (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.8 higher (0.09 higher to 1.51 higher)		⊕○○○ Very low	IMPORTANT
Functional - vertical hop (better indicated by higher values) – 4 months post-op												
1 Kinikli 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	17	SMD 0.9 higher (0.18 higher to 1.62 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Kinikli 2014									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

a. Total participants <800

b. 95% CI of an SMD extends > 0.5 points in either direction

Early hamstring isokinetic training versus late strengthening in rehabilitation after ACLR

Bibliography: Sekir 2010

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early H/S isokinetic training	Late H/S isokinetic training	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps ISOM 60° (better indicated by higher values) – 1 month post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.2 lower (0.77 lower to 0.37 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 60° (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.06 lower (0.63 lower to 0.51 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.19 lower (0.76 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.23 lower (0.8 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.34 lower (0.92 lower to 0.23 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 3 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.34 lower (0.91 lower to 0.23 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.45 lower (1.02 lower to 0.13 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 4 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.42 lower (1 lower to 0.15 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 1 year post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	14	SMD 0.54 lower (1.33 lower to 0.25 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 1 year post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	14	SMD 0.67 lower (1.47 lower to 0.12 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30° (better indicated by higher values) – 1 month post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.6 higher (0.02 higher to 1.19 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30° (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.77 higher (0.18 higher to 1.36 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.58 higher (0 to 1.16 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 2 months post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	26	22	SMD 0.16 higher (0.41 lower to 0.72 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early H/S isokinetic training	Late H/S isokinetic training	Relative (95% CI)	Absolute (95% CI)		
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 0.66 higher (0.08 higher to 1.25 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 3 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 0.45 higher (0.13 lower to 1.02 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 4 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 0.55 higher (0.03 lower to 1.13 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 4 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 0.39 higher (0.18 lower to 0.97 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 1 year post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	14	SMD 0.9 higher (0.08 higher to 1.71 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 1 year post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	14	SMD 0.05 higher (0.72 lower to 0.82 higher)	⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - Cincinnati symptoms (better indicated by higher values) – 1 month post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.2 higher (0.58 higher to 1.82 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 1 month post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.19 higher (0.57 higher to 1.81 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati symptoms (better indicated by higher values) – 2 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.08 higher (0.47 higher to 1.69 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 2 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.08 higher (0.47 higher to 1.69 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati symptoms (better indicated by higher values) – 3 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.14 higher (0.52 higher to 1.75 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 3 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.22 higher (0.59 higher to 1.84 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati symptoms (better indicated by higher values) – 4 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 0.53 higher (0.05 lower to 1.11 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 4 months post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	26	22	SMD 1.54 higher (0.88 higher to 2.19 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati symptoms (better indicated by higher values) – 1 year post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	14	SMD 0.93 higher (0.12 higher to 1.75 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati ADL (better indicated by higher values) – 1 year post-op												
1	Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	12	14	SMD 0.95 higher (0.13 higher to 1.77 higher)	⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early H/S isokinetic training	Late H/S isokinetic training	Relative (95% CI)	Absolute (95% CI)		
PROM - Lysholm (better indicated by higher values) – 1 year post-op												
1 Sekir 2010	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0 (0.62 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
Adverse events												
Sekir 2010									None reported		CRITICAL	

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Early eccentric training versus usual care in rehabilitation after ACLR

Bibliography: Gerber 2007a, Gerber 2007b, Gerber 2009

Ne of studies	Study design	Certainty assessment					Ne of patients		Effect		Certainty	Importance
		Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
3												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.74 higher (0.1 higher to 1.38 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 6 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	16	SMD 0.51 higher (0.2 lower to 1.21 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.68 higher (0.04 higher to 1.31 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 60°/s (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.24 higher (0.38 lower to 0.86 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 60°/s (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.52 higher (0.11 lower to 1.15 higher)	⊕○○○ Very low	CRITICAL	
Atrophy												
2												
Atrophy - Quadriceps muscle volume change (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 1.25 higher (0.56 higher to 1.93 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Gluteus maximus muscle volume change (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 1.35 higher (0.66 higher to 2.04 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Hamstring muscle volume change (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.14 lower (0.76 lower to 0.48 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Gracilis muscle volume change (better indicated by higher values) – 4 months post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.1 higher (0.52 lower to 0.72 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Quadriceps muscle volume (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.49 higher (0.14 lower to 1.12 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Quadriceps muscle volume change (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.79 higher (0.14 higher to 1.43 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Gluteus Maximus muscle volume (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.14 higher (0.48 lower to 0.76 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Gluteus Maximus muscle volume change (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.75 higher (0.11 higher to 1.4 higher)	⊕○○○ Very low	CRITICAL	
Atrophy - Hamstring muscle volume change (better indicated by higher values) – 1 year post-op												
1	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.14 higher (0.48 lower to 0.76 higher)	⊕○○○ Very low	CRITICAL	

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

No of studies	Study design	Risk of bias	Certainty assessment				No of patients		Effect		Certainty	Importance
			Inconsistency	Indirectness	Imprecision	Other considerations	Early eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Atrophy - Gracilis muscle volume change (better indicated by higher values) – 1 year post-op												
1 Gerber 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.09 higher (0.53 lower to 0.71 higher)	⊕○○○ Very low	CRITICAL	
Patient reported outcomes (PROM)												
3												
PROM - ADLS-KOOS (better indicated by higher values) – 4 months post-op												
1 Gerber 2007b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.2 lower (0.82 lower to 0.43 higher)	⊕○○○ Very low	CRITICAL	
PROM - Lysholm (better indicated by higher values) – 4 months post-op												
1 Gerber 2007b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0 (0.62 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
PROM - ADLS-KOOS (better indicated by higher values) – 6 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.18 higher (0.52 lower to 0.87 higher)	⊕○○○ Very low	CRITICAL	
PROM - ADLS-KOOS (better indicated by higher values) – 1 year post-op												
1 Gerber 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0 (0.62 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
PROM - Lysholm scale (better indicated by higher values) – 1 year post-op												
1 Gerber 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0 (0.62 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
Laxity												
3												
laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 4 months post-op												
1 Gerber 2007b	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.07 lower (0.69 lower to 0.55 higher)	⊕○○○ Very low	CRITICAL	
laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 6 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.07 lower (0.76 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
laxity - laxity difference between limbs measured by KT-1000 (better indicated by lower values) – 1 year post-op												
1 Gerber 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	20	SMD 0.15 lower (0.77 lower to 0.47 higher)	⊕○○○ Very low	CRITICAL	
Pain												
1												
Pain - knee pain (better indicated by lower values) – 4 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.07 lower (0.77 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
Pain - thigh pain (better indicated by lower values) – 4 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.03 higher (0.66 lower to 0.72 higher)	⊕○○○ Very low	CRITICAL	
Swelling												
1												
Swelling - Joint circumference difference mid patella (better indicated by lower values) – 4 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.19 higher (0.51 lower to 0.88 higher)	⊕○○○ Very low	CRITICAL	
Swelling - Joint circumference difference mid patella (better indicated by lower values) – 6 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.08 lower (0.77 lower to 0.62 higher)	⊕○○○ Very low	CRITICAL	
Functional activities												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Early eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
3												
Functional - single leg hop for distance (better indicated by higher values) – 4 months post-op												
1 Gerber 2007b	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.53 higher (0.1 lower to 1.17 higher)	⊕○○○ Very low		IMPORTANT
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op												
1 Gerber 2007a	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	16	16	SMD 0.43 higher (0.27 lower to 1.14 higher)	⊕○○○ Very low		IMPORTANT
Functional - single leg hop for distance (better indicated by higher values) – 1 year post-op												
1 Gerber 2009	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 0.72 higher (0.08 higher to 1.36 higher)	⊕○○○ Very low		IMPORTANT
Adverse events												
Gerber 2007a									None reported			CRITICAL
Gerber 2007b									None reported			CRITICAL
Gerber 2009									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Open Kinetic Chain versus Close Kinetic Chain in rehabilitation after ACLR

Bibliography: Bynum 1995, Morrissey 2000, Mikkelsen 2000, Hooper 2001, Morrissey 2002, Perry 2005, Kang 2012, Chrzan 2013, Ucar 2014

No of studies	Study design	Certainty assessment					No of patients		Effect		Certainty	Importance
		Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Open Kinetic Chain	Close Kinetic Chain	Relative (95% CI)	Absolute (95% CI)		
Strength												
3												
Strength - Quadriceps ISOM 60° (better indicated by higher values) – 6 weeks post-op												
1 Morrissey 2002	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.14 lower (0.74 lower to 0.46 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 30-60°/s (better indicated by higher values) – 6 months post-op												
2 Mikkelsen 2000 Kang 2012	randomised trials	very serious	not serious I ² = 0%	not serious	serious ^a	none	40	40	SMD 0.52 higher (0.07 higher to 0.97 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps ECC 30°/s (better indicated by higher values) – 6 months post-op												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.27 higher (0.33 lower to 0.86 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 120-180°/s (better indicated by higher values) – 6 months post-op												
2 Mikkelsen 2000 Kang 2012	randomised trials	very serious	not serious I ² = 14%	not serious	serious ^a	none	40	40	SMD 0.48 higher (0.00 lower to 0.96 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps ECC 120°/s (better indicated by higher values) – 6 months post-op												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.2 higher (0.4 lower to 0.79 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps CON 240°/s (better indicated by higher values) – 6 months post-op												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.12 higher (0.47 lower to 0.71 higher)	⊕○○○ Very low	CRITICAL	
Strength - Quadriceps ECC 240°/s (better indicated by higher values) – 6 months post-op												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.15 higher (0.44 lower to 0.74 higher)	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 60°/s (better indicated by higher values) – 6 months post-op												
1 Kang 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.57 higher (0.09 lower to 1.24 higher)	⊕○○○ Very low	CRITICAL	
Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	22	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL	
Strength - Hamstring ECC 60°/s (better indicated by higher values) – 6 months post-op												
Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	22	22	SDs are not reported. The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low	CRITICAL	
Strength - Hamstring CON 180°/s (better indicated by higher values) – 6 months post-op												
1 Kang 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.66 higher (0.01 lower to 1.33 higher)	⊕○○○ Very low	CRITICAL	
Strength - 1RM squat leg press (better indicated by higher values) – 6 months post-op												
1 Kang 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	18	18	SMD 0.42 higher (0.24 lower to 1.08 higher)	⊕○○○ Very low	CRITICAL	
Laxity												
4												
Laxity – 6 weeks post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Open Kinetic Chain	Close Kinetic Chain	Relative (95% CI)	Absolute (95% CI)		
Morrissey 2000	randomised trial	serious	not assessable	not serious	very serious ^{a, c}	none	18	18	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity - (better indicated by lower values) – 3 months post-op												
1 Perry 2005	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	23	24	SMD 0 (0.57 lower to 0.57 higher)		⊕○○○ Very low	CRITICAL
Laxity - (better indicated by lower values) – 6 months post-op												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	22	22	SMD 0.21 lower (0.81 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Laxity - laxity 90N – more than 1 year post-op												
Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	32	32	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Laxity - laxity max – more than 1 year post-op												
Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	32	32	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Pain												
3												
Pain VAS scale (better indicated by lower values) – 6 weeks post-op												
1 Morrissey 2002	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	22	21	SMD 0.18 lower (0.78 lower to 0.41 higher)		⊕○○○ Very low	CRITICAL
Pain VAS scale (better indicated by lower values) – 3 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.58 higher (0.07 higher to 1.1 higher)		⊕○○○ Very low	CRITICAL
Pain VAS scale (better indicated by lower values) – 6 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	28	28	SMD 0.49 higher (0.04 lower to 1.03 higher)		⊕○○○ Very low	CRITICAL
Patellofemoral pain – number of patients with patellofemoral pain – more than 1 year post-op												
1 Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	10/41 (24.4%)	8/44 (18.2%)	RR 1.34 (0.59 to 3.07)	62 more per 1,000 (from 75 fewer to 376 more)	⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
6												
PROM - Hughston Clinic Questionnaire (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	18	18	SMD 0 (0.65 lower to 0.65 higher)		⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Questionnaire Question 1 (better indicated by higher values) – 6 weeks post-op												
1 Morrissey 2002	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	22	21	SMD 0.31 lower (0.91 lower to 0.29 higher)		⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Questionnaire Question 2 (better indicated by higher values) – 6 weeks post-op												
1 Morrissey 2002	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	22	21	SMD 0.47 lower (1.08 lower to 0.14 higher)		⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Questionnaire Question 25 (better indicated by higher values) – 6 weeks post-op												
1 Morrissey 2002	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	22	21	SMD 0.16 lower (0.76 lower to 0.44 higher)		⊕○○○ Very low	CRITICAL
PROM - IKDC (better indicated by higher values) – 2 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Open Kinetic Chain	Close Kinetic Chain	Relative (95% CI)	Absolute (95% CI)		
1 Chrzan 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	20	20	SMD 1.5 higher (0.79 higher to 2.21 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 2-3 months post-op												
2 Chrzan 2013 Ucar 2014	randomised trials	very serious	serious I ² =0%	not serious	very serious ^{a, b}	none	50	50	SMD 0.24 higher (0.54 lower to 1.02 higher)		⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Questionnaire (better indicated by higher values) – 3 months post-op												
1 Perry 2005	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	24	25	SMD 0.23 lower (0.79 lower to 0.33 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 6 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	28	28	SMD 1.1 lower (1.66 lower to 0.53 lower)		⊕○○○ Very low	CRITICAL
PROM - Lysholm scale – more than 1 year post-op												
Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	41	44	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Tegner – more than 1 year post-op												
Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	41	44	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM - Overall patient assessment rating – more than 1 year post-op												
Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, c}	none	41	44	SDs are not reported. The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Atrophy												
1												
Atrophy - thigh circumference difference (better indicated by lower values) – 3 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.45 higher (0.06 lower to 0.97 higher)		⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference difference (better indicated by lower values) – 6 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	28	28	SMD 0.2 higher (0.32 lower to 0.73 higher)		⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
2												
ROM - knee flexion (better indicated by higher values) – 3 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.57 lower (1.08 lower to 0.05 lower)		⊕○○○ Very low	IMPORTANT
ROM - knee flexion (better indicated by higher values) – 6 months post-op												
1 Ucar 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	28	28	SMD 0.38 lower (0.91 lower to 0.15 higher)		⊕○○○ Very low	IMPORTANT
ROM – patients with extension deficit >5deg – 1 year post-op												
1 Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	1/32 (3.1%)	2/32 (6.3%)	RR 0.50 (0.05 to 5.24)	31 fewer per 1,000 (from 59 fewer to 265 more)	⊕○○○ Very low	IMPORTANT
ROM - patients with flexion deficit >10deg – 1 year post-op												
1 Bynum 1995	randomised trial	very serious	not assessable	not serious	very serious ^{a, d}	none	0/32 (0.0%)	2/32 (6.3%)	RR 0.20 (0.01 to 4.01)	50 fewer per 1,000 (from 62 fewer to 188 more)	⊕○○○ Very low	IMPORTANT
Functional activities												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Open Kinetic Chain	Close Kinetic Chain	Relative (95% CI)	Absolute (95% CI)		
2												
Functional - knee flexion at heel-strike during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.31 higher (0.36 lower to 0.97 higher)		⊕○○○ Very low	IMPORTANT
Functional - Midstance excursion angle during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.49 lower (1.16 lower to 0.19 higher)		⊕○○○ Very low	IMPORTANT
Functional - Knee flexion at toe-off during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.24 higher (0.42 lower to 0.91 higher)		⊕○○○ Very low	IMPORTANT
Functional - Flexor impulse during walking (better indicated by higher values) – 6 weeks post-op												
Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.54 higher (0.14 lower to 1.21 higher)		⊕○○○ Very low	IMPORTANT
Functional - Extensor impulse during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.29 lower (0.96 lower to 0.38 higher)		⊕○○○ Very low	IMPORTANT
Functional - Eccentric energy during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0.55 lower (1.23 lower to 0.13 higher)		⊕○○○ Very low	IMPORTANT
Functional - Concentric energy during walking (better indicated by higher values) – 6 weeks post-op												
1 Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	17	18	SMD 0 (0.66 lower to 0.66 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance (better indicated by higher values) – 3 months post-op												
1 Perry 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	14	15	SMD 0.18 higher (0.55 lower to 0.91 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg vertical jump (better indicated by higher values) – 3 months post-op												
1 Perry 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	15	15	SMD 0.22 lower (0.94 lower to 0.5 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg crossover jump (better indicated by higher values) – 3 months post-op												
1 Perry 2005	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	9	8	SMD 0.09 lower (1.04 lower to 0.86 higher)		⊕○○○ Very low	IMPORTANT
Functional – biomechanics during stair ascent and descent												
Hooper 2001	randomised trial	serious	not assessable	not serious	very serious ^{a, c}	none	17	18	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Time to return to sport (better indicated by lower values)												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	12	5	SMD 1.07 lower (2.19 lower to 0.05 higher)		⊕○○○ Very low	CRITICAL
Number of patients that returned to sport at the same level												
1 Mikkelsen 2000	randomised trial	very serious	not assessable	not serious	serious ^a	none	12/22 (54.5%)	5/22 (22.7%)	RR 2.40 (1.02 to 5.67)	318 more per 1,000 (from 5 more to 1,000 more)	⊕○○○ Very low	CRITICAL
Adverse events												
Bynum 1995									2 subjects in the OKC group had early graft failure, one occurred as a result of a fall several weeks after surgery, the cause of the other is unknown.			CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Open Kinetic Chain	Close Kinetic Chain	Relative (95% CI)	Absolute (95% CI)		
Morrissey 2000									None reported			CRITICAL
Mikkelsen 2000									None reported			CRITICAL
Hooper 2001									None reported			CRITICAL
Morrissey 2002									None reported			CRITICAL
Perry 2005									None reported			CRITICAL
Kang 2012									None reported			CRITICAL
Chrzan 2013									None reported			CRITICAL
Ucar 2014									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference; RR: risk ratio

- Total participants <800
- 95% CI of an SMD extends > 0.5 points in either direction
- Not reporting results or SDs
- 95% CI boundaries cross the arbitrary thresholds of 0.75 and 1.25

Eccentric training versus usual care in rehabilitation after ACLR

Bibliography: Friedmann-bette 2018, Milandri 2021, Kasmi 2021

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 5-6 months post-op												
2 Friedmann-bette 2018 Milandri 2021	randomised trials	very serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	33	26	SMD 0.08 lower (0.6 lower to 0.43 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s LSI% (better indicated by higher values) – 5-6 months post-op												
2 Friedmann-bette 2018 Milandri 2021	randomised trials	very serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	33	26	SMD 0.22 lower (0.74 lower to 0.29 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 5-6 months post-op												
2 Friedmann-bette 2018 Milandri 2021	randomised trials	very serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	33	26	SMD 0.04 lower (0.56 lower to 0.47 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s LSI% (better indicated by higher values) – 5-6 months post-op												
2 Friedmann-bette 2018 Milandri 2021	randomised trials	very serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	33	26	SMD 0.13 lower (0.65 lower to 0.38 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ECC 60°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.1 lower (0.94 lower to 0.74 higher)		⊕⊕○○ Low	CRITICAL
Strength - Quadriceps ECC 120°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.21 lower (1.06 lower to 0.63 higher)		⊕⊕○○ Low	CRITICAL
Strength - Hamstring CON 60°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.17 higher (0.67 lower to 1.01 higher)		⊕⊕○○ Low	CRITICAL
Strength - Hamstring CON 120°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.26 lower (1.11 lower to 0.58 higher)		⊕⊕○○ Low	CRITICAL
Strength - Hamstring ECC 60°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.1 lower (0.94 lower to 0.74 higher)		⊕⊕○○ Low	CRITICAL
Strength - Hamstring ECC 120°/s LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.01 higher (0.83 lower to 0.85 higher)		⊕⊕○○ Low	CRITICAL
Atrophy												
2												
Atrophy - lean thigh volume LSI% (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	12	10	SMD 0.53 lower (1.39 lower to 0.33 higher)		⊕⊕○○ Low	CRITICAL
Atrophy - cross-sectional area of both quadriceps femoris muscles MRI LSI% (better indicated by higher values) – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Friedmann-bette 2018	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	21	16	SMD 0.47 higher (0.19 lower to 1.13 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
2												
PROM - Lysholm (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0.59 higher (0.31 lower to 1.49 higher)		⊕○○○ Very low	CRITICAL
PROM - ACL-RSI (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 1.23 higher (0.26 higher to 2.21 higher)		⊕○○○ Very low	CRITICAL
PROM - IKDC (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.14 lower (0.98 lower to 0.7 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS pain (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.19 lower (1.03 lower to 0.65 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS symptoms (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.16 higher (0.68 lower to 1 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.26 lower (1.1 lower to 0.58 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS Sport (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.21 lower (1.05 lower to 0.63 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS QOL (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.2 lower (1.04 lower to 0.64 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 PCL (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.1 lower (0.94 lower to 0.74 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 MCS (better indicated by higher values) – 5 months post-op												
1 Milandri 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	10	SMD 0.09 higher (0.75 lower to 0.92 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - single leg hop for distance (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 5.93 higher (3.7 higher to 8.15 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance without hands (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 4.96 higher (3.03 higher to 6.88 higher)		⊕○○○ Very low	IMPORTANT
Functional - triple hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 4.82 higher (2.94 higher to 6.7 higher)		⊕○○○ Very low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Functional - crossover hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 5.4 higher (3.34 higher to 7.47 higher)	⊕○○○ Very low	IMPORTANT	
Functional - 6m-timed hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 5.15 higher (3.17 higher to 7.14 higher)	⊕○○○ Very low	IMPORTANT	
Balance												
1												
Balance - Y balance test (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	10	10	SMD 0 (0.88 lower to 0.88 higher)	⊕○○○ Very low	IMPORTANT	
Adverse events												
Friedmann- bette 2018									None reported		CRITICAL	
Milandri 2021									None reported		CRITICAL	
Kasmi 2021									None reported		CRITICAL	

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Isokinetic training versus isotonic training in rehabilitation after ACLR

Bibliography: Tsaklis 2002, Vidmar 2020

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Isokinetic training	Isotonic training	Relative (95% CI)	Absolute (95% CI)		
Strength												
2												
Strength - Quadriceps ISOM 60° (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 1.2 higher (0.41 higher to 1.99 higher)	⊕⊕○○ Low		CRITICAL
Tsaklis 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	Isotonic training showed significant better results compared to isokinetic training.	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.01 higher (0.71 lower to 0.72 higher)	⊕⊕○○ Low		CRITICAL
Tsaklis 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	Isokinetic training showed significant better results compared to isotonic training.	⊕○○○ Very low		CRITICAL
Strength - Quadriceps ECC 60°/s (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.93 higher (0.17 higher to 1.69 higher)	⊕⊕○○ Low		CRITICAL
Strength - H/Q ratio CON 60°/s – 3 months post-op												
Tsaklis 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	Isokinetic training showed significant better results compared to isotonic training.	⊕○○○ Very low		CRITICAL
Strength - 1RM of quadriceps – 3 months post-op												
Tsaklis 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	Combination of isotonic and isokinetic training showed significant differences compared to the other groups.	⊕○○○ Very low		CRITICAL
Atrophy												
2												
Atrophy - vastus lateralis cross-sectional area (cm²) (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.48 lower (1.21 lower to 0.25 higher)	⊕⊕○○ Low		CRITICAL
Atrophy - vastus intermedius cross-sectional area (cm²) (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.18 lower (0.89 lower to 0.54 higher)	⊕⊕○○ Low		CRITICAL
Atrophy - vastus medialis cross-sectional area (cm²) (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.31 lower (1.03 lower to 0.41 higher)	⊕⊕○○ Low		CRITICAL
Atrophy - rectus femoris cross-sectional area (cm²) (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0 (0.72 lower to 0.72 higher)	⊕⊕○○ Low		CRITICAL
Atrophy - quadriceps cross-sectional area (cm²) (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	not serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.42 lower (1.15 lower to 0.3 higher)	⊕⊕○○ Low		CRITICAL
Atrophy - thigh circumference – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Isokinetic training	Isotonic training	Relative (95% CI)	Absolute (95% CI)		
Tsaklis 2002	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	15	15	The authors reported no difference between groups. Combination of isotonic and isokinetic training showed significant thigh circumference increase compared to the two training methods in isolation.		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM – Lysholm scale (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 1.05 higher (0.28 higher to 1.82 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - single leg hop for distance (better indicated by higher values) – 3 months post-op												
1 Vidmar 2020	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.16 higher (0.56 lower to 0.88 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Tsaklis 2002									None reported			CRITICAL
Vidmar 2020									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction
c. Not reporting results or SDs

Low intensity versus high intensity resistance training in rehabilitation after ACLR

Bibliography: Bieler 2014

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Low intensity	High intensity	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps power using leg extensor power rig (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0 (0.64 lower to 0.64 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - Tegner Activity Scale (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 1.15 lower (1.84 lower to 0.46 lower)		⊕○○○ Very low	CRITICAL
PROM - Lysholm Score (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.66 higher (0 to 1.32 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS Pain (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.27 higher (0.37 lower to 0.91 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS Symptoms (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.9 lower (1.57 lower to 0.23 lower)		⊕○○○ Very low	CRITICAL
PROM - KOOS ADL (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.79 higher (0.13 higher to 1.45 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS Sport (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.37 lower (1.02 lower to 0.27 higher)		⊕○○○ Very low	CRITICAL
PROM - KOOS QOL (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.28 higher (0.36 lower to 0.92 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - Single leg hop for distance (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.17 lower (0.81 lower to 0.46 higher)		⊕○○○ Very low	IMPORTANT
Functional - Triple hop (better indicated by higher values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.42 lower (1.06 lower to 0.23 higher)		⊕○○○ Very low	IMPORTANT
Laxity												
1												
Laxity - laxity (better indicated by lower values) – 5 months post-op												
1 Bieler 2014	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	20	18	SMD 0.22 lower (0.86 lower to 0.41 higher)		⊕○○○ Very low	CRITICAL
Adverse events												
Bieler 2014									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

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Aspetar clinical practice guideline on rehabilitation after ACLR: Supplementary file

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction

Motor control training versus usual care in rehabilitation after ACLR

Bibliography: Cappellino 2012, Cho 2013, Kaya 2019, Shen 2021, Hajouj 2021, Baltaci 2013, Bartels 2016

No of studies	Study design	Risk of bias	Certainty assessment				No of patients		Effect		Certainty	Importance
			Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Proprioception												
5												
Proprioception - Angle reproduction test 20° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 1.97 lower (3.08 lower to 0.86 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - Angle reproduction test 50° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 2.16 lower (3.31 lower to 1.01 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - Angle reproduction test 80° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 1.77 lower (2.84 lower to 0.7 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - Passive motion perception test 20° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 2.11 lower (3.25 lower to 0.97 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - Passive motion perception test 50° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 2.16 lower (3.31 lower to 1.01 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - Passive motion perception test 80° (better indicated by lower values) – 4 weeks post-op												
1 Shen 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	very serious ^a	10	10	SMD 1.5 lower (2.52 lower to 0.49 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - first movement deviation difference between limbs (better indicated by lower values) – 2 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.23 lower (0.95 lower to 0.49 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - first movement deviation difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.06 higher (0.65 lower to 0.78 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - second movement deviation difference between limbs (better indicated by lower values) – 2 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.52 lower (1.25 lower to 0.21 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - second movement deviation difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.38 higher (0.34 lower to 1.1 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - joint position sense 45° - Absolute error (better indicated by lower values) – 15 weeks post-op												
1 Hajouj 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 2.41 lower (3.38 lower to 1.44 lower)	⊕○○○ Very low	CRITICAL	
proprioception - joint position sense 45° - Variable error (better indicated by lower values) – 15 weeks post-op												
1 Hajouj 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 2.58 lower (3.58 lower to 1.58 lower)	⊕○○○ Very low	CRITICAL	
Proprioception - joint position sense 45° - Constant error (better indicated by lower values) – 15 weeks post-op												
1 Hajouj 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.1 higher (0.61 lower to 0.82 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - joint position sense at 15° (better indicated by lower values) post intervention; duration of program was 6 weeks												
1 Cho 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 0.12 higher (0.62 lower to 0.86 higher)	⊕○○○ Very low	CRITICAL	
Proprioception - joint position sense at 45° (better indicated by lower values) post intervention; duration of program was 6 weeks												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1	Cho 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 0.6 lower (1.36 lower to 0.16 higher)	⊕○○○ Very low	CRITICAL
Proprioception - joint position sense 15° (better indicated by lower values), 2 years after surgery												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.59 lower (1.3 lower to 0.12 higher)	⊕○○○ Very low	CRITICAL
Proprioception - joint position sense 45° (better indicated by lower values), 2 years after surgery												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.35 lower (1.05 lower to 0.35 higher)	⊕○○○ Very low	CRITICAL
Proprioception - joint position sense 75° (better indicated by lower values), 2 years after surgery												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.45 lower (1.16 lower to 0.25 higher)	⊕○○○ Very low	CRITICAL
Balance												
2												
Balance - star excursion balance test anterior direction, difference between limbs (better indicated by lower values) – 2 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.08 higher (0.64 lower to 0.79 higher)	⊕○○○ Very low	CRITICAL
Balance - star excursion balance test anterior direction, difference between limbs (better indicated by lower values) – 3 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.28 lower (1 lower to 0.44 higher)	⊕○○○ Very low	CRITICAL
Balance - star excursion balance test posteromedial direction, difference between limbs (better indicated by lower values) – 2 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.54 lower (1.27 lower to 0.19 higher)	⊕○○○ Very low	CRITICAL
Balance - star excursion balance test posteromedial direction, difference between limbs (better indicated by lower values) – 3 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.38 lower (1.1 lower to 0.34 higher)	⊕○○○ Very low	CRITICAL
Balance - star excursion balance test posterolateral direction, difference between limbs (better indicated by lower values) – 2 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.55 lower (1.28 lower to 0.19 higher)	⊕○○○ Very low	CRITICAL
Balance - star excursion balance test posterolateral direction, difference between limbs (better indicated by lower values) – 3 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.72 lower (1.47 lower to 0.02 higher)	⊕○○○ Very low	CRITICAL
Balance - Static baropodometric test (difference in loading between limbs) (better indicated by lower values) – 3 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.63 higher (0.45 lower to 1.72 higher)	⊕○○○ Very low	CRITICAL
Balance - Static baropodometric test (difference in loading between limbs) (better indicated by lower values) – 6 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.08 lower (2.22 lower to 0.07 higher)	⊕○○○ Very low	CRITICAL
Balance - Dynamic baropodometric test (difference in loading between limbs) (better indicated by lower values) – 3 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.16 higher (0.89 lower to 1.21 higher)	⊕○○○ Very low	CRITICAL
Balance - Dynamic baropodometric test (difference in loading between limbs) (better indicated by lower values) – 6 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.57 lower (1.64 lower to 0.51 higher)	⊕○○○ Very low	CRITICAL
Coordination												
1												
Coordination - concentric deviation difference between limbs (better indicated by lower values) – 2 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.28 lower (1 lower to 0.44 higher)		⊕○○○ Very low	CRITICAL
Coordination - coordination concentric deviation difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.21 higher (0.51 lower to 0.93 higher)		⊕○○○ Very low	CRITICAL
Coordination - eccentric deviation deficit difference between limbs (better indicated by lower values) – 2 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.04 higher (0.68 lower to 0.75 higher)		⊕○○○ Very low	CRITICAL
Coordination - eccentric deviation deficit difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.38 lower (1.1 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
Reactivity												
2												
Reactivity - response label time to finish difference between limbs (better indicated by lower values) – 2 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.07 higher (0.64 lower to 0.79 higher)		⊕○○○ Very low	CRITICAL
Reactivity - response label time to finish difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.25 lower (0.97 lower to 0.47 higher)		⊕○○○ Very low	CRITICAL
Reactivity - response time difference between limbs (better indicated by lower values) – 2 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.2 higher (0.52 lower to 0.92 higher)		⊕○○○ Very low	CRITICAL
Reactivity - response time difference between limbs (better indicated by lower values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.25 lower (0.97 lower to 0.46 higher)		⊕○○○ Very low	CRITICAL
Reactivity - ground contact time during a reaction test (better indicated by lower values) – 6 months post-op												
1 Bartels 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	28	22	SMD 0.36 lower (0.92 lower to 0.2 higher)		⊕○○○ Very low	CRITICAL
Reactivity - reaction time (better indicated by lower values) – 6 months post-op												
1 Bartels 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	28	22	SMD 1.21 lower (1.82 lower to 0.60 lower)		⊕○○○ Very low	CRITICAL
Patient reported outcome measures (PROM)												
3												
PROM - SF-36 Physical activity (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.73 higher (0.44 higher to 3.02 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Physical activity (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.71 higher (0.38 lower to 1.8 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Physical role (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.73 lower (1.83 lower to 0.36 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Physical role (better indicated by higher values) – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.3 higher (0.75 lower to 1.36 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Bodily pain (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.49 higher (0.58 lower to 1.56 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Bodily pain (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.42 higher (0.64 lower to 1.49 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 General health (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0 (1.05 lower to 1.05 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 General health (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.6 lower (1.68 lower to 0.48 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Vitality (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.73 lower (1.82 lower to 0.37 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Vitality (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.26 lower (1.32 lower to 0.79 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Social activity (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.2 higher (0.85 lower to 1.26 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Social activity (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.48 higher (0.59 lower to 1.55 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Emotional role (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.48 higher (0.59 lower to 1.55 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Emotional role (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0 (1.05 lower to 1.05 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Mental health (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.21 lower (1.27 lower to 0.84 higher)		⊕○○○ Very low	CRITICAL
PROM - SF-36 Mental health (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.13 higher (0.92 lower to 1.18 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) post intervention; duration program is 6 weeks												
1 Cho 2013	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 0.08 lower (0.82 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
PROM - IKDC (better indicated by higher values) – 15 weeks post-op												
1 Hajouj 2021	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 1.65 higher (0.81 higher to 2.5 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
3												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Functional - Walking Speed (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.41 lower (1.47 lower to 0.65 higher)		⊕○○○ Very low	IMPORTANT
Functional - Stride length (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.09 higher (0.96 lower to 1.13 higher)		⊕○○○ Very low	IMPORTANT
Functional - Cadence (strides/min) (better indicated by higher values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.14 lower (2.3 lower to 0.02 higher)		⊕○○○ Very low	IMPORTANT
Functional - Step Width (better indicated by lower values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.34 higher (0.72 lower to 1.4 higher)		⊕○○○ Very low	IMPORTANT
Functional - Walking Speed (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.66 lower (1.75 lower to 0.42 higher)		⊕○○○ Very low	IMPORTANT
Functional - Stride length (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.1 higher (0.95 lower to 1.14 higher)		⊕○○○ Very low	IMPORTANT
Functional - Cadence (strides/min) (better indicated by higher values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 2.39 lower (3.87 lower to 0.91 lower)		⊕○○○ Very low	IMPORTANT
Functional - Step Width (better indicated by lower values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.01 lower (2.14 lower to 0.13 higher)		⊕○○○ Very low	IMPORTANT
Functional - one leg vertical jump height (better indicated by higher values) – 6 months post-op												
1 Bartels 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	28	22	SMD 0.11 higher (0.44 lower to 0.67 higher)		⊕○○○ Very low	IMPORTANT
Functional - Single leg hop for distance (cm) (better indicated by higher values), 2 years post-op												
1 Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.18 lower (0.87 lower to 0.52 higher)		⊕○○○ Very low	IMPORTANT
Strength												
2												
Strength - Quadriceps CON 60°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.04 lower (0.76 lower to 0.68 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s LSI% (better indicated by higher values) – 3 months post-op												
1 Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.68 higher (0.06 lower to 1.42 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 30°/s (better indicated by higher values), 2 years post-op												
1 Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0 (0.69 lower to 0.7 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values), 2 years post-op												
1 Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.22 higher (0.48 lower to 0.92 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values), 2 years post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.18 lower (0.88 lower to 0.52 higher)	⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 330°/s (better indicated by higher values), 2 years post-op												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.3 lower (1 lower to 0.4 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s LSI% (better indicated by higher values) – 3 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 0.56 higher (0.17 lower to 1.29 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s LSI% (better indicated by higher values) – 3 months post-op												
1	Baltaci 2013	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	15	15	SMD 1.1 lower (1.87 lower to 0.32 lower)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 30°/s (better indicated by higher values) – 2 years post-op												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.08 higher (0.61 lower to 0.78 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 2 years post-op												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.3 higher (0.4 lower to 0.99 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 2 years post-op												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.01 higher (0.68 lower to 0.71 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 330°/s (better indicated by higher values) – 2 years post-op												
1	Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	17	15	SMD 0.17 lower (0.87 lower to 0.52 higher)	⊕○○○ Very low	CRITICAL
Atrophy												
2												
Atrophy - thigh circumference difference between limbs (cm) (better indicated by lower values) – 3 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^c	none	7	7	SMD 0.41 lower (0.65 lower to 1.48 higher)	⊕○○○ Very low	CRITICAL
Atrophy - thigh circumference difference between limbs (cm) (better indicated by lower values) – 6 months post-op												
2	Cappellino 2012 Bartels 2016	randomised trials	very serious	not serious I ² =36%	not serious	very serious ^{a,b}	none	35	29	SMD 0.51 lower (1.22 lower to 0.19 higher)	⊕○○○ Very low	CRITICAL
Atrophy – calf circumference 10cm below knee (cm) (better indicated by lower values) – 6 months post-op												
1	Bartels 2016	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	28	22	SMD 0.52 lower (1.09 lower to 0.04 higher)	⊕○○○ Very low	CRITICAL
Pain												
2												
Pain - pain (VAS) (better indicated by lower values) – 3-4 months post-op												
2	Cappellino 2012 Hajouj 2021	randomised trials	very serious	very serious I ² =82%	not serious	very serious ^{a,b}	none	22	22	SMD 0.33 lower (1.93 lower to 1.27 higher)	⊕○○○ Very low	CRITICAL
Pain - pain (VAS) (better indicated by lower values) – 6 months post-op												
1	Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.3 lower (1.36 lower to 0.75 higher)	⊕○○○ Very low	CRITICAL
Range of motion (ROM)												
2												
ROM - flexion (better indicated by higher values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.26 higher (0.07 higher to 2.44 higher)		⊕○○○ Very low	IMPORTANT
ROM - flexion (better indicated by higher values) – 6 months post-op												
2 Cappellino 2012 Bartels 2016	randomised trials	very serious	not serious I ² =31%	not serious	very serious ^{a,b}	none	35	29	SMD 0.50 higher (0.1 lower to 1.2 higher)		⊕○○○ Very low	IMPORTANT
ROM - extension (better indicated by lower values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.66 lower (1.75 lower to 0.42 higher)		⊕○○○ Very low	IMPORTANT
ROM - extension (better indicated by lower values) – 6 months post-op												
2 Cappellino 2012 Bartels 2016	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	35	29	SMD 0.37 lower (0.87 lower to 0.13 higher)		⊕○○○ Very low	IMPORTANT
Swelling												
1												
Swelling - mid-patella knee joint circumference (cm) using measuring tape; difference between limbs (better indicated by lower values) – 3 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 1.85 lower (3.18 lower to 0.53 lower)		⊕○○○ Very low	IMPORTANT
Swelling - mid-patella knee joint circumference (cm) using measuring tape; difference between limbs (better indicated by lower values) – 6 months post-op												
1 Cappellino 2012	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	7	7	SMD 0.37 lower (1.43 lower to 0.69 higher)		⊕○○○ Very low	IMPORTANT
Laxity (pivot shift, anterior drawer, and valgus stress tests)												
Kaya 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	17	15	No significant differences were reported		⊕○○○ Very low	CRITICAL
Adverse events												
Cappellino 2012									"1 subject of TG was unable to return to amateur sport previously carried out, while three subjects of CG could not return to practice it."			CRITICAL
Cho 2013									None reported			CRITICAL
Kaya 2019									None reported			CRITICAL
Shen 2021									None reported			CRITICAL
Hajouj 2021									None reported			CRITICAL
Baltaci 2013									None reported			CRITICAL
Bartels 2016									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction

Motor control training versus strength training in rehabilitation after ACLR

Bibliography: Liu-ambrose 2003, Cooper 2005

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Strength training	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps CON 45°/s (better indicated by higher values) – 1 year post-op												
1 Liu-ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 1.56 higher (0.04 higher to 3.08 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ECC 45°/s (better indicated by higher values) – 1 year post-op												
1 Liu-ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.91 higher (0.43 lower to 2.25 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 45°/s (better indicated by higher values) – 1 year post-op												
1 Liu-ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.35 higher (0.91 lower to 1.6 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ECC 45°/s (better indicated by higher values) – 1 year post-op												
1 Liu-ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.99 higher (0.37 lower to 2.35 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring Peak torque time (better indicated by lower values) – 1 year post-op												
1 Liu-ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.46 lower (1.73 lower to 0.8 higher)		⊕○○○ Very low	CRITICAL
Patient reported outcome measures (PROM)												
2												
PROM – Patient Specific Functional Scale (PSFS) activity 1 (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.36 higher (0.38 lower to 1.09 higher)		⊕○○○ Very low	CRITICAL
PROM – Patient Specific Functional Scale (PSFS) activity 2 (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.1 lower (0.83 lower to 0.63 higher)		⊕○○○ Very low	CRITICAL
PROM – Patient Specific Functional Scale (PSFS) activity 3 (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.18 lower (0.91 lower to 0.55 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - pain (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.28 higher (0.45 lower to 1.01 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - swelling (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.24 lower (0.97 lower to 0.49 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - overall condition (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.29 lower (1.02 lower to 0.45 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - walking (better indicated by higher values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Strength training	Relative (95% CI)	Absolute (95% CI)		
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0 (0.73 lower to 0.73 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - stairs (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0 (0.73 lower to 0.73 higher)		⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - squatting/kneeling (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0 (0.73 lower to 0.73 higher)		⊕○○○ Very low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 1 year post-op												
1 Liu- ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.07 higher (1.17 lower to 1.31 higher)		⊕○○○ Very low	CRITICAL
PROM - Tegner (better indicated by higher values) – 1 year post-op												
1 Liu- ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.34 higher (0.91 lower to 1.6 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
2												
Functional - single leg hop for distance (m) (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.6 higher (0.15 lower to 1.34 higher)		⊕○○○ Very low	IMPORTANT
Functional - Triple crossover hop LSI% (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.04 lower (0.77 lower to 0.69 higher)		⊕○○○ Very low	IMPORTANT
Functional - Timed 6m LSI% (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.3 higher (0.43 lower to 1.04 higher)		⊕○○○ Very low	IMPORTANT
Functional - single leg hop for distance (m) (better indicated by higher values) – 1 year post-op												
1 Liu- ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.13 lower (1.37 lower to 1.11 higher)		⊕○○○ Very low	IMPORTANT
Functional - Timed 6m LSI% (better indicated by higher values) – 1 year post-op												
1 Liu- ambrose 2003	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.18 lower (1.43 lower to 1.06 higher)		⊕○○○ Very low	IMPORTANT
Range of motion (ROM)												
1												
ROM - knee flexion (°) (better indicated by higher values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.72 higher (0.03 lower to 1.48 higher)		⊕○○○ Very low	IMPORTANT
ROM - knee extension deficit (cm) (better indicated by lower values) – 3 months post-op												
1 Cooper 2005	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	15	SMD 0.11 higher (0.61 lower to 0.84 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Liu- ambrose 2003									None reported			CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Motor control training	Strength training	Relative (95% CI)	Absolute (95% CI)		
Cooper 2005									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction

Plyometric and agility training versus usual care in rehabilitation after ACLR

Bibliography: Risberg 2007, Risberg 2009, Souissi 2011, Kasmi 2021

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + agility training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps work CON 60°/s (better indicated by higher values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.17 higher (0.32 lower to 0.65 higher)	⊕⊕○○ Low	CRITICAL
Strength - Quadriceps work CON 240°/s (better indicated by higher values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.06 higher (0.43 lower to 0.55 higher)	⊕⊕○○ Low	CRITICAL
Strength - Quadriceps work CON 60°/s (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.09 higher (0.38 lower to 0.56 higher)	⊕⊕○○ Low	CRITICAL
Strength - Quadriceps work CON 240°/s (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.12 higher (0.35 lower to 0.59 higher)	⊕⊕○○ Low	CRITICAL
Strength - Quadriceps work CON 60°/s (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.11 higher (0.36 lower to 0.59 higher)	⊕⊕○○ Low	CRITICAL
Strength - Quadriceps work CON 240°/s (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.16 lower (0.63 lower to 0.32 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 60°/s (better indicated by higher values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.14 lower (0.63 lower to 0.35 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 240°/s (better indicated by higher values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.2 lower (0.69 lower to 0.28 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 60°/s (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.09 lower (0.56 lower to 0.38 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 240°/s (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.51 lower (0.99 lower to 0.03 lower)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 60°/s (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.22 higher (0.25 lower to 0.7 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring work CON 240°/s (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.74 lower (1.23 lower to 0.25 lower)	⊕⊕○○ Low	CRITICAL
Balance												
2												
Balance - Balance index, static measured on instrumented unstable platform (KAT2000) (better indicated by lower values) – 3 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + agility training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	36	31	SMD 0.4 lower (0.89 lower to 0.08 higher)	⊕⊕○○ Low	IMPORTANT
Balance - Balance index, dynamic measured on instrumented unstable platform (KAT2000) (better indicated by lower values) – 3 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	36	31	SMD 0.19 lower (0.67 lower to 0.29 higher)	⊕⊕○○ Low	IMPORTANT
Balance - Y balance test (better indicated by higher values) – 4 months post-op												
1	Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 5.43 higher (3.36 higher to 7.51 higher)	⊕○○○ Very low	IMPORTANT
Balance - Balance index, static measured on instrumented unstable platform (KAT2000) (better indicated by lower values) – 6 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.08 lower (0.57 lower to 0.4 higher)	⊕⊕○○ Low	IMPORTANT
Balance - Balance index, dynamic measured on instrumented unstable platform (KAT2000) (better indicated by lower values) – 6 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.46 lower (0.95 lower to 0.04 higher)	⊕⊕○○ Low	IMPORTANT
Proprioception												
1												
Proprioception – threshold to detection of passive motion (better indicated by lower values) – 3 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	36	31	SMD 0.37 lower (0.85 lower to 0.11 higher)	⊕⊕○○ Low	IMPORTANT
Proprioception - threshold to detection of passive motion (better indicated by lower values) – 6 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.03 lower (0.52 lower to 0.46 higher)	⊕⊕○○ Low	IMPORTANT
Patient reported outcome measures (PROM)												
3												
PROM - Cincinnati knee rating scale - (better indicated by higher values) – 3 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	31	31	SMD 0.48 higher (0.03 lower to 0.98 higher)	⊕⊕○○ Low	CRITICAL
PROM - Lysholm (better indicated by higher values) – 4 months post-op												
1	Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 0.80 higher (0.12 lower to 1.72 higher)	⊕○○○ Very low	CRITICAL
PROM - ACL-RSI (better indicated by higher values) – 4 months post-op												
1	Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 3.29 higher (1.85 higher to 4.72 higher)	⊕○○○ Very low	CRITICAL
PROM - Cincinnati knee rating scale - (better indicated by higher values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.63 higher (0.13 higher to 1.13 higher)	⊕⊕○○ Low	CRITICAL
PROM - Cincinnati knee rating scale - (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.43 higher (0.05 lower to 0.91 higher)	⊕⊕○○ Low	CRITICAL
PROM - Cincinnati knee rating scale - (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.32 higher (0.15 lower to 0.8 higher)	⊕⊕○○ Low	CRITICAL
Functional activities												
3												
Functional - single leg hop for distance (better indicated by higher values) – 4 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + agility training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 9.8 higher (6.3 higher to 13.3 higher)		⊕○○○ Very low	CRITICAL
Functional - single leg hop for distance without hands (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 8.58 higher (5.49 higher to 11.68 higher)		⊕○○○ Very low	CRITICAL
Functional - triple hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 8.01 higher (5.11 higher to 10.92 higher)		⊕○○○ Very low	CRITICAL
Functional - crossover hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 9.68 higher (6.22 higher to 13.14 higher)		⊕○○○ Very low	CRITICAL
Functional - 6m-timed hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 8.83 higher (5.65 higher to 12.00 higher)		⊕○○○ Very low	CRITICAL
Functional - single leg hop for distance (m) (better indicated by higher values) – 6 months post-op												
2 Risberg 2009 Souissi 2011	randomised trials	serious	serious I ² =58%	not serious	very serious ^{a,b}	none	42	39	SMD 0.60 higher (0.29 lower to 1.49 higher)		⊕○○○ Very low	CRITICAL
Functional - triple hop for distance (m) (better indicated by higher values) – 6 months post-op												
2 Risberg 2009 Souissi 2011	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	42	39	SMD 0.46 higher (0.02 higher to 0.90 higher)		⊕⊕○○ Low	CRITICAL
Functional - stairs hop test (m) (better indicated by higher values) – 6 months post-op												
1 Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0 (0.49 lower to 0.49 higher)		⊕⊕○○ Low	CRITICAL
Functional – five jump test distance (m) (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.69 higher (0.33 lower to 1.71 higher)		⊕○○○ Very low	CRITICAL
Functional – agility t-test (s) reported as improvement (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.49 higher (0.51 lower to 1.49 higher)		⊕○○○ Very low	CRITICAL
Functional – squat jump height (cm) (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.53 higher (0.47 lower to 1.54 higher)		⊕○○○ Very low	CRITICAL
Functional – countermovement jump height (cm) (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.15 higher (0.83 lower to 1.13 higher)		⊕○○○ Very low	CRITICAL
Functional – arm countermovement jump height (cm) (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 0.75 higher (0.27 lower to 1.78 higher)		⊕○○○ Very low	CRITICAL
Functional – single leg countermovement jump height (cm) (better indicated by higher values) – 6 months post-op												
Souissi 2011	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	8	8	SMD 1.05 higher (0.02 lower to 2.11 higher)		⊕○○○ Very low	CRITICAL
Functional - single leg hop for distance (m) (better indicated by higher values) – 1 year post-op												
1 Risberg 2009	randomised trials	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.16 higher (0.31 lower to 0.63 higher)		⊕⊕○○ Low	CRITICAL
Functional - single leg hop for distance (m) (better indicated by higher values) – 1 year post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + agility training	Usual care	Relative (95% CI)	Absolute (95% CI)		
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.01 higher (0.46 lower to 0.48 higher)	⊕⊕○○ Low	CRITICAL
Functional - triple hop for distance (m) (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.07 higher (0.4 lower to 0.54 higher)	⊕⊕○○ Low	CRITICAL
Functional - stairs hop test (better indicated by higher values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.11 higher (0.37 lower to 0.58 higher)	⊕⊕○○ Low	CRITICAL
functional - triple hop for distance (m) (better indicated by higher values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.02 higher (0.45 lower to 0.49 higher)	⊕⊕○○ Low	CRITICAL
Functional - stairs hop test (better indicated by higher values) – 2 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.08 lower (0.56 lower to 0.39 higher)	⊕⊕○○ Low	CRITICAL
Pain												
2												
Pain - pain VAS (better indicated by lower values) – 3 months post-op												
1	Risberg 2007	randomised trial	very serious	not assessable	not serious	serious ^a	none	36	31	SMD 0.28 higher (0.2 lower to 0.76 higher)	⊕○○○ Very low	CRITICAL
Pain - pain VAS (better indicated by lower values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.19 lower (0.66 lower to 0.29 higher)	⊕⊕○○ Low	CRITICAL
Pain - pain VAS (better indicated by lower values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.52 lower (1 lower to 0.04 lower)	⊕⊕○○ Low	CRITICAL
Pain - pain VAS (better indicated by lower values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.33 lower (0.81 lower to 0.15 higher)	⊕⊕○○ Low	CRITICAL
Laxity												
2												
Laxity - difference between limbs (mm) (better indicated by lower values) – 3 months post-op												
1	Risberg 2007	randomised trial	serious	not assessable	not serious	serious ^a	none	36	31	SMD 0.1 higher (0.38 lower to 0.58 higher)	⊕⊕○○ Low	CRITICAL
Laxity - difference between limbs (mm) (better indicated by lower values) – 6 months post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	34	31	SMD 0.14 higher (0.34 lower to 0.63 higher)	⊕⊕○○ Low	CRITICAL
Laxity - difference between limbs (mm) (better indicated by lower values) – 1 year post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.18 higher (0.29 lower to 0.66 higher)	⊕⊕○○ Low	CRITICAL
Laxity - difference between limbs (mm) (better indicated by lower values) – 2 years post-op												
1	Risberg 2009	randomised trial	serious	not assessable	not serious	serious ^a	none	36	33	SMD 0.35 higher (0.12 lower to 0.83 higher)	⊕⊕○○ Low	CRITICAL
Adverse events												
Risberg 2007										None reported		CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + agility training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Risberg 2009									None reported			CRITICAL
Souissi 2011									None reported			CRITICAL
Kasmi 2021									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Plyometric and eccentric training versus usual care in rehabilitation after ACLR

Bibliography: Kasmi 2021

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Plyometric + eccentric training	Usual care	Relative (95% CI)	Absolute (95% CI)		
Balance												
1												
Balance - Y balance test (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 7.41 higher (4.70 higher to 10.12 higher)		⊕○○○ Very low	IMPORTANT
Patient reported outcome measures (PROM)												
1												
PROM - Lysholm (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 2.50 higher (1.27 higher to 3.73 higher)		⊕○○○ Very low	CRITICAL
PROM - ACL-RSI (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 6.68 higher (4.21 higher to 9.15 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - single leg hop for distance (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 12.67 higher (8.20 higher to 17.14 higher)		⊕○○○ Very low	CRITICAL
Functional - single leg hop for distance without hands (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 11.96 higher (7.73 higher to 16.19 higher)		⊕○○○ Very low	CRITICAL
Functional - triple hop for distance (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 10.79 higher (6.96 higher to 14.62 higher)		⊕○○○ Very low	CRITICAL
Functional - crossover hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 13.41 higher (8.69 higher to 18.12 higher)		⊕○○○ Very low	CRITICAL
Functional - 6m-timed hop (better indicated by higher values) – 4 months post-op												
1 Kasmi 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	10	10	SMD 11.59 higher (7.49 higher to 15.70 higher)		⊕○○○ Very low	CRITICAL
Adverse events												
Kasmi 2021									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Low intensity versus high intensity plyometric training in rehabilitation after ACLR

Bibliography: Chmielewski 2016

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Low intensity	High intensity	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps CON 60°/s LSI% change (better indicated by higher values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	not serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.2 higher (0.6 lower to 1 higher)		⊕⊕○○ Low	CRITICAL
Patient reported outcomes (PROM)												
1												
PROM - IKDC (better indicated by higher values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.46 higher (0.35 lower to 1.27 higher)		⊕○○○ Very low	CRITICAL
PROM – Tampa scale of kinesiophobia (TSK-11) Score (better indicated by lower values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.07 higher (0.73 lower to 0.87 higher)		⊕○○○ Very low	CRITICAL
PROM – knee activity self-efficacy score (better indicated by higher values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.47 lower (1.28 lower to 0.34 higher)		⊕○○○ Very low	CRITICAL
PROM – pain catastrophizing scale (better indicated by lower values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.32 higher (0.49 lower to 1.12 higher)		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - Single leg hop for distance (better indicated by higher values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	not serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.46 higher (0.36 lower to 1.27 higher)		⊕⊕○○ Low	CRITICAL
Laxity												
1												
Laxity - laxity (better indicated by lower values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	not serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.35 higher (0.46 lower to 1.16 higher)		⊕⊕○○ Low	CRITICAL
Pain												
1												
Pain - pain (better indicated by lower values) – 5 months post-op												
1 Chmielewski 2016	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	12	12	SMD 0.17 lower (0.98 lower to 0.63 higher)		⊕○○○ Very low	CRITICAL
Adverse events												
Chmielewski 2016									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Cross-education (contralateral leg strength training) versus usual care in rehabilitation after ACLR

Bibliography: Papandreu 2007, Papandreu 2009, Papandreu 2013, Zult 2018, Zult 2019, Harput 2019, Minshull 2021

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cross-education	Usual care	Relative (95% CI)	Absolute (95% CI)		
Strength												
5												
Strength - Quadriceps ISOM 60-65° (better indicated by higher values) – 5-8 weeks post-op												
2 Papandreu 2013 Zult 2019	randomised trials	serious	very serious I ² =91%	not serious	very serious ^{a,b}	none	36	35	SMD 0.10 higher (1.61 lower to 1.81 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 45° (better indicated by higher values) – 2 months post-op												
1 Papandreu 2007	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 0.94 higher (0.15 higher to 1.73 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 90° (better indicated by higher values) – 2 months post-op												
1 Papandreu 2007	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 1.19 higher (0.37 higher to 2 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 30-65° (better indicated by higher values) – 3 months post-op												
3 Zult 2019 Harput 2019 Minshull 2021	randomised trials	very serious	very serious I ² =91%	not serious	very serious ^{a,b}	none	60	59	SMD 0.48 higher (0.83 lower to 1.79 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 3 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.64 lower (1.25 lower to 0.02 lower)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 120°/s (better indicated by higher values) – 3 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.05 higher (0.55 lower to 0.64 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 3 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.06 higher (0.54 lower to 0.66 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ISOM 30-65° (better indicated by higher values) – 6 months post-op												
3 Zult 2019 Harput 2019 Minshull 2021	randomised trials	very serious	not serious I ² =0%	not serious	serious ^a	none	60	59	SMD 0.06 lower (0.42 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 60°/s (better indicated by higher values) – 6 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.3 lower (0.9 lower to 0.3 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 120°/s (better indicated by higher values) – 6 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.17 higher (0.42 lower to 0.77 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps CON 180°/s (better indicated by higher values) – 6 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.18 higher (0.42 lower to 0.78 higher)		⊕○○○ Very low	CRITICAL
Strength - Quadriceps ECC 60°/s (better indicated by higher values) – 6 months post-op												
1 Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.08 lower (0.68 lower to 0.52 higher)		⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 65° (better indicated by higher values) – 5 weeks post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cross-education	Usual care	Relative (95% CI)	Absolute (95% CI)		
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.11 lower (0.69 lower to 0.49 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30-65° (better indicated by higher values) – 3 months post-op												
2	Zult 2019 Minshull 2021	randomised trials	serious	not serious I ² =0%	not serious	serious ^a	none	44	44	SMD 0.09 higher (0.33 lower to 0.5 higher)	⊕⊕○○ Low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 3 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.62 lower (1.22 lower to 0.01 lower)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 120°/s (better indicated by higher values) – 3 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.41 lower (1.01 lower to 0.19 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 3 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.15 lower (0.75 lower to 0.44 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ISOM 30-65° (better indicated by higher values) – 6 months post-op												
2	Zult 2019 Minshull 2021	randomised trials	serious	not serious I ² =0%	not serious	very serious ^{a,b}	none	44	44	SMD 0.1 lower (0.52 lower to 0.32 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 60°/s (better indicated by higher values) – 6 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.25 lower (0.84 lower to 0.34 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 120°/s (better indicated by higher values) – 6 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.18 lower (0.77 lower to 0.41 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring CON 180°/s (better indicated by higher values) – 6 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0.46 higher (0.14 lower to 1.06 higher)	⊕○○○ Very low	CRITICAL
Strength - Hamstring ECC 60°/s (better indicated by higher values) – 6 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	22	SMD 0 (0.59 lower to 0.59 higher)	⊕○○○ Very low	CRITICAL
Patient reported outcomes (PROM)												
4												
PROM - Hughston Clinic Knee score (better indicated by lower values) – 1 month post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.89 higher (0.26 higher to 1.52 higher)	⊕○○○ Very low	CRITICAL
PROM - Lysholm score (better indicated by higher values) – 2 months post-op												
1	Papandreou 2009	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	14	14	SMD 1.26 higher (0.44 higher to 2.08 higher)	⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Knee score (better indicated by lower values) – 3 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.5 higher (0.11 lower to 1.11 higher)	⊕○○○ Very low	CRITICAL
PROM - Hughston Clinic Knee score (better indicated by lower values) – 6 months post-op												
1	Zult 2019	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.12 higher (0.48 lower to 0.71 higher)	⊕○○○ Very low	CRITICAL
PROM - IKDC score (better indicated by higher values) – 6 months post-op												
1	Harput 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	16	16	SMD 0.28 higher (0.42 lower to 0.98 higher)	⊕○○○ Very low	CRITICAL

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cross-education	Usual care	Relative (95% CI)	Absolute (95% CI)		
Minshull 2021	randomised trial	serious	not assessable	not serious	very serious ^{a,c}	none	22	22	Results are not reported. Authors report no significant difference between groups.		⊕○○○ Very low	CRITICAL
Functional activities												
3												
Functional - single leg hop for distance (better indicated by higher values) – 6 months post-op												
3 Zult 2019 Harput 2019 Minshull 2021	randomised trials	very serious	not serious ^{I²=0%}	not serious	serious ^a	none	56	54	SMD 0.12 lower (0.49 lower to 0.26 higher)		⊕○○○ Very low	IMPORTANT
Proprioception												
1												
Proprioception - knee joint repositioning error 15° (better indicated by lower values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 30° (better indicated by lower values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.56 higher (0.05 lower to 1.17 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 45° (better indicated by lower values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.25 lower (0.85 lower to 0.36 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 60° (better indicated by lower values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 15° (better indicated by lower values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 30° (better indicated by lower values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.56 higher (0.05 lower to 1.17 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 45° (better indicated by lower values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.25 lower (0.85 lower to 0.36 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 60° (better indicated by lower values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 15° (better indicated by lower values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.28 higher (0.32 lower to 0.88 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 30° (better indicated by lower values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.56 higher (0.05 lower to 1.17 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 45° (better indicated by lower values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.25 lower (0.85 lower to 0.36 higher)		⊕○○○ Very low	IMPORTANT
Proprioception - knee joint repositioning error 60° (better indicated by lower values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.33 lower (0.93 lower to 0.28 higher)		⊕○○○ Very low	IMPORTANT
Balance												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cross-education	Usual care	Relative (95% CI)	Absolute (95% CI)		
1												
Balance - One-leg standing balance, eyes open (better indicated by higher values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.43 lower (1.04 lower to 0.17 higher)		⊕○○○ Very low	IMPORTANT
Balance - One-leg standing balance, eyes closed (better indicated by higher values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.35 higher (0.25 lower to 0.96 higher)		⊕○○○ Very low	IMPORTANT
Balance - Star-excursion balance test, composite score (% leg length) (better indicated by higher values) – 5 weeks post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.33 lower (0.93 lower to 0.28 higher)		⊕○○○ Very low	IMPORTANT
Balance - One-leg standing balance, eyes open (better indicated by higher values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Balance - One-leg standing balance, eyes closed (better indicated by higher values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.15 higher (0.44 lower to 0.75 higher)		⊕○○○ Very low	IMPORTANT
Balance - Star-excursion balance test, composite score (% leg length) (better indicated by higher values) – 3 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.49 lower (1.1 lower to 0.12 higher)		⊕○○○ Very low	IMPORTANT
Balance - One-leg standing balance, eyes open (better indicated by higher values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0 (0.6 lower to 0.6 higher)		⊕○○○ Very low	IMPORTANT
Balance - One-leg standing balance, eyes closed (better indicated by higher values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.05 higher (0.55 lower to 0.65 higher)		⊕○○○ Very low	IMPORTANT
Balance - Star-excursion balance test, composite score (% leg length) (better indicated by higher values) – 6 months post-op												
1 Zult 2018	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	22	21	SMD 0.33 lower (0.93 lower to 0.28 higher)		⊕○○○ Very low	IMPORTANT
Adverse events												
Papandreou 2007									None reported			CRITICAL
Papandreou 2009									None reported			CRITICAL
Papandreou 2013									None reported			CRITICAL
Zult 2018									None reported			CRITICAL
Zult 2019									None reported			CRITICAL
Harput 2019									None reported			CRITICAL
Minshull 2021									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction

Core stability training versus no core stability training in rehabilitation after ACLR

Bibliography: Panchal 2017, Li 2019

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Core stability	No core stability	Relative (95% CI)	Absolute (95% CI)		
Range of motion (ROM)												
2												
ROM (total range of motion improvement (°) measured by mobile application; better indicated by higher values) – 4 weeks post-op												
1 Panchal 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,b}	none	30	30	SMD 0.48 lower (0.99 lower to 0.04 higher)	⊕○○○ Very low		IMPORTANT
ROM - active knee flexion (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 4.33 higher (3.48 higher to 5.18 higher)	⊕○○○ Very low		IMPORTANT
ROM - passive knee flexion (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 4.34 higher (3.49 higher to 5.19 higher)	⊕○○○ Very low		IMPORTANT
Patient reported outcomes (PROM)												
2												
PROM - Lysholm score (better indicated by higher values) – 4 weeks post-op												
1 Panchal 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	30	30	SMD 0.76 higher (0.23 higher to 1.28 higher)	⊕○○○ Very low		CRITICAL
PROM - Tegner level (better indicated by higher values) – 4 weeks post-op												
1 Panchal 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	30	30	SMD 0 (0.51 lower to 0.51 higher)	⊕○○○ Very low		CRITICAL
PROM - Lysholm score (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.68 higher (1.14 higher to 2.21 higher)	⊕○○○ Very low		CRITICAL
Functional activities												
1												
Functional - cadence (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 2.28 higher (1.68 higher to 2.87 higher)	⊕○○○ Very low		IMPORTANT
Functional - stride Length (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.38 higher (0.87 higher to 1.89 higher)	⊕○○○ Very low		IMPORTANT
Functional - stride width (better indicated by lower values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.48 lower (2 lower to 0.97 lower)	⊕○○○ Very low		IMPORTANT
Functional - gait speed (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.89 higher (1.33 higher to 2.44 higher)	⊕○○○ Very low		IMPORTANT
Functional - gait cycle (better indicated by lower values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.05 lower (1.54 lower to 0.56 lower)	⊕○○○ Very low		IMPORTANT
Functional - stance phase time on affected side (better indicated by lower values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	37	37	SMD 1.14 lower (1.63 lower to 0.65 lower)	⊕○○○ Very low		IMPORTANT
Functional - swing phase time on affected side (better indicated by higher values) – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Core stability	No core stability	Relative (95% CI)	Absolute (95% CI)		
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	37	37	SMD 0.9 higher (0.42 higher to 1.38 higher)		⊕○○○ Very low	IMPORTANT
Functional - hip peak reaction force (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	37	37	SMD 0.71 higher (0.24 higher to 1.18 higher)		⊕○○○ Very low	IMPORTANT
Functional - knee peak reaction force (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	37	37	SMD 0.6 higher (0.13 higher to 1.07 higher)		⊕○○○ Very low	IMPORTANT
Functional - ankle peak reaction force (better indicated by higher values) – 6 months post-op												
1 Li 2019	randomised trial	very serious	not assessable	not serious	very serious ^{a, b}	none	37	37	SMD 1.54 higher (1.02 higher to 2.07 higher)		⊕○○○ Very low	IMPORTANT
Pain												
1												
Pain – improvement in pain score VAS (better indicated by higher values) – 4 weeks post-op												
1 Panchal 2017	randomised trial	serious	not assessable	not serious	very serious ^{a, b}	none	30	30	SMD 0.21 higher (0.29 lower to 0.72 higher)		⊕○○○ Very low	CRITICAL
Adverse events												
Panchal 2017									None reported			CRITICAL
Li 2019									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

- a. Total participants <800
b. 95% CI of an SMD extends > 0.5 points in either direction

Aquatic therapy versus no aquatic therapy in rehabilitation after ACLR

Bibliography: Tovin 1994, Zamarioli 2008, Peultier-Celli 2017

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Aquatic therapy	No aquatic therapy	Relative (95% CI)	Absolute (95% CI)		
Strength												
1												
Strength - Quadriceps ISOM 85° LSI% (better indicated by higher values) – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	9	SMD 0.02 lower (0.92 lower to 0.88 higher)	⊕○○○ Very low		CRITICAL
Strength - Quadriceps CON 90°/s LSI% (better indicated by higher values) – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	9	SMD 0.28 lower (1.19 lower to 0.62 higher)	⊕○○○ Very low		CRITICAL
Strength - Hamstring ISOM 85° LSI% (better indicated by higher values) – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	9	SMD 0.13 lower (1.04 lower to 0.77 higher)	⊕○○○ Very low		CRITICAL
Strength - Hamstring CON 90°/s LSI% (better indicated by higher values) – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	9	SMD 1.14 lower (2.13 lower to 0.15 lower)	⊕○○○ Very low		CRITICAL
Range of motion (ROM)												
3												
ROM - knee flexion (better indicated by higher values) – 2 months post-op												
1 Zamarioli 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.09 lower (1.33 lower to 1.15 higher)	⊕○○○ Very low		CRITICAL
Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	10	10	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
ROM - knee extension (better indicated by lower values) – 2 months post-op												
1 Zamarioli 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.8 higher (0.52 lower to 2.12 higher)	⊕○○○ Very low		CRITICAL
Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	10	10	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
Patient reported outcomes (PROM)												
2												
PROM – Lysholm scale (better indicated by higher values) – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	10	9	SMD 1.04 higher (0.06 higher to 2.01 higher)	⊕○○○ Very low		CRITICAL
PROM – Lysholm scale – 6 months post-op												
Peultier-Celli 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.	⊕○○○ Very low		CRITICAL
PROM – IKDC scale – 6 months post-op												

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Aquatic therapy	No aquatic therapy	Relative (95% CI)	Absolute (95% CI)		
Peultier-Celli 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
PROM – KOOS scale – 6 months post-op												
Peultier-Celli 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Functional activities												
1												
Functional - 6 minutes' walk test (better indicated by higher values) – 1 month post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.56 higher (0.07 higher to 1.04 higher)		⊕⊕○○ Low	IMPORTANT
Functional - 6 minutes' walk test – 6 month post-op												
Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Laxity												
1												
Laxity - laxity – 2 months post-op												
1 Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	10	10	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Proprioception												
Proprioception – repositioning error – 2 months post-op												
Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	IMPORTANT
Pain												
1												
pain – pain VAS (better indicated by lower values) – 2 months post-op												
1 Zamaroli 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.96 lower (2.31 lower to 0.39 higher)		⊕○○○ Very low	CRITICAL
Peultier-Celli 2017	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	32	35	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Balance												
1												
Balance - balance (sway path) (better indicated by lower values) – 2 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.2 higher (0.28 lower to 0.68 higher)		⊕⊕○○ Low	IMPORTANT
Balance - balance (sway path) (better indicated by lower values) – 6 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.23 higher (0.25 lower to 0.71 higher)		⊕⊕○○ Low	IMPORTANT
Balance - balance (area) (better indicated by lower values) – 2 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.13 lower (0.61 lower to 0.35 higher)		⊕⊕○○ Low	IMPORTANT

Certainty assessment							No of patients		Effect		Certainty	Importance
No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Aquatic therapy	No aquatic therapy	Relative (95% CI)	Absolute (95% CI)		
Balance - balance (area) (better indicated by lower values) – 6 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.12 lower (0.6 lower to 0.36 higher)		⊕⊕○○ Low	IMPORTANT
Balance - somatosensory contribution (better indicated by lower values) – 2 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.22 lower (0.7 lower to 0.27 higher)		⊕⊕○○ Low	IMPORTANT
Balance - somatosensory contribution (better indicated by lower values) – 6 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.66 lower (1.15 lower to 0.17 lower)		⊕⊕○○ Low	IMPORTANT
balance - visual contribution (better indicated by lower values) – 2 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.21 lower (0.69 lower to 0.28 higher)		⊕⊕○○ Low	IMPORTANT
Balance - visual contribution (better indicated by lower values) – 6 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.43 lower (0.92 lower to 0.05 higher)		⊕⊕○○ Low	IMPORTANT
Balance - vestibular contribution (better indicated by lower values) – 2 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.04 lower (0.52 lower to 0.44 higher)		⊕⊕○○ Low	IMPORTANT
Balance - vestibular contribution (better indicated by lower values) – 6 months post-op												
1 Peultier-Celli 2017	randomised trial	serious	not assessable	not serious	serious ^a	none	32	35	SMD 0.25 lower (0.73 lower to 0.23 higher)		⊕⊕○○ Low	IMPORTANT
Atrophy												
2												
Atrophy - thigh circumference (better indicated by higher values) – 2 months post-op												
1 Zamarioli 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.68 lower (1.98 lower to 0.62 higher)		⊕○○○ Very low	CRITICAL
Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	10	10	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Swelling												
2												
Swelling - mid-patella circumference (better indicated by lower values) – 2 months post-op												
1 Zamarioli 2008	randomised trial	very serious	not assessable	not serious	very serious ^{a,b}	none	5	5	SMD 0.12 lower (1.36 lower to 1.12 higher)		⊕○○○ Very low	CRITICAL
Tovin 1994	randomised trial	very serious	not assessable	not serious	very serious ^{a,c}	none	10	10	The authors reported no statistically significant difference between the two groups.		⊕○○○ Very low	CRITICAL
Adverse events												
Tovin 1994									None reported			CRITICAL
Zamarioli 2008									None reported			CRITICAL
Peultier-Celli 2017									None reported			CRITICAL

CI: confidence interval; SMD: standardised mean difference

VAS: Visual Analog Scale;

- a. Total participants <800
- b. 95% CI of an SMD extends > 0.5 points in either direction
- c. Not reporting results or SDs

Recommendations level of agreement

Scoring sheet Aspetar ACL rehabilitation guideline.

Rate each statement with a whole number out of 7. Write any comments in the dedicated box only if you want.

All statements need a score unless you feel it isn't appropriate for you to answer (check the "I have no opinion" box in that case).

	Recommendation	Score 0-100% Mean (95% CI)	Comments
1	Pre-operative rehabilitation might improve post-operative quadriceps strength, knee range of motion, and may decrease the time to return to sport. We recommend at least one visit to ensure that there is adequate voluntary muscle activation and no flexion contracture that may require further pre-operative visits, and to educate the patient regarding the post-operative rehabilitation course.	96.06 (92.53 to 99.59)	Agree, develop good strength capacity baseline as tolerated, with biased exercises to focused on existing hip, foot and ankle motor and strength deficits. Education on the key accessory exercises that can be started immediately post op may help exercise quality and patterning.
2	Unsupervised exercise execution might be followed by patients after ACLR who cannot afford supervised rehabilitation, have reduced access to physiotherapy, or have high motivation and are compliant to perform their rehabilitation independently. Irrespective, patients should have their programs individually prescribed and be monitored regarding the execution of the rehabilitation protocol and to ensure the progression without adverse events.	84.69 (76.87 to 92.52)	<p>I think unsupervised exercise execution (UEE) can benefit depends on the patients. Patients who have experience in exercising on daily base with high body awareness can be considered UEE, however those who are not can be very dangerous for them. So, I would not recommend UEE in general unless they are educated well in exercising.</p> <p>Agree, if affordable, if not videos and clear explanations required with a focus on key exercises or main deficit to be targeted.</p> <p>This is a rehabilitation expertise guidance and strategic decision, cannot comment on this as a surgeon since I have no literature knowledge or benchmark data on this topic.</p> <p>I feel that if this is the case, non-operative treatment should be considered the best treatment option (non-compliant).</p>
3	The duration of the rehabilitation protocol is individual-specific and depends on the patient demonstrating their ability to safely return to their pre-injury activity level (criteria-based). Accelerated timelines under the right conditions can be used	97.04 (94.80 to 99.28)	The biological component for graft maturation should be a priority. Afterwards, the dynamic component can be used for progression.

	without adverse events. Specific criteria should be used to progress rehabilitation mindful of minimum time requirements for graft protection and healing.		
4	There is no additional benefit for pain, range of motion, or swelling in using continuous passive motion compared to active motion exercises. We recommend against using it in the rehabilitation protocol as it is time-consuming and costly.	75.51 (64.97 to 86.05)	<p>You may be right that it may be costly. However, sometimes we need this controlled early motion, and the patient is not able due to preoperative nerve block. So sometimes and if we rely only on immediate active motion we may lose the beneficial effects of (any kind of) motion due to inability of patients to actively move immediately. And in addition to NMES that you suggest to avoid atrophy (and I agree), the motion also offers additional advantage (except from the avoidance of atrophy) to the whole nutrition of the joint and cartilage due to diffusion. Finally, motion may help to avoid DVT (to be honest I am not aware for any evidence regarding correlation of CPM to avoid DVT). In general, we don't like immobilized patients post op but sometimes it happens due to nerve block as anesthesia.</p> <p>As long as CPM does not force to exceed one's ROM limit, I would definitely use it.</p> <p>From an ROM perspective, in some cases, I feel it can be beneficial for patients that are very guarded/ protective. Graded CPM can help / develop trust in knee movement i.e Flexion / Extension. In turn may help with desensitization.</p> <p>For isolated ACL, agree. However, in case of combined cartilage work, CPM is welcomed while active exercises can be initially contra-indicated.</p> <p>Should be used in exceptional circumstances.</p> <p>It may be beneficial in the very early stages, in the first day or so post-op. However, active motion exercises should be initiated as soon as pain allows.</p> <p>I have no experience.</p> <p>Somewhat disagree just because of previous emphasis on early CPM. No real clinical justification for the selection.</p> <p>I think it has a role in the immediate postoperative period (0-72 hours).</p>
5	Cryotherapy can be applied inexpensively, it is easy to use, has a high level of patient satisfaction, and is rarely associated with adverse events, therefore it is justified in the early phase of postoperative	97.04 (94.80 to 99.28)	

	management after ACLR. However, patients should be educated on safe ice application to avoid injury. Compressive cryotherapy, if available, might be more effective than cryotherapy alone.		
6	We recommend the use of Neuromuscular Electrical Stimulation (NMES) in the very early phase after surgery to stimulate muscle activation or minimize the expected disuse atrophy. At the early phase, NMES might be used during functional activities to further facilitate strength gains.	93.37 (90.55 to 96.18)	Can be useful for some functional activities once timing of movement execution and stimulus is correct.
7	Low load blood flow restriction training might be used in addition to standard care in the early phase of rehabilitation to improve quadriceps and hamstring strength, particularly when patients have increased knee pain or cannot tolerate high knee joint loads. However, clinicians should be aware of the contraindications (e.g., cardiovascular disease, extensive swelling, skin irritation, etc.).	92.61 (88.60 to 96.62)	But timeline - wise, I might have some reservations to start BFR before 4 weeks postoperatively for DVT risk reasons. Studies show that is a safe intervention with very low rates of complications and if any, very mild in nature.
8	We don't recommend the use of vastus medialis trigger point dry needling in the very early rehabilitation phase due to increased risk of haemorrhage.	67.62% (52.53 to 82.71)	and risk of infection (it has happened before) Due to lack of evidence Also I would not recommend it for the following reason: the uncertainty regarding the possible benefit what could be achieved with dry needling. Very low risk of haemorrhage with dry needling risks outweigh reward
9	Whole-body vibration might be used as an additional intervention to improve quadriceps strength and static balance but cannot replace conventional rehabilitation. Given the additional cost, and the reported complications (pain or swelling) when using this intervention, we suggest not including this in the rehabilitation protocol.	83.23 (75.19 to 91.27)	I have no experience at all with this. what is conventional rehabilitation and why can it not replace it?
10	Active knee motion should begin immediately after surgery, mindful of any surgical instruction.	97.04 (94.80 to 99.28)	Agree but only in isolated ACL cases. This can differ in case of combined surgical cartilage or complex meniscal work.

	Immobilization does not decrease pain and can lead to muscle atrophy which slows the recovery of function.		Within surgical precautions. Unless there is some underlying condition that the operated limb has to be immobilized as per surgeon restricted order.
11	Early weight-bearing (first week) should be done in a progressive, controlled manner, as tolerated by each patient, mindful of any surgical instructions.	95.57 (90.31 to 100)	In isolated ACL rupture. Again, if there are some restricted order from the surgeon we have to noticed it as well.
12	Patient may start open kinetic chain exercises in limited range of motion (90°-45° of knee flexion) from the 4th week after surgery without compromising knee stability. Clinicians and patients should monitor for anterior knee pain and adjust the knee load and the progression of strengthening accordingly.	88.78 (84.16 to 93.39)	May be an idea to have a subsection in the protocols on dealing with anterior knee pain and how to progress. Yes, for hamstring ACL's. No for BTB or Quad ACL's Iso from 3 weeks 90, 70, 60. Arc 90-60 from 6 weeks. Full ROM from 8-10 weeks
13	Isometric quadriceps exercises including static quadriceps contractions and straight leg raises might have a small effect on faster knee flexion recovery, but not on quadriceps strength. They may be prescribed during the first 2 weeks after surgery without compromising the graft integrity.	84.69 (76.17 to 93.21)	I would let my rehab expert guide me on that. How would knee extension exercises increase speed of knee flexion recovery? Including NMES, ROM dependent Strongly agree for latter statement.
14	Leg press may be initiated as early as 3 weeks after surgery in patients with hamstring graft, using a functional pattern similar to a half squat (0°-45°) to improve quadriceps and hamstring strength, functional activities and subjective function. Anterior knee pain should be monitored, with load progressed accordingly.	88.27 (84.26 to 92.27)	Agree, with correct tibia angles on the press. Yes, if gracilis and semiT were harvested during the surgical graft preparation. No if only the semiT was taken. Start isometrically first.
15	Early quadriceps eccentric strengthening, using eccentric cycle or stepper ergometer, between 20°-60° of knee flexion, may be initiated at 3 weeks after surgery in patients with patellar tendon or hamstring autograft to improve quadriceps strength and hypertrophy without compromising graft integrity.	82.74 (75.63 to 89.85)	Are there any evidence about any effect of early quad strengthening on PF pain and donor site in cases of BPTB autograft? I would be cautious of eccentric work on BTB to avoid anterior knee pain at week 3 and somewhat graft / site integrity. Although, ACL load may be low at those ranges I may consider another exercise to isolate quads that may achieve more with less risk and allow for better ranges. Starting at day 15 postop is too early for BTB.

			Could be even earlier if pain allows.
16	A combination of closed and open kinetic chain exercise may lead to significantly better quadriceps strength and earlier return to sports, without any increase in laxity, compared to closed chain alone. Monitor for anterior knee pain during open kinetic chain exercises and adjust loading accordingly.	91.33 (85.82 to 96.83)	Agree, with exercises programmed at the correct rehabilitation timelines and overall load is calculated through the week to avoid anterior knee pain. Depends on the time that these exercises start.
17	We suggest using eccentric training in combination with concentric training to elicit improved strength and functional outcomes after ACL surgery.	91.84 (88.01 to 95.66)	Isokinetic eccentric training could potentially be utilized in our protocols as applicable to the patient. What is the progression to eccentric strengthening? I would let my rehab expert guide me on that. The surgical input can be beneficial on the time decision to start this training.
18	The exclusive use of isokinetic training for muscle strengthening after ACL surgery is not suggested. The combination of isotonic and isokinetic training appears to improve muscle strength more than these interventions in isolation.	90.48 (85.28 to 95.67)	I would be in favour of isokinetic training but the patient has to meet the right criteria for its use and mainly used towards end stage if required to clear quadriceps deficit. Can easily be overloaded between both gym work and isokinetic training. Clear structuring through the week is integral if being used. That's hard to generalize. Some patients tend to respond more to one or the other (or combined). But I would let my rehab expert guide me on that. Individual monitoring is key and needs to guide un on how to progress depending on the biofeedback data and athlete response. Time constraints make this very difficult.
19	Motor control and strength training are both integral parts of the rehabilitation and should be combined in the rehabilitation protocol to improve outcomes.	98.52 (96.84 to 100)	It should always be part of the training exercises.
20	Plyometric and agility training may further improve subjective function and functional activities compared to usual care, without any increase in laxity or pain.	80% (70.70 to 89.30)	In the proper phase Depends on what your doing the exercise for. If it is to increase confidence subjectively may get better results as long as baseline strength is there to support Coupled with Motor control and break down of the plyo movement will then help functional activities. May increase pain If done at the appropriate stage of healing and at the correct level of intensity

21	There are conflicting results on the effect of cross-education training program on quadriceps strength. However, we do not suggest the implementation of an exaggerated cross-education training program for strength gains in the injured leg. The uninjured limb's strength should be monitored and restored to baseline/optimal levels as indicated.	83.74 (76.67 to 90.82)	<p>The uninjured leg should naturally increase in strength through the program. The rehab can focus on the uninjured leg towards mid-end stage due to the higher risk of opposite ACL occurrence in return to play post ACLR. Combining the patient's BW/ strength and power for their level of sport is important to ensure the all metrics are adequate.</p> <p>That's where my rehab expert needs to guide the patient on that based upon the player's pre-operative testing results. This looks very individual to me and hard to generalize.</p> <p>What is an exaggerated program?</p>
22	Core stability exercises might improve functional outcomes and subjective knee function and can be used as an addition to the rehabilitation protocol.	92.61 (88.87 to 96.35)	<p>With particular focus on upper extremity sway during lower limb tasks. Making sure the core exercises is being completed because of a deficit or combined to improve a functional task.</p> <p>But obviously also gluteal exercises as a link</p>
23	Aquatic therapy may be used in addition to the usual care during the early phase of rehabilitation to improve subjective knee function. We recommend that it is initiated 3-4 weeks postoperative, once the wound has completely healed.	96.06 (93.19 to 98.93)	<p>Once controlled and patient aware of knee flexion loads underwater.</p> <p>Big Fan.</p> <p>Possibly earlier?</p>
24	We recommend that a patient does not attempt to drive before they can safely activate the brake in a simulated emergency. Typically, this will be at approximately 4 to 6 weeks after right-sided ACLR and approximately 2 to 3 weeks after left-sided ACLR.	92.06 (87.28 to 96.85)	<p>Depends on the patient and their function at that stage.</p> <p>Functional test can be added x squat in x seconds</p>
25	Despite an absence of research findings, we feel it is warranted to suggest criteria for return to running (where running has a volume and intensity to achieve cardiovascular adaptation): 95% knee flexion ROM Full extension ROM No effusion/trace of effusion LSI>80% for quadriceps strength LSI>80% eccentric impulse during Countermovement Jump Pain-free aqua jogging and Alter G running Pain-free repeated single leg hopping ("pogos")	87.76 (83.06 to 92.45)	<p>What is the progression in aqua and alter g prior to running?</p>

	Absence of pelvic drop/trunk sway in mid stance running on ACLR side stance.		
26	<p>No pain or swelling</p> <p>Knee full ROM</p> <p>Stable Knee (pivot-shift, Lachman, instrumented laxity evaluation)</p> <p>Normalised subjective knee function and psychological readiness using patient-reported outcomes (most commonly IKDC, ACL-RSI and Tampa Scale of Kinesiophobia)</p> <p>Isokinetic quadriceps and hamstring peak torque at 60°/s should display 100% symmetry for return to high demand pivoting sports. Restore (as a minimum) preoperative absolute values (if available) and normative values according to the sport and level of activity.</p> <p>Countermovement Jump and Drop Jump >90% symmetry of jump height and concentric and eccentric impulse. Reactive strength index (height/time) > 1.3 for double leg and 0.5 for single leg for field sport athletes (higher for track and field)</p> <p>Jumping biomechanics – normalise absolute and symmetry values for moments, angles, and work in vertical and horizontal jumps especially in sagittal and frontal plane at hip, knee, and ankle.</p> <p>Running mechanics – restoration of >90% symmetry of vertical ground reaction forces and knee biomechanics during stance during high-speed running and change of direction.</p> <p>Complete a sports specific training program.</p>	88.78 (83.48 to 94.08)	<p>Does the core stability and control include sth more than hip and pelvis? Should we test also this? Especially for athletes that use their upper limb, eg overhead athletes. The core is extremely important and sometimes we (the surgeons) forget about this. eg a scenario, there may be an overhead athlete that went ACL reconstruction. Should we test his core kinetic chain before going back to sport? But also for any other athlete. Thank you for the suggestions. They were all great!!</p> <p>Difficult to define return to sport criteria</p> <p>There is a lot there, but it is important to know progression and the other factors such as the state of the knee prior to reconstruction.</p> <p>All these criteria make sense, when considering them individually. If all patients should meet all the criteria before discharge, I think the probability is low.</p>

