

Study/year	Details		Population			Exposure	Outcome	
	Design	N	Pop <sup>1</sup>	Age	Female	Treatment	Reporting	Follow-up time
<i>Aqlietti 2004</i>	qRCT	120	M	25(15-39)	23%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	2
<i>Andersson 1989</i>	qRCT	107	M	25(13-49)	27%	ACL-S <sup>repair</sup>	patients <sup>s</sup>	4.8±0.6
<i>Anstey 2012</i>	RCS	195	A	34(16-60)	41%	Non-Op <sup>b surg</sup>	patients <sup>i</sup>	0.3
<i>Asano 2004</i>	CS <sup>?</sup>	100	M	27(15-44)	53%	ACL-R	patients <sup>i</sup>	1.2
<i>Barenius 2014</i>	RCT	134	-	40(29-57) <sup>FU</sup>	41%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	14.1±0.5
<i>Barrack 1990</i>	RCS	72	A	25(16-45)	8%	Mixed	patients <sup>s</sup>	3.2(0.7-7)
<i>Barrack 1990</i>	RCS	35	M	25(15-45)	31%	Mixed	patients <sup>s</sup>	3.4(0.7-7)
<i>Batailler 2017</i>	RCCS	82	M	31(15-74)	26%	ACL-R +EAT	patients <sup>s</sup>	1.1±0.3
<i>Blyth 2003</i>	PCS	30	A	55(50-66)	50%	ACL-R	patients <sup>s</sup>	3.8(2-8)
<i>Bray 1989</i>	CS <sup>?</sup>	47	-	-	-	ACL-S	patients <sup>i</sup>	6(4-8)
<i>Buckley 1989</i>	RCS	25	M	25(15-45)	16%	Non-op	patients <sup>s</sup>	4(0-7)
<i>Calvo 2014</i>	RCS	27	P	13(12-16)	41%	ACL-R <sup>transph</sup>	patients <sup>s</sup>	10.6(10-13)
<i>Cassard 2014</i>	RCS	28	P	13(9-15)	29%	ACL-R <sup>hybrid</sup>	patient <sup>i</sup>	2.8(2-5)
<i>Casteleyn 1996</i>	RCS	228	A	33(16-66)	25%	Mixed	patients <sup>s</sup>	2-12
<i>Charlton 2003</i>	RCS	47	A	38(17-59) <sup>?</sup>	64%	ACL-R	patients <sup>s</sup>	2.5(2-3.6)
<i>Cinque 2018</i>	RCS	151	M	36(14-73)	56%	ACL-R	patients <sup>i</sup>	3.2(2-5.6)
<i>Cohen 2009</i>	RCS	26	P	13(11-15)	58%	ACL-R <sup>transph.</sup>	patients <sup>s</sup>	3.8(2-7)
<i>Cruz 2017</i>	RCS	103	P	12±1.8	23%	ACL-R <sup>all-epi</sup>	patients <sup>s</sup>	1.8±1.1
<i>Davis 2017</i>	RCS	4087	-	26 <sub>med</sub> (18-26 <sub>icr</sub> )	44%	ACL-R	patients <sup>s</sup>	3.5±2.4
<i>DeRoeck 2003</i>	RCS	68	A	30(16-49)	10%	Non-op <sup>b surg</sup>	patients <sup>i</sup>	1.1±(0.1-4.3)
<i>Drogset 2010</i>	RCT	97	A	27 <sub>med</sub> (18-50)	37%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	2
<i>Dugas 2016</i>	RCS	42	M	20(12-41)	0%	ACL-R	patients <sup>s</sup>	4.2
<i>Ekås 2018</i>	PCS	47	P	11(7-13)	34%	Mixed	patients <sup>i</sup>	9.5 (7-14)
<i>Eriksson 2003</i>	RCT	164	M	26±6.9	41%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	2.6(2-5)
<i>Feller 2003</i>	RCT	65	A	26±6	28%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	3
<i>Fink<sup>h</sup> 2001</i>	RCS	69	A	33(±8.2)	23%	Mixed	injuries <sup>s</sup>	11±8
<i>Fisterbush 1990</i>	RCS	98	M	26(13-45)	12%	Non-op	patients <sup>s</sup>	4.2
<i>Frosch 2005</i>	RCS	24	A	30(17-62)	-	ACL-R	patients <sup>i</sup>	1.4±0.7
<i>Furumatsu 2014</i>	RCS	20	M	19(15-38)	60%	na	patients <sup>i</sup>	1.2(0.5-2.2)
<i>Grindem 2012</i>	PMCo	138	M	28(±7)	46%	Mixed	patients <sup>i</sup>	1.1(±0.1)
<i>Grindem 2014<sup>op</sup></i>	PCo	100	M	24±7.2	56%	ACL-R	patients <sup>i</sup>	2±0.1
<i>Grindem 2014<sup>nop</sup></i>	PCo	43	M	30±8.8	56%	Non-Op	patients <sup>i</sup>	2±0.1
<i>Grøntvedt 1995</i>	RCT	52 <sup>FU</sup>	A	29(16-50)	-	ACL-S <sup>repair</sup>	patients <sup>i</sup>	6(5-7)
<i>Guenther 2014</i>	RCS	112	M	15(12-17)	54%	Non-Op <sup>b surg</sup>	patients <sup>i</sup>	0.7(0.04-4.5)
<i>Ichinohe 2000</i>	RCS	72	-	-	-	ACL-R	injuries	1.3

<i>Jarvala 2001</i>	RCS	72	M	32(15-61) <sup>FU</sup>	33%	ACL-R	patients <sup>s</sup>	7(5-9)
<i>Jarvala 2007</i>	RCT	65	-	33±9	-	ACL-R <sup>ST/G SB or DB</sup>	patients <sup>s</sup>	1.2(1-1.7)
<i>Karikis 2018</i>	RCS	59	A	27(17-49)	44%	ACL-R <sup>ST/G</sup>	patients <sup>s</sup>	10.5(6.4-18.5)
<i>Karlsson 1999</i>	RCS	200	M	23(13-40)	36%	ACL-R <sup>PT</sup>	patients <sup>s</sup>	3.3(1.8-5.7)
<i>Kobayashi 2001</i>	RCS	58	A	25(16-55)	-	ACL-R <sup>ST/G</sup>	patients <sup>i</sup>	(0.1-3.8)
<i>Koga 2015</i>	qRCT	53	M	25(14-49)	57%	ACL-R <sup>ST SB or DB</sup>	patients <sup>s</sup>	5.8(3-11.7)
<i>Kondo 2008</i>	PCS	328	M	26(13-57)	43%	ACL-R <sup>ST/G SB or DB</sup>	patients <sup>s</sup>	(2-5)
<i>Krudwig 2002</i>	RCS	217	A	29(16-57)	28%	ACL-S <sup>synt.lig</sup>	patients <sup>s</sup>	4.8(1-8.3)
<i>Krysch 2010</i>	RCS	99	M	16(13-18)	57%	ACL-R	patients <sup>i</sup>	8.3(2.4-19.1)
<i>Lebel 2008</i>	RCS	98	A	28(16-59)	23%	ACL-R <sup>PT</sup>	injuries <sup>s</sup>	11.6(±0.8)
<i>Marder 1991</i>	RCT	72	A	23(16-41)	31%	ACL-R <sup>PT or ST/G</sup>	patients <sup>s</sup>	2.4(2-3.5)
<i>Mei 2016</i>	qRCT	48	A	37 (±5.1)	65%	ACL-R <sup>allo SB or DB</sup>	patients <sup>s</sup>	3
<i>Mohtadi 2016</i>	RCT	330	M	29(14-50)	45%	ACL-R <sup>SB or DB</sup>	patients <sup>s</sup>	2
<i>Morgan 1991</i>	RCS	70	-	-	-	M-repair <sup>mix</sup>	patients <sup>s</sup>	0.7(0.2-3)
<i>Neuman 2008</i>	RCT	94	-	26(15-43)	42%	Mixed	patients <sup>s</sup>	15.7(±1.4)
<i>Neusel 1996</i>	RCS	35	-	27 <sup>?</sup>	-	Non-Op	patients <sup>s</sup>	5
<i>Oiestad 2011</i>	PCS	210	M	39(±8.7) <sup>FU</sup>	43%	ACL-R	patients <sup>i</sup>	13.7(±4.4)
<i>O'Neill 1996</i>	qRCT	125	M	27(14-56) <sup>?</sup>	35%	ACL-R <sup>PT SI or DI</sup>	patients <sup>s</sup>	3.5(2-5)
<i>Orfaly 1998</i>	RCS	105	-	29 <sup>FU</sup>	40%	ACL-R <sup>ST/G</sup>	patients <sup>s</sup>	3.3(2-6.3)
<i>Ouanazar 2018</i>	RCS	128	A	35(17-54) <sup>?</sup>	36%	ACL-R <sup>ST+rem.</sup>	patients <sup>s</sup>	2.7(2-3.7)
<i>Pattee 1989</i>	RCS	40	A	27(16-46) <sup>?</sup>	24%	Non-Op	patients <sup>s</sup>	5.6(4-10.2)
<i>Petsche 2002</i>	RCS	27	-	-	-	M-repair <sup>mix</sup>	patients <sup>s</sup>	Min 12
<i>Pinczewski<sup>STG</sup> 2007</i>	qRCT	90	M	24 <sub>med</sub> (13-52)	48%	ACL-R <sup>ST/G</sup>	patients <sup>s</sup>	10
<i>Reid 1992</i>	RCS	32	A	22(16-34)	16%	ACL-S <sup>Ellison</sup>	patients <sup>s</sup>	11(7-15)
<i>Risberg 1999</i>	RCT	56	A	28(15-47)	47%	ACL-R <sup>PT</sup>	patients <sup>i</sup>	2
<i>Salmon 2006</i>	RCS	49	A	27 <sub>med</sub> 25-28 <sub>CI</sub>	30%	ACL-R <sup>PT</sup>	injuries <sup>s</sup>	13
<i>Seitz 1996</i>	RCS	27	A	28(18-56) <sup>?</sup>	32%	Non-Op	patients <sup>s</sup>	8(4-12)
<i>Shelbourne<sup>controls</sup> 2015</i>	PCCS	343	M	22(12-50)	-	ACL-R	patients <sup>s</sup>	7.1(2-16)
<i>Shirakura 1995</i>	RCS	53	M	29(14-60)	57%	Non-Op	patients <sup>s</sup>	6.2(3.6-11.1)
<i>Sommerlath 1992</i>	RCS	80	-	27(±9)	15%	Mixed	patients <sup>s</sup>	6-8
<i>Streich 2011</i>	RMCS	80	A	26(17-39)	30%	Mixed	patients <sup>s</sup>	15.3(14-16)
<i>Takazawa 2017</i>	RCS	121	M	14-47	0	ACL-S	patients <sup>s</sup>	4.7 (min 2)
<i>Tayton 2009</i>	RCS	205	-	-	23%	Non-Op <sup>b surg</sup>	patients <sup>i</sup>	(0.5-2.7) <sub>median</sub>
<i>Thaunat 2017</i>	RCS	548	M	24(12-56)	30%	ACL-R <sup>ALL</sup>	patients <sup>s</sup>	3(2-4.5)
<i>Thompson 2006</i>	RCS	30	-	-	-	ACL-R <sup>ST/G</sup>	patients <sup>i</sup>	-
<i>Thompson 2015</i>	PCS	90	M	25(15-42)	49%	ACL-R <sup>PT</sup>	patients <sup>s</sup>	20.4(19.2-21.6)
<i>Van Dijk 2008</i>	RCS	196	A	34(18-52)	20%	ACL-R <sup>PT</sup>	patients <sup>s</sup>	7.4(3-13)
<i>Xu 2014</i>	RCT	66	A	32(±10.5)	26%	ACL-R <sup>STG SB or DB</sup>	patients <sup>i</sup>	1.4(1-3)

<i>Yoo 2009</i>	RCS	31	A	29(18-47)	13%	ACL-R <sup>mmr</sup>	patients <sup>i</sup>	4.2(1-11)
<i>Wall 2017</i>	RCS	21	P	11(9-15)	15%	ACL-R <sup>all-epi</sup>	patients <sup>s</sup>	3.6(2-6.6)
<i>Willimon 2015</i>	RCS	21	P	12(10-14)	0	ACL-R <sup>TB-Mic</sup>	patients <sup>s</sup>	3(1-6.9)

Supplementary file z Study characteristics, setting and outcome assessment for individual studies included for qualitative analysis.

Abbreviations and explanations:

#### Design

qRCT quasi randomized controlled trial (ie if randomized based on birth date or timepoint for inclusion)

RCT randomized controlled trial

RCS retrospective case series

PCS prospective case series

CS<sup>?</sup> Case series, unclear if prospective or retrospective

RCCS retrospective case control study

PCCS prospective case control study

RMCS retrospective matched case study

PMCo prospective matched cohort

PCo prospective cohort

#### Population

Pop<sup>l</sup> population category at inclusion

P pediatric (age under 16 years in all patients or described as skeletally mature at inclusion)

A adult (age over 15 years in all patients or specified that all patients were skeletally mature at inclusion)

M mixed (both patients age under and 16 years old and over at inclusion and not specified whether the patients were skeletally mature or not)

#### Age

Age (mean, min-max or  $\pm$  SD) at inclusion ( same as surgery in some surgical cohorts) if not stated otherwise.

Age<sup>FU</sup> indicate age at follow-up (some studies report that and not age at inclusion)

Age<sup>?</sup> Age is reported, but at unclear timepoint.

- Age is not reported

med indicate that the age was reported as median instead of mean

ci indicate that age was reported in confidence intervals rather than min-max

icr indicate that the age was reported in interquartile range rather than min-max.

## Treatment

ACL-S is ACL surgery other than ACL-reconstruction ie repair

ACL-R is ACL reconstruction

ST/G indicate semitendinosus and gracilis graft, PT patella tendon graft

SB or DB indicate single bundle or double bundle technique

SI or DI indicate single or double incision technique

all-epi indicate the physsealsparing technique all-epiphyseal ACL-reconstruction, transphy indicate transphyseal technique, hybrid indicate a hybrid (physsealsparing + transphyseal) technique and ITB\_Mic indicate the physsealsparing extra articular technique described by Micheli.

mmr indicate that all patients had a medial meniscal repair

PT+ rem indicate use of patellar tendon graft combined with leaving the ACL remnant

M-repair<sup>mixed</sup> indicate that all patients had meniscal repair and that the treatment of the ACL was mixed; non-operative or ACL-reconstruction

Mixed indicate that some patients had non-operative treatment and some had ACL reconstruction. In the majority the study started out with non-operative and a proportion had delayed ACL-R.

Non-op<sup>bsurg</sup> indicate that all the patients in the study were evaluated prior to having surgery

## Reporting

Reporting indicates how new meniscal injuries were reported in the study

Patients<sup>s</sup> indicates that the study reported the number of patients with new injuries that had surgery

Patients<sup>i</sup> indicates that the study reported the number of patients with new injuries (unregardless of having surgery or not)

Injuries<sup>s</sup> the number of injuries that had surgery, patients are not reported and we are not able to calculate the number of patients who had these injuries

Injuries<sup>i</sup> indicate the number of injuries unregardless if they had surgery or not, as above patients with new injuries are not reported.

### Follow-up time

Years follow up, mean, min-max or  $\pm$ SD. In some patients only min or up to a certain timepoint is reported.  
– means it is not reported.

Follow-up<sub>median</sub> indicate that median follow up time was reported

Neusel: Only 24 of 35 patients in the study was included for qualitative analysis because 11 patients had partial tears and were removed.