

Appendix

TABLE E-1 Search Strategy for the Systematic Literature Review

(metatarsus primus varus OR hallux valgus OR hallux abductovalgus OR hallux abducto valgus OR hallux interphalangeus OR hallux interphalangeal OR bunion OR bunions OR bunionette) AND (surgery OR surgical OR removal OR bunionectomy OR osteotomy OR osteotomies OR correct* OR simple OR capsulorrhaphy OR exostectomy OR exostosis OR sesamoid excision OR chevron OR scarf OR crescentic OR distal) OR (fusion OR arthrodesis OR arthrodeses OR arthrodiastasis OR operate OR operation OR operated OR operates OR procedure*) AND (metatarsophalangeal OR metatarsophalangeal OR MPJ OR MTP OR MTC OR metatarsocuneiform OR metatarsal cuneiform OR tarsometatarsal OR Lapidus) OR ((Proximal Phalangeal OR Metatarsal) AND (osteotomy OR osteotomies)) OR (Hueter[tiab] OR Barker[tiab] OR “Lioson-Balacesu”[tiab] OR Keller[tiab] OR Riedl[tiab] OR Mayo[tiab] OR Albrecht[tiab] OR Fuld[tiab] OR Ludloff[tiab] OR Reverdin[tiab] OR Juvara[tiab] OR Lexer[tiab] OR Hohmann[tiab] OR Trethowan[tiab] OR Mauclair[tiab] OR Silver[tiab] OR Akin[tiab] OR Sazepin[tiab] OR Mau[tiab] OR Goebell[tiab] OR McBride[tiab] OR “Mc Bride”[tiab] OR Balog[tiab] OR Kotzenberg[tiab] OR Peabody[tiab] OR Saresi[tiab] OR Kleinberg[tiab] OR Lapidus[tiab] OR Wilhelm[tiab] OR Lenggenhager[tiab] OR “Stanley Breck”[tiab] OR Daw[tiab] OR Stein[tiab] OR Girdlestone[tiab] OR Allan[tiab] OR Petri[tiab] OR “Van Ness”[tiab] OR Joplin[tiab] OR Massarl[tiab] OR Arredondo[tiab] OR “Rocyn Jones”[tiab] OR Lelievre[tiab] OR Logroscino[tiab] OR Kamza[tiab] OR Ellis[tiab] OR “Bilboquet of Bazy”[tiab] OR “Bonney Macnab”[tiab] OR McKeever[tiab] OR Thomasen[tiab] OR “Lenax Balke”[tiab] OR Mommsen[tiab] OR Hulbert[tiab] OR Mizumo[tiab] OR Durman[tiab] OR “Prignacch Zarasi”[tiab] OR Slamm[tiab] OR Butlers[tiab] OR Wilson[tiab] OR Mitchell[tiab] OR Werthemer[tiab] OR Mikhail[tiab] OR Simmonds[tiab] OR Stone[tiab] OR Golden[tiab] OR “L Wilson”[tiab] OR “Gibson Piggott”[tiab] OR Keikan[tiab] OR “Dewar Rathbun”[tiab])
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TABLE E-2 Methods for Measuring Rates of Satisfaction

Data Type	Scale or Tool		No. (%)
Dichotomous	Satisfied/dissatisfied		47 (33.8%)
Ordinal	3 items	Completely satisfied, partially satisfied (satisfied with reservation), dissatisfied	12 (8.6%)
		Very satisfied, satisfied, dissatisfied	23 (16.5%)
		Excellent, good, unsatisfactory	2 (1.4%)
		Good, moderate, poor	2 (1.4%)
		Good, satisfactory, poor	2 (1.4%)
		Good, fair, poor	1 (0.7%)
	4 items	Completely satisfied, very satisfied, satisfied, dissatisfied	6 (4.3%)
		Very satisfied, satisfied, partially satisfied, dissatisfied	5 (3.6%)
		Very satisfied, satisfied, dissatisfied, very dissatisfied	2 (1.4%)
		Very satisfied, satisfied, improved, dissatisfied	5 (3.6%)
		Without reservation, mild reservation, moderate reservation, dissatisfied	1 (0.7%)
		Excellent, good, fair, poor	16 (11.5%)
	5 items	Excellent, good, satisfied, dissatisfied	8 (5.8%)
		Very satisfied, satisfied, satisfied with few reservations, satisfied with many reservations, dissatisfied	2 (1.4%)
Interval	Very satisfied, satisfied, satisfied with reservations, dissatisfied, very dissatisfied		2 (1.4%)
	Visual analog scale		2 (1.4%)
	Manchester-Oxford Foot Questionnaire (MOXFQ)		1 (0.7%)

TABLE E-3 Clinical Studies Reporting Outcomes of Hallux Valgus Surgical Treatment Included in the Final Analysis*

Study	Study Design	LOE	Patient Cohort		Surgical Procedure		Mean Follow-up (Range) (yr)
			Patients	Feet	Description	Type	
Abbühl, 1992 ²⁴	RS, SC, obs	IV	41	55	Modified Mayo procedure	Joint hemiresection	4.2 (0.5-6)
Adam, 2011 ²⁵	RS, SC, obs	IV	29	34	Scarf OT	1st MT shaft OT	2.2 (1-4)
Akman, 2015 ²⁶	RS, SC, obs	IV	47	51	Modified Simmonds-Menelaus OT	Proximal 1st MT OT	8.3 (5-16)
Al-Nammari, 2015 ²⁷	RS, SC, obs	IV	45	47	1st MT double OT and Akin OT	Other	3.8 (1.2-5)
Archibald, 1990 ²⁸	RS, SC, obs	IV	22	29	Modified McBride procedure	Simple bunionectomy and soft-tissue release	7 (4-12)
Baba, 2009 ²⁹	RS, SC, obs	IV	48	60	Mitchell OT	Distal 1st MT OT	3 (1.5-6)
Bai, 2010 ³⁰	RS, SC, obs	IV	76	86	Distal chevron OT with distal soft-tissue procedure	Distal 1st MT OT	2.6 (2-3.3)
Barca, 1997 ³¹	RS, SC, obs	IV	30	35	Austin or chevron OT	Distal 1st MT OT	1.5 (1-3)
Bauer, 2010 ³²	PS, SC, obs	IV	82	104	Percutaneous Reverdin-Isham OT of the distal 1st MT	Distal 1st MT OT	2 (1-3.3)
Baykal, 2006 ³³	RS, SC, obs	IV	41	49	Modified crescentic proximal 1st MT OT	Proximal 1st MT OT	2.1 (0.8-5)
Beck, 1971 ³⁴	RS, SC, obs	IV	10	12	DuVries modification of McBride procedure	Simple bunionectomy and soft-tissue release	8.3 (5-12.3)
Bisognini, 1983 ³⁵	RS, SC, obs	IV	45	50	Bunionectomy	Simple bunionectomy and soft-tissue release	(4-6)
Bock, 2015 ³⁶	RS, SC, obs	IV	93	93	Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	10.3 (9.2-11.7)
Boychenko, 2015 ³⁷	PS, SC, obs	III	40	60	Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	2 (2-2)
Buciuto, 2014 ³⁸	PS, SC, comp	I	120	120	Distal chevron OT or Mitchell OT	Distal 1st MT OT	3 (3-3)
Calder, 1999 ³⁹	PS, SC, comp	I	30	30	Mitchell OT	Distal 1st MT OT	1 (1-1)
Caminear, 2005 ⁴⁰	RS, SC, obs	IV	15	18	Distal chevron OT	Distal 1st MT OT	1.5 (0.5-2.2)
Cancilleri, 2008 ⁴¹	RS, SC, comp	III	60	60	Austin OT or Boc OT	Distal 1st MT OT	3.6 (2.5-4.7), 2.6 (2.4-3)
Capasso, 1994 ⁴²	RS, SC, obs	IV	31	31	Modified Keller-Lelievre procedure	Joint hemiresection	3 (3-3)
Capozza, 1994 ⁴³	RS, SC, obs	IV	92	100	Regnault procedure	Joint hemiresection	7.2
Catanzariti, 1999 ⁴⁴	RS, SC, obs	IV	39	47	Modified Lapidus procedure	1st TMT AD	6.3 (1.5-10.6)
Chen, 2015 ⁴⁵	PS, SC, obs	III	49	49	Lapidus procedure	1st TMT AD	2 (2-2)
Chen, 2015 ⁴⁶	RS, SC, obs	IV	40	53	Mitchell OT	Distal 1st MT OT	3.2 (1-9.8)
Chen, 2010 ⁴⁷	RS, SC, obs	IV	26	48	Double OT of 1st MT	Other	2.3 (1-4)
Chiang, 2012 ⁴⁸	RS, SC, comp	III	60	62	Proximal Ludloff OT or Bosch OT	Proximal 1st MT OT or distal 1st MT OT	2 (2-2)
Choi, 2013 ⁴⁹	RS, SC, obs	IV	91	103	Proximal Ludloff OT	Proximal 1st MT OT	2.2 (1-5.2)
Choi, 2016 ⁵⁰	RS, SC, comp	III	91	98	McBride procedure or chevron OT	Simple bunionectomy, soft-tissue release or distal 1st MT OT	4.0 (2-6), 4.3 (2.7-5.9)
Choi, 2013 ⁵¹	PS, SC, obs	IV	51	53	Scarf OT	1st MT shaft OT	2 (1-5.5)
Choi, 2009 ⁵²	RS, SC, comp	III	98	98	Proximal chevron OT or proximal Ludloff OT	Distal 1st MT OT or 1st MT shaft OT	4.1 (3.2-4.9), 1.8 (1-2.8)
Chou, 1998 ⁵³	RS, SC, obs	IV	14	17	Biplanar distal chevron OT	Distal 1st MT OT	2.8 (1-5.8)

Chow, 2008 ⁵⁴	RS, SC, obs	IV	21	26	Proximal crescentic OT	Proximal 1st MT OT	8 (6.1-12)
Coetzee, 2003 ⁵⁵	RS, SC, obs	IV	19	19	Scarf OT	1st MT shaft OT	1 (1-1)
Coetzee, 2004 ⁵⁶	PS, SC, obs	IV	91	105	Lapidus AD	1st TMT AD	3.7 (1.5-6.2)
Coughlin, 2007 ⁵⁷	PS, SC, obs	IV	103	122	Proximal crescentic OT and Akin OT	Proximal 1st MT OT and phalangeal OT	2.3 (2-3.1)
Coughlin, 1997 ⁵⁸	RS, SC, obs	IV	29	35	Chevron OT	Distal 1st MT OT	6 (2-12.5)
Courtman, 1995 ⁵⁹	RS, SC, obs	IV	22	38	Distal 1st MT OT	Distal 1st MT OT	4.1 (1.9-6.3)
Daghino, 2003 ⁶⁰	RS, MC, comp	III	106	141	Regnault procedure, various 1st MT OT	Joint hemiresection or other	4.1 (1.1-8.4), 4.3 (1.1-9.8)
Day, 1997 ⁶¹	RS, SC, comp	III	41	41	Z-OT or Kalish OT	Distal 1st MT OT or distal 1st MT OT	3.4 (1.1-5.6), 3.6 (0.9-5.5)
Deenik, 2007 ⁶²	PS, SC, comp	I	83	96	Scarf OT or distal chevron OT	1st MT shaft OT or distal 1st MT OT	2.3 (1.9-2.6)
Dennis, 2011 ⁶³	RS, SC, obs	IV	69	90	Modified Mitchell OT	Distal 1st MT OT	3.1 (2.1-4.8)
Deorio, 2001 ⁶⁴	RS, SC, obs	IV	32	41	Chevron OT	Distal 1st MT OT	2.5 (1.2-4.1)
Desjardins, 1993 ⁶⁵	RS, SC, obs	IV	63	91	Mitchell OT	Distal 1st MT OT	3.3 (1-11.2)
Deveci, 2013 ⁶⁶	RS, SC, obs	IV	43	50	Scarf OT	1st MT shaft OT	2.2 (1.5-3)
Di Giorgio, 2013 ⁶⁷	RS, SC, obs	IV	25	33	Distal oblique OT	Distal 1st MT OT	1.5 (1-3)
Donley, 2002 ⁶⁸	RS, SC, obs	IV	35	50	Keller resection arthroplasty	Joint hemiresection	3
Donnelly, 1994 ⁶⁹	RS, SC, obs	IV	36	42	Modified distal chevron OT	Distal 1st MT OT	1.9 (1.2-3.1)
Dreeben, 1996 ⁷⁰	RS, SC, obs	IV	20	28	Proximal crescentic OT	Proximal 1st MT OT	5.3 (4.5-7.5)
Easley, 1996 ⁷¹	PS, SC, comp	I	66	84	Proximal crescentic OT or proximal chevron OT	Proximal 1st MT OT or proximal 1st MT OT	2 (1.1-2.7), 1.7 (1.1-2.5)
El-Tantawy, 2015 ⁷²	PS, SC, obs	IV	15	20	Double (distal and proximal) OT	Other	1.9 (1.3-2.5)
Enan, 2010 ⁷³	PS, SC, obs	IV	24	36	Minimally invasive distal OT	Distal 1st MT OT	1.8 (1-3)
Fadel, 2008 ⁷⁴	RS, SC, obs	IV	32	39	Proximal closing-wedge OT	Proximal 1st MT OT	2.5 (1.5-4.2)
Faour-Martin, 2013 ⁷⁵	PS, SC, obs	IV	87	115	Percutaneous distal OT	Distal 1st MT OT	10.1
Faraco Urrego, 2014 ⁷⁶	RS, SC, obs	IV	17	20	Minimally invasive distal OT	Distal 1st MT OT	1.7 (1.3-2)
Finsen, 1980 ⁷⁷	RS, SC, obs	IV	30	40	McBride procedure	Simple bunionectomy and soft-tissue release	(9-12)
Franzreb, 1999 ⁷⁸	RS, SC, obs	IV	57	62	Resection arthroplasty	Joint hemiresection	3 (1.4-5.7)
Galli, 2007 ⁷⁹	RS, SC, obs	IV	25	25	Scarf OT	1st MT shaft OT	2 (2-2)
Gebuhr, 1992 ⁸⁰	RS, SC, obs	IV	36	46	McBride procedure	Simple bunionectomy and soft-tissue release	9 (2-11)
Georgieva, 2011 ⁸¹	RS, SC, comp	III	70	70	Mitchel OT or Keller-Brandes Procedure	Distal 1st MT OT or joint hemiresection	1 (1-1)
Giannini, 2013 ⁸²	PS, SC, comp	II	40	40	Distal minimally invasive OT or Scarf OT	Distal 1st MT OT or 1st MT shaft OT	(2-7)
Giannini, 2013 ⁸³	PS, SC, obs	IV	577	896	Distal minimally invasive OT	Distal 1st MT OT	7 (5-10)
Giotis, 2016 ⁸⁴	RS, SC, obs	IV	33	44	Modified distal chevron OT	Distal 1st MT OT	2.7 (min. 2)
Givissis, 2004 ⁸⁵	RS, SC, obs	IV	20	32	Wilson OT	Distal 1st MT OT	2.8 (1-5.3)

Glazebrook, 2014 ⁸⁶	PS, SC, comp	I	73	73	Proximal opening-wedge OT or proximal chevron OT	Proximal 1st MT OT or proximal 1st MT OT	1 (1-1)
Goel, 1993 ⁸⁷	RS, SC, obs	IV	30	35	Distal V OT	Distal 1st MT OT	3 (0.7-4.2)
Goforth, 1996 ⁸⁸	RS, SC, obs	IV	32	45	Austin OT	Distal 1st MT OT	5 (min. 1.5)
Granberry, 1995 ⁸⁹	RS, SC, comp	III	39	56	Proximal closing-wedge OT and Akin OT	Proximal 1st MT OT and phalangeal OT	1.8 (min. 1)
Groulier, 1988 ⁹⁰	RS, SC, obs	IV	NR	210	Modified McBride procedure, Akin OT, and MT OT	Other	4 (1-13)
Guclu, 2011 ⁹¹	RS, SC, obs	IV	59	88	Distal chevron OT with a capsuloperiosteal flap	Distal 1st MT OT	11.3(10-16.1)
Guerrero Forero, 2015 ⁹²	RS, SC, obs	IV	57	69	Chevron OT or Scarf OT	Other	12 (12-12)
Gupta, 2008 ⁹³	PS, SC, obs	IV	17	23	Scarf OT	1st MT shaft OT	1.5 (1-1.8)
Gusgen, 2005 ⁹⁴	RS, SC, obs	IV	60	66	Distal chevron OT	Distal 1st MT OT	2.9 (1.1-5.7)
Han, 2015 ⁹⁵	RS, SC, comp	III	95	104	Straight or oblique proximal OT	Proximal 1st MT OT	2 (1.6-3.5)
Hansen, 1974 ⁹⁶	RS, SC, obs	IV	91	139	McBride procedure	Simple bunionectomy and soft-tissue release	6.3 (5-8)
Hattrup, 1985 ⁹⁷	RS, SC, obs	IV	154	225	Distal chevron OT	Distal 1st MT OT	2.3 (1-6.3)
Havlíček, 2007 ⁹⁸	RS, SC, obs	IV	72	84	McBride procedure and/or distal chevron OT	Other	10.3 (9.8-12)
Henning, 1997 ¹⁰⁰	RS, SC, obs	IV	53	57	Hohmann OT or chevron OT or Lelievre-Viladot procedure or proximal 1st MT OT	Other	4.8 (0.5-10)
Hirvensalo, 1991 ¹⁰¹	PS, SC, obs	IV	60	78	Distal chevron OT	Distal 1st MT OT	1.2 (1-2.6)
Hofstaetter, 2006 ¹⁰²	PS, SC, obs	IV	67	70	Modified proximal Ludloff OT	Proximal 1st MT OT	3.1
Hofstaetter, 2012 ¹⁰³	PS, SC, obs	IV	61	86	Distal chevron OT	Distal 1st MT OT	3.3
Horne, 1984 ¹⁰⁴	RS, SC, obs	IV	51	76	Distal chevron OT	Distal 1st MT OT	3 (0.5-8)
Hyytinen, 1995 ¹⁰⁵	RS, SC, obs	IV	44	63	Modified distal 1st MT OT	Distal 1st MT OT	4.6 (1.7-6.5)
Iannò, 2013 ¹⁰⁶	PS, SC, obs	IV	72	85	Minimally invasive modified Bosch OT	Distal 1st MT OT	6.1 (1.4-10.3)
Jardé, 1996 ¹⁰⁷	RS, SC, obs	IV	50	62	Akin OT and lateral release	Other	5 (4-10)
Jawish, 2010 ¹⁰⁸	RS, SC, obs	IV	63	101	Opening-wedge OT of the 1st cuneiform	Other	7.7 (1.5-14.8)
Jung, 2014 ¹⁰⁹	RS, SC, obs	IV	98	117	Proximal reverse chevron OT and Akin OT	Proximal 1st MT OT and phalangeal OT	1.2 (1-2.1)
Kalender, 2013 ¹¹⁰	RS, SC, obs	IV	25	43	Mitchell OT	Distal 1st MT OT	1.4 (1-4.5)
Karataglis, 2001 ¹¹¹	RS, SC, comp	III	86	107	Mitchell OT or Wilson OT	Distal 1st MT OT or distal 1st MT OT	2.8 (1.2-10.2), 3.2 (1.1-19.6)
Kayali, 2008 ¹¹²	RS, SC, obs	IV	30	31	McBride procedure	Simple bunionectomy and soft-tissue release	4.5 (3-6.8)
Kelikian, 1988 ¹¹³	RS, SC, obs	IV	35	50	Modified Z OT	1st MT shaft OT	1.8 (1-5)

Kim, 2013 ¹¹⁴	RS, SC, obs	IV	51	56	Distal chevron OT	Distal 1st MT OT	2.3 (2-3.8)
Kinnard, 1991 ¹¹⁵	RS, SC, obs	IV	19	28	Akin OT	Other	2.3 (1-3.5)
Kinnard, 1984 ¹¹⁶	RS, SC, comp	III	21	30	Distal chevron OT or Mitchell OT	Distal 1st MT OT or distal 1st MT OT	1.8, 2.8
Klareskov, 1988 ¹¹⁷	RS, SC, obs	IV	51	77	Wilson OT	Distal 1st MT OT	3 (2-4)
Kokavec, 2005 ¹¹⁸	RS, SC, obs	IV	21	37	Frejka OT	Proximal 1st MT OT	3 (2.4-3.8)
Kopp, 2005 ¹¹⁹	RS, SC, obs	IV	29	35	Modified Lapidus AD	1st TMT AD	3.5 (2.4-7.8)
Kromann-Andersen, 1982 ¹²⁰	RS, SC, obs	IV	41	51	Crawford Adams oblique OT	Distal 1st MT OT	3.5 (1-7.4)
Kuo, 1998 ¹²¹	RS, SC, obs	IV	96	161	Modified Mitchell OT	Distal 1st MT OT	3.2 (1.5-5)
Kurian, 2000 ¹²²	RS, SC, obs	IV	20	25	Regnauld procedure	Joint hemiresection	3.3 (2.5-5.7)
Lambers Heerspink, 2015 ⁹⁹	RS, SC, comp	III	84	84	Distal chevron OT or Mitchell OT	Distal 1st MT OT or distal 1st MT OT	4.8 (4-6)
Lee, 2008 ¹²³	PS, SC, comp	I	65	85	Distal chevron OT or distal chevron OT	Proximal 1st MT OT or proximal 1st MT OT	1.7 (1-2.6), 1.6 (1-2.1)
Lee, 2007 ¹²⁴	RS, SC, obs	IV	29	35	Distal chevron OT and Akin OT	Distal 1st MT OT and phalangeal OT	2.2 (2-2.7)
Leemrijse, 2012 ¹²⁵	RS, SC, obs	IV	12	15	Scarf OT	1st MT shaft OT	7.7
Li, 2016 ¹²⁶	RS, SC, obs	IV	50	53	Arthroscopic bunionectomy	Simple bunionectomy and soft-tissue release	3.2 (2-5)
Loh, 2015 ¹²⁷	PS, SC, comp	II	206	206	Scarf OT	1st MT shaft OT	2 (2-2)
Lorei, 2006 ¹²⁸	PS, SC, obs	II	32	32	Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	2.8 (1.2-4.3)
Loretz, 1993 ¹²⁹	RS, SC, obs	IV	48	69	Distal "L" or Reverdin-Laird OT	Distal 1st MT OT	2.8 (1.1-3.9)
Love, 1987 ¹³⁰	PS, SC, obs	IV	44	75	Keller-Brandes procedure	Joint hemiresection	2.6 (1-5.3)
Lüthje, 1990 ¹³¹	RS, SC, obs	IV	38	52	Proximal opening-wedge OT	Proximal 1st MT OT	4.6 (3-8)
Maffulli, 2009 ¹³²	RS, SC, comp	III	72	72	Scarf OT and Akin OT or Bosch OT	1st MT shaft OT and phalangeal OT or distal 1st MT OT	2.5 (2.1-3.2)
Maffulli, 2005 ¹³³	RS, SC, obs	IV	15	21	Minimally invasive distal OT	Distal 1st MT OT	2.1
Magnan, 2005 ¹³⁴	RS, SC, obs	IV	82	118	Minimally invasive distal OT	Distal 1st MT OT	3 (2-6.5)
Mahadevan, 2016 ¹³⁵	PS, SC, comp	II	84	109	Modified distal chevron OT or Scarf OT	Distal 1st MT OT or 1st MT shaft OT	1 (1-1)
Majkowski, 1992 ¹³⁶	RS, SC, comp	III	51	81	Keller-Brandes procedure or modified Mayo procedure	Joint hemiresection	3.3 (2-9)
Manjure, 2003 ¹³⁷	RS, SC, obs	IV	70	102	Wilson OT	Distal 1st MT OT	6 (2-16)
Mann, 1991 ¹³⁸	RS, SC, obs	IV	47	72	DuVries modified McBride procedure	Simple bunionectomy and soft-tissue release	4 (2-8)
Mann, 1997 ¹³⁹	RS, SC, obs	IV	17	23	Distal chevron OT	Distal 1st MT OT	3 (1-5)
Mao, 2015 ¹⁴⁰	RS, SC, obs	IV	21	21	Proximal crescentic OT	Proximal 1st MT OT	1.3 (1-2.2)
Markbreiter, 1997 ¹⁴¹	RS, SC, obs	III	36	50	Proximal crescentic OT or proximal chevron OT	Proximal 1st MT OT or proximal 1st MT OT	5.2 (3.3-11.8), 1.8 (1-2.8)
Martinez-Nova, 2008 ¹⁴²	PS, SC, comp	III	31	31	McBride procedure	Simple bunionectomy and soft-tissue release	1.3 (1-1.5)

Martinez-Nova, 2008 ¹⁴³	PS, SC, obs	IV	26	30	Akin OT	Other	1 (1-1.1)
Marudanayagam, 2014 ¹⁴⁴	RS, SC, obs	IV	52	57	Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	2.2 (2-3)
Matricali, 2014 ¹⁴⁵	PS, SC, comp	I	86	88	Distal chevron OT or Scarf OT	Distal 1st MT OT or 1st MT shaft OT	2 (2-2)
McDonald, 1988 ¹⁴⁶	RS, MC, obs	IV	48	60	Austin OT and Akin OT	Distal 1st MT OT and phalangeal OT	2.8 (1.4-6.2)
McLaughlin, 1990 ¹⁴⁷	RS, SC, obs	IV	46	52	Keller-Brandes procedure	Joint hemiresection	2.5 (1-5.4)
Meyer, 1990 ¹⁴⁸	RS, SC, obs	IV	75	100	Regnauld procedure	Joint hemiresection	6 (3-10)
Meyer, 1987 ¹⁴⁹	RS, SC, obs	IV	21	21	Modified McBride procedure	Simple bunionectomy and soft-tissue release	5.5 (4-7)
Moalli, 1997 ¹⁵⁰	RS, SC, obs	IV	33	36	Mitchell OT	Distal 1st MT OT	1.8 (1-3.2)
Monteleone, 2003 ¹⁵¹	RS, SC, obs	IV	26	28	Viladot-Regnauld procedure	Joint hemiresection	18.7 (12-26)
Moon, 2012 ¹⁵²	RS, SC, comp	III	95	108	Distal chevron OT	Distal 1st MT OT	3.8 (2-5.8)
Morandi, 2013 ¹⁵³	PS, SC, comp	III	383	439	Distal chevron OT	Distal 1st MT OT	2.6, 2.3
Mühlbauer, 2001 ¹⁵⁴	PS, SC, obs	IV	45	55	Modified distal chevron OT	Distal 1st MT OT	2.8 (2-4.8)
Murawski, 2011 ¹⁵⁵	RS, SC, obs	IV	140	140	Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	3.4 (2-5.7)
Neese, 2009 ¹⁵⁶	RS, SC, obs	IV	28	36	Modified Mau-Reverdin OT	1st MT shaft OT	4 (1-10.1)
Nery, 2013 ¹⁵⁷	RS, SC, comp	III	28	50	Distal chevron OT or biplanar chevron OT or Mitchell OT or Scarf OT or proximal OT	Other	10 (2-20)
Nery, 2013 ¹⁵⁸	RS, SC, obs	IV	41	70	Proximal opening-wedge OT and Akin OT	Proximal 1st MT OT and phalangeal OT	2.4 (1-5)
Nikolau, 2009 ¹⁵⁹	RS, SC, comp	III	68	71	Mitchell OT	Distal 1st MT OT	2 (1-3), 1.8 (1-2.7)
Oh, 2008 ¹⁶⁰	RS, SC, obs	IV	46	77	Modified distal chevron OT	Distal 1st MT OT	4.3 (3-7)
Oh, 2004 ¹⁶¹	RS, SC, obs	IV	22	38	Modified distal chevron OT	Distal 1st MT OT	3 (2-5)
O'Kane, 2002 ¹⁶²	PS, SC, obs	IV	35	50	Rotation Scarf OT and Akin OT	1st MT shaft OT and phalangeal OT	2.4 (1-3.3)
Okuda, 2008 ¹⁶³	RS, SC, obs	IV	41	54	Proximal crescentic OT	Proximal 1st MT OT	2.5 (1-7.6)
Okuda, 2011 ¹⁶⁴	RS, SC, obs	IV	55	72	Proximal crescentic OT	Proximal 1st MT OT	2.8 (1.2-10)
Oravakangas, 2016 ¹⁶⁵	RS, SC, obs	IV	20	23	Proximal opening-wedge OT	Proximal 1st MT OT	5.8 (4.6-7)
Orzechowski, 2008 ¹⁶⁶	RS, SC, obs	IV	65	121	McBride procedure	Simple bunionectomy and soft-tissue release	6.5 (4-11)
Ozkan, 2010 ¹⁶⁷	RS, SC, comp	III	37	42	Distal Lindgren-Turan OT	Distal 1st MT OT	1.2 (12-28)
Ozkurt, 2008 ¹⁶⁸	RS, SC, obs	IV	40	43	Distal chevron OT	Distal 1st MT OT	3.6 (1-7.6)
Paczesny, 2009 ¹⁶⁹	RS, SC, comp	III	32	40	Scarf OT or proximal closing-wedge OT	1st MT shaft OT or proximal 1st MT OT	3.8 (2-5.3)
Park, 2013 ¹⁷⁰	RS, SC, obs	IV	53	62	Distal chevron OT and Akin OT	Distal 1st MT OT and phalangeal OT	1.3 (1-2.6)
Park, 2013 ¹⁷¹	RS, SC, comp	III	55	67	Distal chevron OT or proximal chevron OT	Distal 1st MT OT or proximal 1st MT OT	1.2 (1.2-2.7), 1.2 (1.3-2.2)

Park, 2013 ¹⁷²	PS, SC, comp	II	122	122	Distal chevron OT	Distal 1st MT OT	3.2 (2-5.7)
Parra-Télez, 2013 ¹⁷³	RS, SC, obs	IV	46	58	Modified Scarf OT	1st MT shaft OT	2.4
Paulick, 2015 ¹⁷⁴	RS, SC, comp	III	25	25	Lapidus AD	1st TMT AD	1.7 (1-3.2)
Paulin, 1976 ¹⁷⁵	RS, SC, obs	IV	43	63	Simple bunionectomy	Simple bunionectomy and soft-tissue release	3 (1-12)
Pelto-Vasenius, 1997 ¹⁷⁶	RS, SC, obs	IV	70	94	Distal chevron OT	Distal 1st MT OT	2.1 (1-7.8)
Pentikainen, 2014 ¹⁷⁷	PS, SC, comp	III	100	100	Distal chevron OT	Distal 1st MT OT	7.9 (5.8-9.4)
Petersen, 2000 ¹⁷⁸	RS, SC, obs	IV	45	45	Scarf OT	1st MT shaft OT	1.3 (1-4)
Peterson, 1994 ¹⁷⁹	RS, SC, obs	IV	42	58	Distal MT OT	Distal 1st MT OT	2.5 (1-4.2)
Petroutsas, 2005 ¹⁸⁰	RS, SC, obs	IV	76	76	Ludloff OT	1st TM shaft OT	3 (2-4.7)
Piper, 2000 ¹⁸¹	RS, SC, obs	IV	29	35	Hohmann OT	Distal 1st MT OT	6 (0.9-5.9)
Potenza, 2009 ¹⁸²	RS, SC, obs	IV	42	52	Distal chevron OT	Distal 1st MT OT	(2-3)
Prasad, 1998 ¹⁸³	RS, SC, obs	IV	50	50	Keller resection arthroplasty	Joint hemiresection	7.6 (2-13.8)
Radwan, 2012 ¹⁸⁴	PS, SC, comp	I	60	64	Minimally invasive distal OT or distal chevron OT	Distal 1st MT OT or distal 1st MT OT	1.8 (1-3), 1.6 (1-3)
Randhawa, 2009 ¹⁸⁵	RS, SC, obs	IV	29	31	Proximal opening-wedge OT and Akin OT	Proximal 1st MT OT and phalangeal OT	1.4 (1-2)
Rangrez, 2012 ¹⁸⁶	PS, SC, obs	IV	40	50	Gibson or Piggott OT	Distal 1st MT OT	(1-5)
Rennotte, 1976 ¹⁸⁷	RS, SC, obs	IV	34	54	Keller resection arthroplasty	Joint hemiresection	6.5 (0.5-15)
Resch, 1994 ¹⁸⁸	PS, SC, comp	I	84	106	Distal chevron OT	Distal 1st MT OT	3 (1-4)
Resch, 1993 ¹⁸⁹	PS, SC, comp	I	68	80	Distal chevron OT or proximal closing-wedge OT	Distal 1st MT OT or proximal 1st MT OT	3.5 (1-4.8)
Rix, 1968 ¹⁹⁰	RS, SC, obs	IV	38	59	Modified Mayo procedure	Joint hemiresection	6.5 (2-16)
Rossi, 1992 ¹⁹¹	RS, SC, obs	IV	112	168	Distal chevron OT	Distal 1st MT OT	4.4 (1.1-7.5)
Rowe, 1985 ¹⁹²	RS, SC, obs	IV	20	32	Modified Hohman OT	Distal 1st MT OT	5 (2-10)
Sakka, 1995 ¹⁹³	RS, SC, obs	IV	28	49	McBride procedure	Simple bunionectomy and soft-tissue release	6 (1.3-15)
Salvi, 1992 ¹⁹⁴	PS, SC, obs	IV	44	44	Austin OT	Distal 1st MT OT	2.5
Sanhudo, 2006 ¹⁹⁵	RS, SC, obs	IV	34	50	Modified chevron shaft OT and Akin OT	1st MT shaft OT and phalangeal OT	2.5 (min. 1.1)
Saro, 2007 ¹⁹⁶	PS, SC, comp	I	92	92	Lundgren OT or distal chevron OT	Distal 1st MT OT or distal 1st MT OT	4.7 (3-6)
Saxena, 1997 ¹⁹⁷	RS, SC, obs	IV	12	14	Ludloff OT and Akin OT	1st MT shaft OT and phalangeal OT	4
Saxena, 2013 ¹⁹⁸	PS, SC, comp	II	112	119	Ludloff OT	1st MT shaft OT	4.2
Scala, 2013 ¹⁹⁹	RS, SC, obs	IV	126	146	Minimally invasive distal OT	Distal 1st MT OT	2.4 (1-4.5)
Schemitsch, 1989 ²⁰⁰	RS, SC, obs	IV	65	100	Wilson OT	Distal 1st MT OT	5.2 (2-15)
Schneider, 2004 ²⁰¹	RS, SC, obs	IV	73	112	Distal chevron OT	Distal 1st MT OT	12.7 (10-14.6)

Schneider, 2002 ²⁰²	RS, SC, comp	III	58	76	Keller-Brandes procedure or distal chevron OT	Joint hemiresection or distal 1st MT OT	5.7 (5.1-7.2), 5.7 (5-7.6)
Schulz, 2003 ²⁰³	RS, SC, obs	IV	55	62	Keller-Brandes procedure	Joint hemiresection	9.6 (3.5-15.5)
Selner, 1999 ²⁰⁴	RS, SC, obs	IV	84	121	Distal OT	Distal 1st MT OT	1.8 (1.5-2)
Shi, 2016 ²⁰⁵	RS, SC, comp	III	76	76	Distal chevron OT	Distal 1st MT OT	1 (1-1)
Siclari, 2009 ²⁰⁶	RS, SC, obs	IV	49	59	Minimally invasive distal OT	Distal 1st MT OT	2.6 (1-4)
Siekman, 2014 ²⁰⁷	RS, SC, obs	IV	32	32	Double proximal and distal OT	Other	4.9 (4.6-5.4)
Silovský, 1993 ²⁰⁸	RS, SC, obs	IV	74	87	Dega OT	Distal 1st MT OT	2.6 (0.5-6)
Small, 1995 ²⁰⁹	RS, SC, obs	IV	50	71	Distal chevron OT	Distal 1st MT OT	1.3 (1-2.1)
Sjøbjerg, 1980 ²¹⁰	RS, SC, obs	IV	94	148	Hohmann-Thomasen OT	Distal 1st MT OT	4.7 (2-7)
Stienstra, 2002 ²¹¹	RS, SC, obs	IV	34	38	Distal chevron OT	Distal 1st MT OT	2.6 (1-10.9)
Szudy, 2003 ²¹²	RS, SC, obs	IV	41	68	Dega OT	Distal 1st MT OT	4.5 (2-10)
Takao, 2007 ²¹³	RS, SC, obs	IV	22	27	Proximal oblique-domed OT	Proximal 1st MT OT	2.6 (2-3.8)
Tan, 1998 ²¹⁴	RS, SC, obs	IV	38	55	Mitchell OT	Distal 1st MT OT	2.5 (1-5)
Tanaka, 2008 ²¹⁵	RS, SC, obs	IV	37	48	Proximal spherical OT	Proximal 1st MT OT	4.1 (2-8)
Tangen, 1971 ²¹⁶	RS, SC, obs	IV	109	177	Modified Hohmann-Thomasen OT	Distal 1st MT OT	4 (2-5)
Teli, 2001 ²¹⁷	PS, SC, obs	IV	45	60	Mitchell OT	Distal 1st MT OT	2.1 (1-3.1)
Terzis, 1997 ²¹⁸	RS, SC, obs	IV	38	55	Mayday OT	Distal 1st MT OT	2.4 (1-4.6)
Thangarajah, 2013 ²¹⁹	RS, SC, obs	IV	23	23	Mau OT and Akin OT	1st MT shaft OT and phalangeal OT	(min. 1)
Tomizawa, 1992 ²²⁰	RS, SC, obs	IV	38	48	Modified Lapidus AD	1st TMT AD	5.2 (1-12)
Tong, 2012 ²²¹	RS, SC, obs	IV	20	23	Minimally invasive distal OT	Distal 1st MT OT	1.8 (1-5)
Torkki, 2001 ²²²	PS, MC, comp	I	70	97	Austin OT	Distal 1st MT OT	(min. 1)
Torkki, 2001 ²²³	RS, SC, obs	IV	76	106	Distal chevron OT	Distal 1st MT OT	6 (5.5-7.7)
Tóth, 2007 ²²⁴	RS, SC, obs	IV	135	240	Lindgren-Turan OT	Distal 1st MT OT	4.2
Tóth, 2010 ²²⁵	RS, SC, obs	IV	18	22	Different OTs (Lindgren-Turan OT or proximal OT) and Akin OT	Other	2.2 (0.7-4.8)
Trnka, 2008 ²²⁶	PS, SC, comp	IV	99	111	Ludloff OT	1st MT shaft OT	2.8 (1.5-4.7)
Trnka, 1999 ²²⁷	RS, SC, obs	IV	59	83	Proximal closing-wedge OT	Proximal 1st MT OT	16.2 (12-22.2)
Trnka, 2000 ²²⁸	PS, SC, obs	II	86	114	Distal chevron OT	Distal 1st MT OT	2 (2-2), 5 (5-5)
Udin, 1992 ²²⁹	RS, SC, obs	III	NR	98	McBride procedure or Hohmann OT	Simple bunionectomy, soft-tissue release or distal 1st MT OT	19 (7-34)
Us, 1999 ²³⁰	RS, SC, obs	IV	24	31	Distal chevron OT	Distal 1st MT OT	1.2 (1-2.2)
Uygur, 2016 ²³¹	PS, SC, comp	II	66	66	Lundgren OT or distal chevron OT	Distal 1st MT OT	2.2 (1.6-2.8)
Valente Lestingi, 1999 ²³²	RS, SC, obs	IV	22	34	Keller resection arthroplasty	Joint hemiresection	(min. 20)
Velkes, 1991 ²³³	RS, SC, obs	IV	50	80	Distal chevron OT	Distal 1st MT OT	4.6 (2-7)
Veri, 2001 ²³⁴	RS, SC, obs	IV	20	31	Proximal crescentic OT	Proximal 1st MT OT	12.1 (11-13)

Wagdy, 1995 ²³⁵	RS, SC, obs	IV	71	79	Distal double OT	Distal 1st MT OT	(2-5)
Wanivenhaus, 1988 ²³⁶	RS, SC, obs	IV	21	26	Proximal closing-wedge OT	Proximal 1st MT OT	2.8 (1.5-8)
Weatherall, 2013 ²³⁷	RS, SC, obs	IV	25	25	Suture-button implant	Other	1.9 (1.4-2.2)
Weng, 1995 ²³⁸	RS, SC, obs	IV	28	44	Modified McBride procedure	Simple bunionectomy and soft-tissue release	4.5 (3-5.5)
Wester, 2016 ²³⁹	PS, SC, comp	II	45	45	Proximal OT (opening-wedge or crescentic)	Proximal 1st MT OT	1 (1-1)
Winemaker, 1996 ²⁴⁰	RS, SC, comp	III	32	52	Distal chevron OT	Distal 1st MT OT	2.4 (1.1-4.2)
Wong, 2014 ²⁴¹	RS, SC, obs	IV	27	54	Suture-button implant	Other	2.2 (2-2.8)
Wu, 2015 ²⁴²	RS, SC, obs	IV	36	63	Suture-button implant	Other	2.1 (1-4.6)
Wu, 2015 ²⁴³	RS, SC, obs	IV	61	110	Suture-button implant	Other	1.9 (1-3.2)
Yasuda, 2015 ²⁴⁴	RS, SC, obs	IV	66	83	Proximal supination OT	Proximal 1st MT OT	2.8 (2.1-4.3)
Yeung, 2004 ²⁴⁵	RS, SC, obs	IV	24	28	Mayday OT	Distal 1st MT OT	2.2 (1-4.3)
Yu, 2011 ²⁴⁶	RS, SC, obs	IV	41	45	Austin OT	Distal 1st MT OT	2.2 (1.3-3)
Zembsch, 1999 ²⁴⁷	RS, SC, obs	IV	24	37	Keller-Brandes procedure	Joint hemiresection	13 (10-16)
Zembsch, 2000 ²⁴⁸	RS, SC, obs	III	58	87	Proximal closing-wedge OT or Keller-Brandes procedure	Proximal 1st MT OT or joint hemiresection	18, 13
Zettl, 2000 ²⁴⁹	RS, SC, obs	IV	70	86	Proximal crescentic OT and Akin OT	Proximal 1st MT OT and phalangeal OT	2.2 (1-5)
Zhang, 2010 ²⁵⁰	RS, SC, obs	IV	25	38	Extensor hallucis longus tendon transfer	Simple bunionectomy and soft-tissue release	3.2 (2.3-3.8)
Zorzi, 2004 ²⁵¹	RS, SC, obs	IV	40	42	Minimally invasive distal OT	Distal 1st MT OT	3.2 (1-4)
Zygmunt, 1989 ²⁵²	RS, SC, obs	IV	39	66	Scarf OT	1st MT shaft OT	2.4 (1-2.7)

*AD = arthrodesis, comp = comparative, LOE = Level of Evidence, MC = multicenter, MT = metatarsal, NR = not reported, obs = observational, OT = osteotomy, PS = prospective, RS = retrospective, SC = single-center, and TMT = tarsometatarsal.

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