TABLE E-1 Summary of Characteristics of Included Trials*

Author (Year)	Level of Evidence	Type of Study	N	Groups	Follow-up	Outcomes Reported
Amin et al.[22] (2006)	I	Prospective matched cohort	82 patients (82 TKAs)	41 patients with BMI ≥40. 41 patients with BMI ≤30	Mean, 38.5 mo (range, 6-66 mo)	KSS, complications, infection (superficial, deep), DVT, mortality, 5-yr survivorship, radiographs (alignment, radiolucencies)
Amin et al.[6] (2006 no. 2)	I	Prospective cohort	283 patients (328 TKAs)	181 TKAs in nonobese patients with BMI <30. 147 TKAs in obese patients with BMI ≥30. 300 TKAs in patients weighing <100 kg. 28 TKAs in patients weighing >100 kg	60 mo	KSS, complications, mortality, infection, DVT, revision
Benjamin et al.[7] (2001)	IV	Retrospective case series	316 patients (405 TKAs)	137 unilateral TKAs in 137 patients with BMI <30. 90 unilateral TKAs in 90 patients with BMI ≥30. 102 bilateral TKAs in 51 patients with BMI <30. 76 bilateral TKAs in 38 patients with BMI ≥30	Minimum, 6 mo	KSS, wound complications, systemic complications
Bordini et al.[8] (2009)	II	Prospective cohort	8892 patients (9735 TKAs)	1840 TKAs in patients with BMI ≤25. 4692 TKAs in patients with BMI >25 but ≤30. 3031 TKAs in patients with BMI >30 but ≤40. 172 TKAs in patients with BMI >40	Mean, 3.1 yr (range, 1.5-6 yr)	Revision for any reason, revision for sepsis, polyethylene liner exchange for any reason, complications (intraoperative, postoperative, general postoperative)
Bourne et al.[9] (2007)	II	Prospective cohort	728 patients (843 TKAs)	4 patients “underweight.” 75 patients “normal weight.” 197 patients “overweight.” 250 patients “class I obesity.” 108 patients “class II obesity.” 81 patients “class III obesity.” 13 patients “class IV obesity”	Mean, 9.5 yr (range, 5-11 yr)	KSS, WOMAC, SF-12, range of motion, 10-yr survivorship, radiographs (alignment, radiolucencies)
Chesney et al.[12] (2008)	II	Prospective cohort	1349 patients (1390 TKAs, 119 UKAs)	710 patients with BMI <30. 380 patients with BMI >30 but <35. 154 patients with BMI >35 but <40. 34 patients with BMI >40	5 yr	KSS, SF-12, complications (superficial and deep infection)

Dewan et al.[23] (2009)	III	Retrospective case control	169 patients (220 TKAs)	85 TKAs in control patients with BMI 20-29. 94 TKAs in obese patients with BMI 30-39. 41 TKAs in morbidly obese patients with BMI ≥40	Mean, 5.4 yr (range, 2-14.6 yr)	KSS, range of motion, complications, infection, revision, radiographs (alignment, radiolucencies)
Dowsey et al.[15] (2010)	II	Prospective cohort	533 patients (573 TKAs)	211 patients with BMI <30. 261 patients with BMI 30-39. 57 patients with BMI >40	12 mo	IKS, SF-12, weight change at 12 mo, adverse events and complications
Ersozlu et al.[11] (2008)	III	Retrospective case control	68 patients (136 TKAs)	Group AI: 42 TKAs in patients with BMI ≥40. Group AII: 54 TKAs in patients with BMI ≥30 but <40. Group B: 40 TKAs in patients with BMI 30	Group A: mean, 34 mo (range, 24-40 mo) Group B: mean, 32 mo (range, 24-39 mo)	KSS, complications, radiographs
Foran et al.[14] (2004)	II	Retrospective matched cohort	54 patients (60 TKAs)	30 TKAs in 27 obese patients with BMI > 30. 30 TKAs in 27 control patients with BMI ≤ 30	Obese group: mean, 14.5 yr (range, 7.7-8.3 yr). Control group: mean, 15.4 yr (range, 8.3-18.4 yr)	KSS, modified HHS activity score, complications, revision, radiographs (alignment, aseptic loosening, radiolucencies)
Foran et al.[13] (2004 no. 2)	II	Retrospective matched cohort	136 patients (156 TKAs)	78 TKAs in 68 patients with BMI ≥30, including 12 TKAs in patients with BMI ≥40. 78 TKAs in 68 patients with BMI <30	Obese group: mean, 80 mo (range, 60-123 mo). Nonobese group: mean, 83 mo (range, 60-123 mo)	KSS, activity level, patellofemoral symptoms, complications, revision, Kaplan-Meier survival at 80 mo, radiographs (alignment, radiolucencies)
Griffin et al.[24] (1998)	III	Retrospective case control	56 patients (73 TKAs)	32 TKAs in 22 patients with BMI >30. 41 TKAs in 34 patients with BMI ≤30	Mean, 10.6 yr (range, 10-11.8 yr)	KSS, HSS knee rating, patellofemoral joint scale, range of motion, revision, radiographs (radiolucencies, alignment, polyethylene wear)
Hamoui et al.[10] (2006)	III	Retrospective case control	62 patients (83 TKAs)	Group A: 30 TKAs in 21 patients with BMI ≥30. Group B: 53 TKAs in 41 patients with BMI <30	Median, 11.3 yr	KSS, revision and reoperation, radiographs (alignment, radiolucencies and osteolysis)

Jackson et al.[25] (2009)	II	Prospective cohort	535 patients (535 TKAs)	153 patients with BMI ≥30. 382 patients with BMI <30	Mean, 9.2 yr (range, 0.3-12.9 yr)	HSS knee rating score, range of motion, satisfaction (scale, 1-10), radiographs (osteolysis, radiolucencies, alignment)
Järvenpää et al.[16] (2010)	II	Prospective cohort	100 TKAs	48 TKAs in patients with BMI <30. 52 TKAs in patients with BMI ≥30	3 mo	Skin incision length, pain (VAS), satisfaction, walking distance, support, range of motion, complications, radiographs (alignment)
Krushell and Fingeroth[26] (2007)	III	Retrospective case control	78 TKAs	Group A: 39 TKAs in patients with BMI <30. Group B: 39 TKAs in patients with BMI >40	Group A: mean, 90 mo (range, 60-158 mo). Group B: mean, 90 mo (range, 62-169 mo)	KSS, satisfaction, complications, radiographs (radiolucencies, alignment)
Miric et al.[27] (2002)	III	Retrospective case control	406 patients (512 TKAs)	404 TKAs in 320 patients with BMI <35. 108 TKAs in 86 patients with BMI >35	Mean, 30 mo (range, 18-42 mo)	Surgical details, time to discharge, complications
Naal et al.[28] (2009)	III	Retrospective case control	77 patients (83 UKAs)	13 UKAs in patients with BMI <25. 47 UKAs in patients with BMI 25-29.9. 23 UKAs in patients with BMI ≥30	2 yr	KSS, UCLA activity score, anterior knee pain, range of motion, implant failure
Namba et al.[29] (2005)	II	Prospective cohort	1813 TKAs	422 TKAs in patients with BMI >35. 1391 TKAs in patients with BMI ≤35	1 yr	Pain and satisfaction (on 10-point scale), complications at 1 yr
Spicer et al.[30] (2001)	III	Retrospective case control	656 patients (751 TKAs)	Group A1: 177 TKAs in patients with BMI 30-34.9. Group A2: 90 TKAs in patients with BMI 35-39.9. Group A3: 59 TKAs in patients with BMI >40. Group B: 425 TKAs in 371 patients with BMI <30	Group A: mean, 75.9 mo (range, 48-144 mo). Group B: mean, 73.7 mo (range, 48-144 mo)	KSS, 10-yr survivorship, revision, radiographs (osteolysis and radiolucencies, alignment, polyethylene wear)

*BMI = body mass index (in kg/m^2), KSS = Knee Society Score, DVT = deep venous thrombosis, TKA = total knee arthroplasty, WOMAC = Western Ontario and McMaster Universities Osteoarthritis Index, SF-12 = Short Form-12 Health Survey, UKA = unicondylar knee arthroplasty, IKS = International Knee Society rating system, HHS = Harris hip score, HSS = Hospital for Special Surgery, VAS = visual analog scale, and UCLA = University of California Los Angeles.

TABLE E-2 Methodology Validity Criteria of Included Trials*

Author (Year)	Selection Bias	Performance Bias	Attrition Bias	Detection Bias
Amin et al.[22] (2006)	Minimal (groups matched for age, sex, diagnosis, type of prosthesis, laterality, and KSS scores, but not medical comorbidities)	Multiple surgeons participated	None	None
Amin et al.[6] (2006 no. 2)	Groups not matched for baseline characteristics	7 surgeons, PCR and PCS designs used. Not all patients had patella resurfaced	92% follow-up at 60 mo. 37 patients (42 TKAs) died during follow-up and were excluded from comparison of clinical outcomes but were included in description of complications	None
Benjamin et al.[7] (2001)	Groups not matched for baseline characteristics	None	None	Assessment of outcome not standardized/blinded
Bordini et al.[8] (2009)	Groups not matched for baseline characteristics	Multiple surgeons and prostheses used	15.6% of knees excluded because of missing information regarding weight/height	Outcomes data recorded by individual surgeons; not blinded
Bourne et al.[9] (2007)	Groups not matched for baseline characteristics	3 surgeons. Similar technique but both PCR and PCS implants utilized	74 patients (81 total knee arthroplasties) died during the study. 7 patients (1%) lost to follow-up	Radiograph assessment "blinded." Clinical assessment protocol not documented
Chesney et al.[12] (2008)	Groups not matched for baseline characteristics	8 surgeons. Single implant for TKAs and UKAs. Not all patellae resurfaced in the TKAs	92% follow-up at 5 yr	None

Dewan et al.[23] (2009)	Groups not matched for baseline characteristics	Single surgeon. Multiple different prostheses utilized with several different approaches	6 knees excluded because of lack of radiographic follow-up; morbidly obese patients had shorter follow-up	None
Dowsey et al.[15] (2010)	Groups not matched for baseline characteristics	Number of surgeons and type of implant not specified	4 patients died prior to follow-up and 4 patients did not complete a questionnaire	Information obtained by phone by a blinded observer. Attending surgeon performed all exams
Ersozlu et al.[11] (2008)	Groups not matched for baseline characteristics; bilateral TKAs performed on "healthier" patients. However, preoperative KSS scores comparable	None	2 patients "not medically stable" to undergo second procedure	No information on whether assessment was blinded
Foran et al.[14] (2004)	Minimal. Groups matched for baseline characteristics	Single implant. Number of surgeons not specified	7 patients lost to follow-up or died before 7 yr	None
Foran et al.[13] (2004 no. 2)	Minimal. Preoperative demographics similar with the exception of sex	Single implant, but varied fixation (cemented, cementless, and hybrid prostheses were utilized)	4 patients died and 4 patients lost to follow-up	None
Griffin et al.[24] (1998)	Groups not matched for baseline characteristics	None	37 patients died (53 TKAs). 19 patients (28 TKAs) excluded for RA, 6 patients (7 TKAs) lost to follow-up. 1 patient (2 TKAs) excluded for SLE. 1 patient (2 TKAs) excluded for medical disability	Assessment of outcomes not blinded
Hamoui et al.[10] (2006)	Minimal. Demographics at baseline not significantly different	Single surgeon, single implant but 2 surgical approaches	None	Assessment of outcomes not blinded

Jackson et al.[25] (2009)	Systematic differences in original group at baseline. No significant differences in matched group	2 surgeons, single implant. Patellar resurfacing variably performed	None	Surgeons recorded demographic and clinical data, surgeon was blinded to BMI when reading radiographs
Järvenpää et al.[16] (2010)	Groups not matched for baseline characteristics; however, no significant difference in comparison groups at baseline	5 surgeons, 2 implants, patella not uniformly resurfaced	None	Clinical assessment not blinded
Krushell and Fingeroth[26] (2007)	Minimal. Groups matched for baseline characteristics	2 surgeons, 2 implant designs (PS and PCR), 2 surgical approaches	None	None
Miric et al.[27] (2002)	Groups not matched for baseline characteristics	1 surgeon series, 2 implant designs (PS and constrained)	None	None
Naal et al.[28] (2009)	Groups not matched for baseline characteristics	Single prosthesis, single approach, number of surgeons not specified	5 patients lost to follow-up	Clinical data collection not blinded
Namba et al.[29] (2005)	Groups not matched for baseline characteristics	No information on type of prosthesis	None	Multiple individual input data
Spicer et al.[30] (2001)	Minimal. Groups matched for demographic data but not preoperative KSS or activity level	Single PCR prosthesis with patellar resurfacing, but included both cemented and uncemented prostheses	123 patients lost to follow-up	Details of data collection not specified

*KSS = Knee Society Score, PCR = posterior cruciate retaining, PCS = posterior cruciate sacrificing, TKA = total knee arthroplasty, UKA = unicondylar knee arthroplasty, RA = rheumatoid arthritis, SLE = systemic lupus erythematosus, BMI = body mass index, and PS = posterior stabilized.