

The majority of this data was retrieved from supplemental 1 provided by Memtsoudis et. al.,[1] with the addition of the sentiment scores from this study. As a reminder, a score of 1 is positive, -1 is negative, and 0 is neutral. n/a is provided for studies that were excluded from sentiment analysis due to either not having an abstract available on PubMed or for not being indexed in the PubMed database.

Randomized Control Trials

A: Allocation concealment B: Blinding of outcome assessors C: Blinding of participants and personnel D: Incomplete outcome data E: Other sources of bias F: Selective outcome reporting G: Sequence Generation

Study	Ref	Year	Study Type	n	A	B	C	D	E	F	G	Sentiment
Aksoy	2	2014	THA	70	Unclear	Low	High	Low	Low	Low	Low	1
Amundson	3	2017	TKA GA NA	157	Low	Low	Low	Low	Low	Low	Low	-1
Andersen	4	2012	TKA NA	40	Low	Low	Low	Low	Low	Low	Low	0
Angers	5	2019	TKA GA	90	Low	Low	Low	Low	Low	Low	Low	-1
Ashraf	6	2013	TKA NA	40	Low	Low	Low	Low	Low	Low	Unclear	0
Bali	7	2016	TKA GA	68	Low	Low	High	Low	Low	Low	Low	0
Baranovi	8	2011	TKA NA	71	Unclear	Unclear	Unclear	High	Low	Low	Low	1
Barrington	9	2005	TKA NA	108	Low	High	High	Low	Low	Low	Low	0
Beausang	10	2016	TKA NA	96	Unclear	High	High	Low	Low	Low	Unclear	0
Biswas	11	2018	TKA NA	130	Low	Low	Low	Unclear	Low	Low	Low	0
Bogoch	12	2002	THA TKA GA	115	Low	Low	Low	Low	Low	Low	Unclear	-1
Bron	13	2018	THA NA	162	Low	Low	Low	Low	Low	Low	Unclear	0
Campbell	14	2008	TKA NA	56	Unclear	Low	Unclear	High	Low	Low	Low	1
Chan	15	2013	TKA GA NA	135	Low	Low	High	Unclear	Low	Low	Low	1
Chan	16	2014	TKA	135	Unclear	Low	Unclear	Low	Low	Low	Unclear	0
Chaumeron	17	2013	TKA NA	59	Low	Low	Low	Low	Low	Low	Low	1
Chelly	18	2001	TKA GA NA	92	High	Unclear	High	Low	Low	Low	Unclear	1
Chen	19	2017	THA TKA GA	90	Low	Low	Unclear	Low	Low	Low	Low	n/a
Fahs	20	2018	THA GA	99	Low	Low	Unclear	Low	Low	Low	Low	1
Fan	21	2016	TKA GA	157	Low	Low	Low	Low	Low	Low	Low	-1
Fan	22	2017	TKA GA	65	Unclear	Unclear	Unclear	Low	Low	Low	Unclear	n/a
Fenten	23	2018	TKA NA	80	Low	Low	Low	Low	Low	Low	Low	1

Gasanova	24	2019	THA GA	60	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	1
Gmez	25	2017	TKA NA	574	Unclear	Unclear	Unclear	Low	Low	Low	Unclear	Unclear	1
Good	26	2007	TKA	42	Low	Low	Low	Low	Low	Low	Unclear	Unclear	1
Goytizolo	27	2016	THA NA	90	Low	Low	Low	Low	Unclear	Low	Low	Unclear	0
Goytizolo	28	2020	TKA NA	111	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	0
Grosso	29	2018	TKA NA	102	Low	Low	Low	Unclear	Low	Low	Low	Unclear	0
Hua	30	2017	THA GA	60	Unclear	Unclear	Unclear	High	Low	Low	Low	n/a	
Johnson	31	2017	THA GA NA	159	Low	Low	High	Low	Low	Low	Low	Unclear	0
Kadic	32	2009	TKA NA	53	Low	Low	Unclear	Low	Low	Low	Low	Unclear	-1
Kampitak	33	2018	TKA NA	57	Low	Low	Low	Low	Low	Low	Low	Unclear	1
Kardash	34	2007	TKA NA	40	Unclear	Low	Low	Low	Low	Low	Unclear	Unclear	-1
Kayupov	35	2018	TKA GA NA	91	Low	High	High	High	Unclear	Low	Low	Unclear	0
Kearns	36	2016	THA NA	108	Low	Low	Low	Low	Low	Low	Low	Unclear	-1
Kendrii	37	2017	THA GA NA	30	Unclear	Unclear	Unclear	Low	Low	Low	Unclear	n/a	
Kovalak	38	2015	TKA NA	60	Low	Unclear	Unclear	Low	Low	Low	Low	Unclear	1
Kratz	39	2015	THA GA	52	Low	Low	High	High	Low	Low	Low	Unclear	1
Kuchlik	40	2017	THA NA	56	Low	Low	Low	Low	Low	Low	Low	Unclear	0
Kulkarni	41	2019	TKA NA	100	Low	Low	Low	Low	Low	Low	Low	Unclear	-1
Lee	42	2011	TKA NA	78	Low	Low	Low	Low	Low	Low	Low	Unclear	0
Lee	43	2012	TKA GA	40	Unclear	Unclear	Unclear	Low	Low	Low	Unclear	Unclear	-1
Leung	44	2018	TKA NA	70	Low	Low	Low	Low	Low	Low	Low	Unclear	1
Li	45	2017	TKA	53	Low	Low	Low	Low	Low	Low	Low	Unclear	1
Long	46	2006	TKA NA	70	Unclear	Unclear	Unclear	High	Low	Unclear	Unclear	n/a	
Lu	47	2017	TKA GA NA	57	Unclear	Low	High	Low	Low	Low	Low	n/a	
Lueznar	48	2020	TKA	139	Low	Low	Low	Low	Low	Low	Low	Unclear	-1
Ivarez	49	2017	TKA NA	39	High	High	High	Low	Low	Low	Low	Unclear	1
Marino	50	2009	THA NA	150	Low	High	Unclear	Low	Low	Low	Low	Unclear	1
Mei	51	2017	THA GA	132	Low	Low	Unclear	Low	Low	Unclear	Low	Unclear	1
Moghtadaei	52	2014	TKA NA	36	Low	Low	Low	Unclear	Low	Low	Low	Unclear	1
Nader	53	2012	TKA NA	62	Low	Unclear	Unclear	Low	Low	Low	Low	Unclear	1

Ng	54	2001	TKA GA	48	Low	Low	Low	Low	Low	Low	Low	Low	-1
Ng	55	2012	TKA GA	32	Low	Low	Low	Low	Low	Low	Low	Low	0
Nishio	56	2014	THA GA NA	19	Low	Unclear	Unclear	Low	Low	Low	Low	Low	1
Niskanen	57	2005	TKA NA	50	Unclear	High	High	Low	Low	Low	Low	Unclear	1
Peng	58	2014	TKA GA	280	Low	Unclear	High	Low	Low	Low	Low	Low	1
Reinhardt	59	2014	TKA NA	94	Low	Low	Low	Low	Low	Low	Low	Low	0
Rizk	60	2017	TKA GA	75	Low	Unclear	Unclear	Low	Low	Low	Low	Low	n/a
Safa	61	2014	TKA NA	68	Low	Low	Low	Low	Low	Low	Low	Low	0
Sahin	62	2014	TKA NA	104	Low	Low	Low	Low	Low	Low	Low	Low	1
Saine	63	2018	TKA NA	60	Low	Low	Low	Low	Low	Low	Low	Low	0
Seet	64	2006	TKA NA	37	Low	Unclear	Unclear	Low	Low	Low	Low	Unclear	0
Siddiqui	65	2007	THA GA	34	Low	High	High	Low	Low	Low	Low	Low	1
Singelyn	66	1998	TKA GA NA	30	Low	Unclear	Unclear	Low	Low	Low	Low	Low	1
Sites	67	2004	TKA NA	40	Low	Unclear	Unclear	Low	Low	Low	Low	Low	1
Sogbein	68	2017	TKA NA	70	Low	Low	Low	Low	Low	Low	Low	Low	1
Spangehl	69	2015	TKA GA	160	Low	High	High	Low	Low	Low	Low	Low	1
Stathellis	70	2017	TKA GA	50	Low	Unclear	Unclear	Low	Low	Low	Low	Low	1
Stevens	71	2000	THA GA	60	Unclear	Unclear	Low	Low	Low	Low	Low	Unclear	1
Sundarathiti	72	2009	TKA NA	61	Unclear	Unclear	Unclear	Low	Low	Low	Low	Unclear	1
Thybo	73	2016	THA NA	100	Low	Low	Low	Unclear	Low	Low	Low	Low	0
Toftdahl	74	2007	TKA NA	77	Low	Unclear	Unclear	Low	Low	Low	Low	Low	0
Tong	75	2019	TKA NA	40	Low	Low	Low	Low	Low	Low	Low	Low	0
Twyman	76	1990	THA GA	20	Unclear	Unclear	Unclear	Low	High	Low	Low	Unclear	1
Wall	77	2017	TKA GA NA	257	Low	Low	Unclear	Unclear	Low	Low	Unclear	Low	1
Wang	78	2019	TKA	90	Low	Low	Low	Low	Low	Low	Low	Low	0
Widmer	79	2012	TKA GA	55	Low	Low	Low	Low	Low	Low	Low	Low	1
Wu	80	2014	TKA NA	79	Low	High	High	Unclear	Low	Low	Low	Low	1
Yamamoto	81	2019	THA NA	53	Low	Low	Low	Low	Low	Low	Low	Low	0
Zhou	82	2018	TKA GA	40	Low	Low	Low	Low	Low	Low	Low	Low	0
Zinkus	83	2017	TKA NA	54	Low	Low	Low	Low	Low	Low	Low	Low	1

Observational Studies

A: Failure to adequately control for confounding B: Failure to develop and apply appropriate eligibility criteria C: Flawed measurement of exposure or outcome D: Incomplete follow-up

Study	Year	Ref	Study Type	Study Technique	Patient	A	B	C	D	Sentiment
Akkaya	2014	84	Case-control	TKA NA	27	High	Low	Low	High	-1
Alsheik	2020	85	Retrospective cohort	TKA GA NA	80	Unclear	Low	Low	Low	1
Antoni	2014	86	Retrospective cohort	TKA GA	98	High	High	Low	Low	-1
Asakura	2011	87	Retrospective cohort	TKA GA	40	High	Low	Low	Low	1
Beaupre	2012	88	Prospective cohort	TKA GA NA	39	High	Low	Low	Low	0
Cien	2015	89	Retrospective cohort	TKA	122	Low	Low	Low	Low	0
Danninger	2014	90	Retrospective cohort	THA TKA GA NA	530089	Unclear	Low	Unclear	Low	-1
DeRuyter	2006	91	Prospective cohort	TKA GA NA	50	High	Low	Unclear	Low	1
Duncan	2013	92	Retrospective cohort	TKA GA NA	108	High	Unclear	Low	Low	1
Fetherston	2011	93	Prospective cohort	THA TKA	52	Unclear	Low	Low	Unclear	0
Fukuda	2020	94	Retrospective cohort	TKA GA	5094	Low	Low	Low	Low	-1
Green	2018	95	Retrospective cohort	THA GA	20	Unclear	Low	Low	Low	0
Gwam	2018	96	Retrospective cohort	TKA	110	Unclear	Low	Low	Low	-1
Henson	2019	97	Retrospective cohort	TKA	144	Unclear	Low	Low	Low	0
Horn	2015	98	Retrospective cohort	TKA	32	Unclear	Low	Low	High	1
Jacob	2011	99	Retrospective cohort	TKA GA NA	8590	Unclear	Low	Low	Low	-1
Jacob	2011a	100	Retrospective cohort	THA	9844	Unclear	Unclear	Low	Low	-1
Kim	2012	101	Retrospective cohort	TKA NA	80	High	Low	Low	Low	0
Kinjo	2012	102	Prospective cohort	TKA GA NA	81	Unclear	Low	Low	High	-1
Kirkness	2017	103	Retrospective cohort	TKA GA NA	268	Low	Low	Low	Low	n/a
Kukreja	2019	104	Retrospective cohort	THA NA	71	Low	Low	Low	Low	1

Liu	2015	105	Retrospective cohort	TKA NA	1768	Unclear	Low	Low	Low	0
Lovald	2015	106	Retrospective cohort	TKA GA NA	35642	High	Low	Unclear	Unclear	1
Mclsaac	2017	107	Retrospective cohort	TKA GA NA	178214	Low	Low	Low	Low	0
Memtsoudis	2016	107	Retrospective cohort	TKA GA NA	719426	Low	Low	Low	Low	-1
Memtsoudis	2016	108	Retrospective cohort	THA GA NA	342726	Low	Low	Low	Low	-1
Peters	2006	109	Retrospective cohort	THA TKA GA NA	100	High	High	Low	High	0
Pope	2015	110	Retrospective cohort	TKA GA NA	294	High	Low	Low	Low	0
Raimer	2007	111	Prospective cohort	TKA GA NA	42	Unclear	Low	Low	High	0
Rajeev	2016	112	Prospective cohort	TKA GA NA	114	High	High	Low	Low	1
Rames	2019	113	Retrospective cohort	TKA	693	Low	Low	Low	Low	0
Roberts	2019	114	Retrospective cohort	TKA	236	Low	Low	Low	Low	1
Schmidt	2009	115	Retrospective cohort	TKA GA NA	200	Unclear	Unclear	Low	Low	-1
Schwab	2019	116	Retrospective cohort	TKA	224	Unclear	Low	Low	Low	1
Simonsen	2011	117	Prospective cohort	TKA NA	67	Unclear	High	Low	Low	1
Singelyn	1999	118	Prospective cohort	THA GA NA	1274	High	Low	Low	Low	1
Sporer	2016	119	Retrospective cohort	TKA NA	597	Unclear	Low	Low	Low	0
Sugar	2011	120	Prospective cohort	TKA NA	28	Unclear	Low	Low	Low	1
Suthersan	2015	121	Prospective cohort	TKA GA NA	46	Unclear	Low	Low	Low	1
Tetsunaga	2016	122	Retrospective cohort	THA GA	62	High	High	Low	Low	0
Willett	2019	123	Retrospective cohort	TKA	151	High	Low	Low	Low	1

References

1. Memtsoudis SG, Cozowicz C, Bekeris J, et al. Peripheral Nerve block anesthesia/analgesia for patients undergoing primary hip and knee arthroplasty: recommendations from the International Consensus on Anesthesia-Related Outcomes after Surgery (ICAROS) group based on a systematic review and meta-analysis of current literature. *Reg Anesth Pain Med*. 2021.
2. Aksoy M, Dostbil A, Ince I, et al. Continuous spinal anaesthesia versus ultrasound-guided combined psoas compartment-sciatic nerve block for hip replacement surgery in elderly high-risk patients: a prospective randomised study. *BMC Anesthesiol* 2014; 14: 99
3. Amundson AW, Johnson RL, Abdel MP, et al. A Three-arm Randomized Clinical Trial Comparing Continuous Femoral Plus Single-injection Sciatic Peripheral Nerve Blocks versus Periarticular Injection with Ropivacaine or Liposomal Bupivacaine for Patients Undergoing Total Knee Arthroplasty. *Anesthesiology* 2017; 126: 1139-50
4. Andersen HL, Gyrn J, Moller L, Christensen B, Zaric D. Continuous saphenous nerve block as supplement to single-dose local infiltration analgesia for postoperative pain management after total knee arthroplasty. *Reg Anesth Pain Med* 2012; 37
5. Angers M, Belzile É L, Vachon J, Beauchamp-Chalifour P, Pelet S. Negative Influence of femoral nerve block on quadriceps strength recovery following total knee replacement: A prospective randomized trial. *Orthop Traumatol Surg Res* 2019; 105: 633-7
6. Ashraf A, Raut VV, Canty SJ, McLauchlan GJ. Pain control after primary total knee replacement. A prospective randomised controlled trial of local infiltration versus single shot femoral nerve block. *The Knee* 2013; 20: 324-7
7. Bali C, Ozmete O, Eker HE, Hersekli MA, Aribogan A. Postoperative analgesic efficacy of fascia iliaca block versus periarticular injection for total knee arthroplasty. *J Clin Anesth* 2016; 35: 404-10
8. Baranovic S, Maldini B, Milosevic M, Golubic R, Nikolic T. Peripheral regional analgesia with femoral catheter versus intravenous patient controlled analgesia after total knee arthroplasty: a prospective randomized study. *Coll Antropol* 2011; 35: 1209-14
9. Barrington MJ, Olive D, Low K, Scott DA, Brittain J, Choong P. Continuous femoral nerve blockade or epidural analgesia after total knee replacement: a prospective randomized controlled trial. *Anesth Analg* 2005; 101: 1824-9
10. Beausang DH, Pozek JP, Chen AF, et al. A Randomized Controlled Trial Comparing Adductor Canal Catheter and Intraarticular Catheter After Primary Total Knee Arthroplasty. *The Journal of arthroplasty* 2016; 31: 298-301
11. Biswas A, Perlas A, Ghosh M, et al. Relative Contributions of Adductor Canal Block and Intrathecal Morphine to Analgesia and Functional Recovery After Total Knee Arthroplasty: A Randomized Controlled Trial. *Reg Anesth Pain Med* 2018; 43: 154-60 11 Bogoch ER, Henke M, Mackenzie T, Olschewski E, Mahomed NN. Lumbar paravertebral nerve block in the management of pain after total hip and knee arthroplasty: a randomized controlled clinical trial. *The Journal of arthroplasty* 2002; 17: 398-401
12. Bron JL, Verhart J, Sierevelt IN, De Vries D, Kingma HJ, Rademakers MV. No effect of double nerve block of the lateral cutaneous nerve and subcostal nerves in total hip arthroplasty: A randomized controlled trial. *Acta Orthop* 2018; 89: 272-7

13. Campbell A, McCormick M, McKinlay K, Scott NB. Epidural vs. lumbar plexus infusions following total knee arthroplasty: randomized controlled trial. *Eur J Anaesthesiol* 2008; 25: 502-7
14. Chan EY, Fransen M, Sathappan S, Chua NH, Chan YH, Chua N. Comparing the analgesia effects of single-injection and continuous femoral nerve blocks with patient controlled analgesia after total knee arthroplasty. *The Journal of arthroplasty* 2013; 28: 608-13
15. Chan EY, Teo YH, Assam PN, Fransen M. Functional discharge readiness and mobility following total knee arthroplasty for osteoarthritis: a comparison of analgesic techniques. *Arthritis Care Res* 2014; 66: 1688-94
16. Chaumeron A, Audy D, Drolet P, Lavigne M, Vendittoli PA. Periarticular injection in knee arthroplasty improves quadriceps function knee. *Clin Orthop* 2013; 471: 2284-95
16. Chelly JE, Greger J, Gebhard R, et al. Continuous femoral blocks improve recovery and outcome of patients undergoing total knee arthroplasty. *J Arthroplasty* 2001; 16: 436-45
17. Chen C, Li M, Wang K, et al. Protective effect of combined general and regional anesthesia on postoperative cognitive function in older arthroplasty patients. *Int J Clin Exp Med* 2017; 10: 15453-8
18. Fahs AM, Koueiter DM, Kurdziel MD, Huynh KA, Perry CR, Verner JJ. Psoas Compartment Block vs Periarticular Local Anesthetic Infiltration for Pain Management After Anterior Total Hip Arthroplasty: A Prospective, Randomized Study. *The Journal of arthroplasty* 2018
19. Fan L, Yu X, Zan P, Liu J, Ji T, Li G. Comparison of Local Infiltration Analgesia With Femoral Nerve Block for Total Knee Arthroplasty: A Prospective, Randomized Clinical Trial. *The Journal of arthroplasty* 2016; 31: 1361-5
20. Fan R, Zhao L, Hong H. Effect of inhalation anesthesia combined with nerve block on improving postoperative cognitive function in elderly orthopedic patients. *Biomedical Research (India)* 2017; 28: 4485-9
21. Fenten MGE, Bakker SMK, Scheffer GJ, Wymenga AB, Stienstra R, Heesterbeek PJC. Femoral nerve catheter vs local infiltration for analgesia in fast track total knee arthroplasty: short-term and long-term outcomes. *Br J Anaesth* 2018; 121: 850-8
22. Gasanova I, Alexander JC, Estrera K, et al. Ultrasound-guided suprainguinal fascia iliaca compartment block versus periarticular infiltration for pain management after total hip arthroplasty: a randomized controlled trial. *Reg Anesth Pain Med* 2019; 44: 206-11
23. Ortiz-Gómez JR, Perepérez-Candel M, Vázquez-Torres JM, et al. Postoperative analgesia for elective total knee arthroplasty under subarachnoid anesthesia with opioids: Comparison between epidural, femoral block and adductor canal block techniques (with and without perineural adjuvants). Aprospective, randomized, clinical trial. *Minerva Anesthesiol* 2017; 83: 50-8
24. Good RP, Snedden MH, Schieber FC, Polachek A. Effects of a preoperative femoral nerve block on pain management and rehabilitation after total knee arthroplasty. *American journal of orthopedics (Belle Mead, NJ)* 2007; 36: 554-7
25. Goytizolo EA, Stundner O, Rúa SH, et al. The Effect of Regional Analgesia on Vascular Tone in Hip Arthroplasty Patients. *HSS journal : the musculoskeletal journal of Hospital for Special Surgery* 2016; 12: 125-31
26. Goytizolo EA, Lin Y, Kim DH, et al. Addition of Adductor Canal Block to Periarticular Injection for Total Knee Replacement: A Randomized Trial. *J Bone Joint Surg Am* 2019; 101: 812-20

27. Grosso MJ, Murtaugh T, Lakra A, et al. Adductor Canal Block Compared with Periarticular Bupivacaine Injection for Total Knee Arthroplasty: A Prospective Randomized Trial. *J Bone Joint Surg Am* 2018; 100: 1141-6
28. Hua X, Hu Y, Chen D, Xiao Y, Luo L. Efficacy and safety of ultrasound-guided fascia iliaca compartment block using dexmedetomidine combined with ropivacaine in aged patients undergoing hip replacement. *Int J Clin Exp Med* 2017; 10: 16484-91
29. Johnson RL, Amundson AW, Abdel MP, et al. Continuous Posterior Lumbar Plexus Nerve Block Versus Periarticular Injection with Ropivacaine or Liposomal Bupivacaine for Total Hip Arthroplasty: A Three-Arm Randomized Clinical Trial. *The Journal of bone and joint surgery American volume* 2017; 99: 1836-45
30. Kadic L, Boonstra MC, MC DEWM, Lako SJ, J VANE, Driessen JJ. Continuous femoral nerve block after total knee arthroplasty? *Acta Anaesthesiol Scand* 2009; 53: 914-20
31. Kampitak W, Tanavalee A, Ngarmukos S, Amarase C, Songthamwat B, Boonshua A. Comparison of Adductor Canal Block Versus Local Infiltration Analgesia on Postoperative Pain and Functional Outcome after Total Knee Arthroplasty: A Randomized Controlled Trial. *Malaysian orthopaedic journal* 2018; 12: 7-14
32. Kardash K, Hickey D, Tessler MJ, Payne S, Zukor D, Velly AM. Obturator versus femoral nerve block for analgesia after total knee arthroplasty. *Anesth Analg* 2007; 105: 853-8
33. Kayupov E, Okroj K, Young AC, et al. Continuous Adductor Canal Blocks Provide Superior Ambulation and Pain Control Compared to Epidural Analgesia for Primary Knee Arthroplasty: A Randomized, Controlled Trial. *J Arthroplasty* 2018; 33: 1040-4.e1
34. Kearns R, Macfarlane A, Grant A, et al. A randomised, controlled, double blind, non-inferiority trial of ultrasound-guided fascia iliaca block vs. spinal morphine for analgesia after primary hip arthroplasty. *Anaesthesia* 2016; 71: 1431-40 36 Kendrišić M, Šurbatović M, Djordjević D, Trifunović B, Jevdjić J. Analgesic efficacy and safety of four different anesthesia/postoperative analgesia protocols in patients following total hip arthroplasty. *Vojnosanit Pregl* 2017; 74: 814-20
35. Kovalak E, Doğan AT, Üzümcügil O, et al. A comparison of continuous femoral nerve block and periarticular local infiltration analgesia in the management of early period pain developing after total knee arthroplasty. *Acta orthopaedica et traumatologica turcica* 2015; 49: 260-6
36. Kratz T, Dette F, Schmitt J, Wiesmann T, Wulf H, Zoremba M. Impact of regional femoral nerve block during general anesthesia for hip arthroplasty on blood pressure, heart rate and pain control: A randomized controlled study. *Technology and health care : official journal of the European Society for Engineering and Medicine* 2015; 28: 257-62
37. Kuchálik J, Magnuson A, Lundin A, Gupta A. Local infiltration analgesia or femoral nerve block for postoperative pain management in patients undergoing total hip arthroplasty. A randomized, double-blind study. *Scandinavian journal of pain* 2017; 16: 223-30
38. Kulkarni MM, Dadheech AN, Wakankar HM, Ganjewar NV, Hedgire SS, Pandit HG. Randomized Prospective Comparative Study of Adductor Canal Block vs Periarticular Infiltration on Early Functional Outcome After Unilateral Total Knee Arthroplasty. *J Arthroplasty* 2019; 34: 2360-4

39. Lee AR, Choi DH, Ko JS, et al. Effect of combined single-injection femoral nerve block and patient-controlled epidural analgesia in patients undergoing total knee replacement. *Yonsei Med J* 2011; 52: 145-50
40. Lee JJ, Choi SS, Lee MK, Lim BG, Hur W. Effect of continuous psoas compartment block and intravenous patient controlled analgesia on postoperative pain control after total knee arthroplasty. *Korean J Anesthesiol* 2012; 62: 47-51
41. Leung P, Dickerson DM, Denduluri SK, et al. Postoperative continuous adductor canal block for total knee arthroplasty improves pain and functional recovery: A randomized controlled clinical trial. *J Clin Anesth* 2018; 49: 46-52
42. Li D, Tan Z, Kang P, Shen B, Pei F. Effects of multi-site infiltration analgesia on pain management and early rehabilitation compared with femoral nerve or adductor canal block for patients undergoing total knee arthroplasty: a prospective randomized controlled trial. *Int Orthop* 2017; 41: 75-83
43. Long WT, Ward SR, Dorr LD, Raya J, Boutary M, Sirianni LE. Postoperative pain management following total knee arthroplasty: a randomized comparison of continuous epidural versus femoral nerve infusion. *The journal of knee surgery* 2006; 19: 137-43
44. Lu Y, Huang HM, Yan J, Jiang H. Comparison of postoperative femoral nerve block, epidural block and intravenous patient-controlled analgesia in pain control and postoperative rehabilitation after total knee arthroplasty. *Int J Clin Exp Med* 2017; 10: 6680-7
45. Lutzner J, Gehring R, Beyer F. Slightly better pain relief but more frequently motor blockade with combined nerve block analgesia compared to continuous intraarticular analgesia after total knee arthroplasty. *Knee Surg Sports Traumatol Arthrosc* 2020; 28: 1169-76
46. Alvarez NER, Ledesma RJG, Hamaji A, Hamaji MWM, Vieira JE. Continuous femoral nerve blockade and single-shot sciatic nerve block promotes better analgesia and lower bleeding for total knee arthroplasty compared to intrathecal morphine: a randomized trial. *BMC Anesthesiol* 2017; 17: 64
47. Marino J, Russo J, Kenny M, Herenstein R, Livote E, Chelly JE. Continuous lumbar plexus block for postoperative pain control after total hip arthroplasty: a randomized controlled trial. *JBJS* 2009; 91: 29-37
48. Mei B, Zha H, Lu X, et al. Peripheral Nerve Block as a Supplement to Light or Deep General Anesthesia in Elderly Patients Receiving Total Hip Arthroplasty: A Prospective Randomized Study. *The Clinical journal of pain* 2017; 33: 1053-9
49. Moghtadaei M, Farahini H, Faiz SH, Mokarami F, Safari S. Pain Management for Total Knee Arthroplasty: Single-Injection Femoral Nerve Block versus Local Infiltration Analgesia. *Iranian Red Crescent medical journal* 2014; 16: e13247
50. Nader A, Kendall MC, Wixson RL, Chung B, Polakow LM, McCarthy RJ. A randomized trial of epidural analgesia followed by continuous femoral analgesia compared with oral opioid analgesia on short- and long-term functional recovery after total knee replacement. *Pain medicine (Malden, Mass)* 2012; 13: 937-47
51. Ng HP, Cheong KF, Lim A, Lim J, Puhaindran ME. Intraoperative single-shot "3-in-1" femoral nerve block with ropivacaine 0.25%, ropivacaine 0.5% or bupivacaine 0.25% provides comparable 48-hr analgesia after unilateral total knee replacement. *Canadian journal of anaesthesia = Journal canadien d'anesthesie* 2001; 48: 1102-8

52. Ng FY, Ng JK, Chiu KY, Yan CH, Chan CW. Multimodal periarticular injection vs continuous femoral nerve block after total knee arthroplasty: a prospective, crossover, randomized clinical trial. *The Journal of arthroplasty* 2012; 27: 1234-8
53. Nishio S, Fukunishi S, Juichi M, et al. Comparison of continuous femoral nerve block, caudal epidural block, and intravenous patient-controlled analgesia in pain control after total hip arthroplasty: a prospective randomized study. *Orthopedic reviews* 2014; 6
54. Niskanen RO, Strandberg N. Bedside femoral block performed on the first postoperative day after unilateral total knee arthroplasty: a randomized study of 49 patients. *The journal of knee surgery* 2005; 18: 192-6
55. Peng L, Ren L, Qin P, et al. Continuous Femoral Nerve Block versus Intravenous Patient Controlled Analgesia for Knee Mobility and Long-Term Pain in Patients Receiving Total Knee Replacement: A Randomized Controlled Trial. *Evidence-based complementary and alternative medicine : eCAM* 2014; 2014: 569107
56. Reinhardt KR, Duggal S, Umunna BP, et al. Intraarticular analgesia versus epidural plus femoral nerve block after TKA: a randomized, doubleblind trial. *Clin Orthop* 2014; 472: 1400-8
57. Rizk H, Hosni Y, Abdeldayem S. Combined adductor canal and sciatic nerve block compared with local intraarticular infiltration analgesia for total knee arthroplasty: A prospective blinded randomized controlled study. *Current Orthopaedic Practice* 2017; 28: 179-83
58. Safa B, Gollish J, Haslam L, McCartney CJ. Comparing the effects of single shot sciatic nerve block versus posterior capsule local anesthetic infiltration on analgesia and functional outcome after total knee arthroplasty: a prospective, randomized, double-blinded, controlled trial. *The Journal of arthroplasty* 2014; 29: 1149-53
59. Sahin L, Korkmaz HF, Sahin M, Atalan G. Ultrasound-guided single-injection femoral nerve block provides effective analgesia after total knee arthroplasty up to 48 hours. *Agri : Agri (Algoloji) Dernegi'nin Yayin organidir = The journal of the Turkish Society of Algology* 2014; 26: 113-8
60. Rousseau-Saine N, Williams SR, Girard F, et al. The Effect of Adductor Canal Block on Knee Extensor Muscle Strength 6 Weeks After Total Knee Arthroplasty: A Randomized, Controlled Trial. *Anesth Analg* 2018; 126: 1019-27
61. Seet E, Leong WL, Yeo AS, Fook-Chong S. Effectiveness of 3-in-1 continuous femoral block of differing concentrations compared to patient controlled intravenous morphine for post total knee arthroplasty analgesia and knee rehabilitation. *Anaesth Intensive Care* 2006; 34: 25-30
62. Siddiqui ZI, Cepeda MS, Denman W, Schumann R, Carr DB. Continuous Lumbar Plexus Block Provides Improved Analgesia With Fewer Side Effects Compared With Systemic Opioids After Hip Arthroplasty: A Randomized Controlled Trial. *Reg Anesth Pain Med* 2007; 32: 393-8
63. Singelyn FJ, Deyaert M, Joris D, Penderville E, Gouverneur JM. Effects of intravenous patient-controlled analgesia with morphine, continuous epidural analgesia, and continuous three-in-one block on postoperative pain and knee rehabilitation after unilateral total knee arthroplasty. *Anesth Analg* 1998; 87: 88-92

64. Sites BD, Beach M, Gallagher JD, Jarrett RA, Sparks MB, Lundberg CJ. A single injection ultrasound-assisted femoral nerve block provides side effect-sparing analgesia when compared with intrathecal morphine in patients undergoing total knee arthroplasty. *Anesth Analg* 2004; 99: 1539-43
65. Sogbein OA, Sondekoppam RV, Bryant D, et al. Ultrasound-Guided Motor-Sparing Knee Blocks for Postoperative Analgesia Following Total Knee Arthroplasty: A Randomized Blinded Study. *The Journal of bone and joint surgery American volume* 2017; 99: 1274-81
66. Spangehl MJ, Clarke HD, Hentz JG, Misra L, Blocher JL, Seamans DP. The Chitranjan Ranawat Award: Periarticular injections and femoral & sciatic blocks provide similar pain relief after TKA: a randomized clinical trial. *Clin Orthop* 2015; 473: 45-53
67. Stathellis A, Fitz W, Schnurr C, et al. Periarticular injections with continuous perfusion of local anaesthetics provide better pain relief and better function compared to femoral and sciatic blocks after TKA: a randomized clinical trial. *Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA* 2017; 25: 2702-7
68. Stevens RD, Van Gessel E, Flory N, Fournier R, Gamulin Z. Lumbar plexus block reduces pain and blood loss associated with total hip arthroplasty. *Anesthesiology* 2000; 93: 115-21
69. Sundarathiti P, Ruananukul N, Channum T, et al. A comparison of continuous femoral nerve block (CFNB) and continuous epidural infusion (CEI) in postoperative analgesia and knee rehabilitation after total knee arthroplasty (TKA). *Journal of the Medical Association of Thailand = Chotmai het thangphaet* 2009; 92: 328-34
70. Thybo KH, Schmidt H, Hägi-Pedersen D. Effect of lateral femoral cutaneous nerve-block on pain after total hip arthroplasty: a randomised, blinded, placebo-controlled trial. *BMC anesthesiology* 2016; 16: 21
71. Toftdahl K, Nikolajsen L, Haraldsted V, Madsen F, Tønnesen EK, Søballe K. Comparison of peri- and intraarticular analgesia with femoral nerve block after total knee arthroplasty: a randomized clinical trial. *Acta Orthop* 2007; 78: 172-9
72. Tong QJ, Lim YC, Tham HM. Comparing adductor canal block with local infiltration analgesia in total knee arthroplasty: A prospective, blinded and randomized clinical trial. *J Clin Anesth* 2018; 46: 39-43
73. Twyman R, Kirwan T, Fennelly M. Blood loss reduced during hip arthroplasty by lumbar plexus block. *The Journal of bone and joint surgery British volume* 1990; 72: 770-1
74. Wall PDH, Parsons NR, Parsons H, et al. A pragmatic randomised controlled trial comparing the efficacy of a femoral nerve block and periarticular infiltration for early pain relief following total knee arthroplasty. *The bone & joint journal* 2017; 99-B: 904-11
75. Wang Q, Yue Y, Li D, Yang Z, Yeersheng R, Kang P. Efficacy of Single-Shot Adductor Canal Block Combined With Posterior Capsular Infiltration on Postoperative Pain and Functional Outcome After Total Knee Arthroplasty: A Prospective, Double-Blind, Randomized Controlled Study. *J Arthroplasty* 2019; 34: 1650-5
76. Widmer BJ, Scholes CJ, Pattullo GG, Oussedik SI, Parker DA, Coolican MR. Is femoral nerve block necessary during total knee arthroplasty?: a randomized controlled trial. *J Arthroplasty* 2012; 27: 1800-5

77. Wu JW, Wong YC. Elective unilateral total knee replacement using continuous femoral nerve blockade versus conventional patient-controlled analgesia: perioperative patient management based on a multidisciplinary pathway. *Hong Kong medical journal = Xianggang yi xue za zhi* 2014; 20: 45-51
78. Yamamoto N, Sakura S, Noda T, et al. Comparison of the postoperative analgesic efficacies of intravenous acetaminophen and fascia iliaca compartment block in hip fracture surgery: A randomised controlled trial. *Injury* 2019; 50: 1689-93
79. Zhou M, Ding H, Ke J. Adductor canal block in combination with posterior capsular infiltration on the pain control after TKA. *Ir J Med Sci* 2018; 187: 465-71
80. Zinkus J, Mockutė L, Gelmanas A, Tamošiūnas R, Vertelis A, Macas A. Comparison of 2 Analgesia Modalities in Total Knee Replacement Surgery: Is There an Effect on Knee Function Rehabilitation? *Medical science monitor : international medical journal of experimental and clinical research* 2017; 23: 3019-25
81. Akkaya A, Tekelioglu UY, Demirhan A, et al. Ultrasound-guided femoral and sciatic nerve blocks combined with sedoanalgesia versus spinal anesthesia in total knee arthroplasty. *Korean J Anesthesiol* 2014; 67: 90-5
82. Alsheikh KA, Alkhelaifi AS, Alharbi MK, et al. Adductor canal blockade versus continuous epidural analgesia after total knee joint replacement: A retrospective cohort study. *Saudi journal of anaesthesia* 2020; 14: 38-43
83. Antoni M, Jenny JY, Noll E. Postoperative pain control by intra-articular local anesthesia versus femoral nerve block following total knee arthroplasty: impact on discharge. *Orthopaedics & traumatology, surgery & research : OTSR* 2014; 100: 313-6
84. Asakura Y, Tsuchiya H, Mori H, Yano T, Kanayama Y, Takagi H. Reduction of the incidence of development of venous thromboembolism by ultrasound-guided femoral nerve block in total knee arthroplasty. *Korean journal of anesthesiology* 2011; 61: 382-7
85. Beaupre LA, Johnston DB, Dieleman S, Tsui B. Impact of a preemptive multimodal analgesia plus femoral nerve blockade protocol on rehabilitation, hospital length of stay, and postoperative analgesia after primary total knee arthroplasty: a controlled clinical pilot study. *ScientificWorldJournal* 2012; 2012: 273821
86. Cien AJ, Penny PC, Horn BJ, Popovich JM, Taunt CJ. Comparison Between Liposomal Bupivacaine and Femoral Nerve Block in Patients Undergoing Primary Total Knee Arthroplasty. *J Surg Orthop Adv* 2015; 24: 225-9
87. Danninger T, Rasul R, Poeran J, et al. Blood transfusions in total hip and knee arthroplasty: an analysis of outcomes. *ScientificWorldJournal* 2014; 2014: 623460
88. De Ruyter ML, Brueilly KE, Harrison BA, Greengrass RA, Putzke JD, Brodersen MP. A pilot study on continuous femoral perineural catheter for analgesia after total knee arthroplasty: the effect on physical rehabilitation and outcomes. *J Arthroplasty* 2006; 21: 1111-7
89. Duncan CM, Moeschler SM, Horlocker TT, Hanssen AD, Hebl JR. A self-paired comparison of perioperative outcomes before and after implementation of a clinical pathway in patients undergoing total knee arthroplasty. *Reg Anesth Pain Med* 2013; 38: 533-8
90. Fetherston CM, Ward S. Relationships between post operative pain management and short term functional mobility in total knee arthroplasty patients with a femoral nerve catheter: a preliminary study. *J Orthop Surg* 2011; 6: 7

91. Fukuda T, Imai S, Simoda S, Nakdera M, Horiguchi H. Comparison of peripheral nerve block with local infiltration analgesia regarding walking ability after total knee replacement: A retrospective, propensity-score matched-pair cohort study. *J Orthop Surg (Hong Kong)* 2020; 28: 2309499020931656
92. Stuart Green M, Ryan Hoffman C, Iqbal U, Olabisi Ives O, Hurd B. Transmuscular Quadratus Lumborum Block Reduces Length of Stay in Patients Receiving Total Hip Arthroplasty. *Anesth Pain Med* 2018; 8: e80233
93. Gwam CU, Mistry JB, Richards IV, et al. Does Addition of Adductor Canal Blockade to Multimodal Periarticular Analgesia Improve Discharge Status, Pain Levels, Opioid Use, and Length of Stay after Total Knee Arthroplasty? *The journal of knee surgery* 2018; 31: 184-8
94. Henson KS, Thomley JE, Lowrie LJ, Walker D. Comparison of Selected Outcomes Associated with Two Postoperative Analgesic Approaches in Patients Undergoing Total Knee Arthroplasty. *AANA J* 2019; 87: 51-7
95. Horn BJ, Cien A, Reeves NP, Pathak P, Taunt CJ. Femoral Nerve Block vs Periarticular Bupivacaine Liposome Injection After Primary Total Knee Arthroplasty: Effect on Patient Outcomes. *The Journal of the American Osteopathic Association* 2015; 115: 714-9
96. Jacob AK, Mantilla CB, Sviggum HP, Schroeder DR, Pagnano MW, Hebl JR. Perioperative nerve injury after total knee arthroplasty: regional anesthesia risk during a 20-year cohort study. *Anesthesiology* 2011; 114: 311-7
97. Jacob AK, Mantilla CB, Sviggum HP, Schroeder DR, Pagnano MW, Hebl JR. Perioperative nerve injury after total hip arthroplasty: regional anesthesia risk during a 20-year cohort study. *Anesthesiology* 2011; 115: 1172-8
98. Kim JH, Cho MR, Kim SO, Kim JE, Lee DK, Roh WS. A comparison of femoral/sciatic nerve block with lateral femoral cutaneous nerve block and combined spinal epidural anesthesia for total knee replacement arthroplasty. *Korean journal of anesthesiology* 2012; 62: 448-53
99. Kinjo S, Lim E, Sands LP, Bozic KJ, Leung JM. Does using a femoral nerve block for total knee replacement decrease postoperative delirium? *BMC Anesthesiol* 2012; 12: 4
100. Kirkness CS, Ren J, Asche CV. Significant improvement of mobility recovery in acute care patients after total knee arthroplasty with liposomal bupivacaine injectable suspension. *Journal of Acute Care Physical Therapy* 2017; 8: 11-9
101. Kukreja P, MacBeth L, Sturdivant A, et al. Anterior quadratus lumborum block analgesia for total hip arthroplasty: a randomized, controlled study. *Reg Anesth Pain Med* 2019
102. Liu Q, Chelly JE, Williams JP, Gold MS. Impact of peripheral nerve block with low dose local anesthetics on analgesia and functional outcomes following total knee arthroplasty: a retrospective study. *Pain Med* 2015; 16: 998-1006
103. Lovald ST, Ong KL, Lau EC, Joshi GP, Kurtz SM, Malkani AL. Readmission and Complications for Catheter and Injection Femoral Nerve Block Administration After Total Knee Arthroplasty in the Medicare Population. *The Journal of arthroplasty* 2015; 30: 2076-81
104. McIsaac DI, McCartney CJ, Walraven CV. Peripheral Nerve Blockade for Primary Total Knee Arthroplasty: A Population-based Cohort Study of Outcomes and Resource Utilization. *Anesthesiology* 2017; 126: 312-20

105. Memtsoudis SG, Poeran J, Cozowicz C, Zubizarreta N, Ozbek U, Mazumdar M. The impact of peripheral nerve blocks on perioperative outcome in hip and knee arthroplasty—a population-based study. *Pain* 2016; 157: 2341-9
106. Peters CL, Shirley B, Erickson J. The effect of a new multimodal perioperative anesthetic regimen on postoperative pain, side effects, rehabilitation, and length of hospital stay after total joint arthroplasty. *The Journal of arthroplasty* 2006; 21: 132-8
107. Pope D, El-Othmani MM, Manning BT, Sepula M, Markwell SJ, Saleh KJ. Impact of Age, Gender and Anesthesia Modality on Post-Operative Pain in Total Knee Arthroplasty Patients. *Iowa Orthop J* 2015; 35: 92-8
108. Raimer C, Priem K, Wiese AA, et al. Continuous psoas and sciatic block after knee arthroplasty: good effects compared to epidural analgesia or i.v. opioid analgesia: a prospective study of 63 patients. *Acta Orthop* 2007; 78: 193-200
109. Rajeev A, Tumia N, Karn K, Kashyap S, Mayne D. Postoperative pain relief and functional outcome following total knee arthroplasty - a prospective comparative audit of three analgesic regimes. *Acta Orthop Belg* 2016; 82: 265-70
110. Rames RD, Barrack TN, Barrack RL, Nunley RM. Effect of Adductor Canal Block on Acute Perioperative Pain and Function in Total Knee Arthroplasty. *J Arthroplasty* 2019; 34: S164-S7
111. Roberts C, Foster D, Shi GG, et al. A Collaborative Approach to Pain Control Reduces In-hospital Opioid Use and Improves Range of Motion following Total Knee Arthroplasty. *Cureus* 2019; 11: e4678
112. Schmidt NR, Donofrio JA, England DA, McDonald LB, Motyka CL, Mileto LA. Extended-release epidural morphine vs continuous peripheral nerve block for management of postoperative pain after orthopedic knee surgery: a retrospective study. *AANA J* 2009; 77: 349-54
113. Schwab PE, Yombi J, Lavand'homme P, Thienpont E. Comparison of local infiltration analgesia with single injection femoral nerve block in total knee arthroplasty. *Acta Orthop Belg* 2019; 85: 122-9
114. Simonsen OH, Gorst-Rasmussen A, Simonsen AB, Jorgensen MB, Rathleff MS, Lundbye-Christensen S. Blood reinfusion combined with femoral nerve block in total knee replacement for patients with increased risk of bleeding. *Journal of orthopaedic surgery (Hong Kong)* 2011; 19: 64-8
115. Singelyn FJ, Gouverneur JM. Postoperative analgesia after total hip arthroplasty: i.v. PCA with morphine, patient-controlled epidural analgesia, or continuous "3-in-1" block?: a prospective evaluation by our acute pain service in more than 1,300 patients. *J Clin Anesth* 1999; 11: 550-4
116. Sporer SM, Rogers T. Postoperative Pain Management After Primary Total Knee Arthroplasty: The Value of Liposomal Bupivacaine. *The Journal of arthroplasty* 2016; 31: 2603-7
117. Sugar SL, Hutson LR, Shannon P, Thomas LC, Nossaman BD. Comparison of extended-release epidural morphine with femoral nerve block to patient-controlled epidural analgesia for postoperative pain control of total knee arthroplasty: a case-controlled study. *The Ochsner journal* 2011; 11: 17-21

118. Suthersan M, Pit S, Gordon L, Loman M, Pezzutti B, Freihaut R. Local infiltration analgesia versus standard analgesia in total knee arthroplasty. *Journal of orthopaedic surgery (Hong Kong)* 2015; 23: 198-201
119. Tetsunaga T, Tetsunaga T, Fujiwara K, Endo H, Ozaki T. Combination Therapy with Continuous Three-in-One Femoral Nerve Block and Periarticular Multimodal Drug Infiltration after Total Hip Arthroplasty. *Pain Res Manag* 2016; 2016: 1425201
120. Willett A, Lew R, Wardhan R. Is continuous proximal adductor canal analgesia with a periarticular injection comparable to continuous epidural analgesia for postoperative pain after Total Knee Arthroplasty? A retrospective study. *Romanian journal of anaesthesia and intensive care* 2019; 26: 9-15