UPDATE Su ALR in Chirurgia Ortopedica: è stato già detto tutto ?

European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA Cè
XXIX CONGRESSO NAZIONALE
ESRA Italian Chapter
CESENA, Cesena fiere
7-9 Novembre 2024

Tecniche Loco-regionale Periferiche Analgesiche nella chirurgia protesica del Ginocchio

Thierry Claude BAGAPHOU

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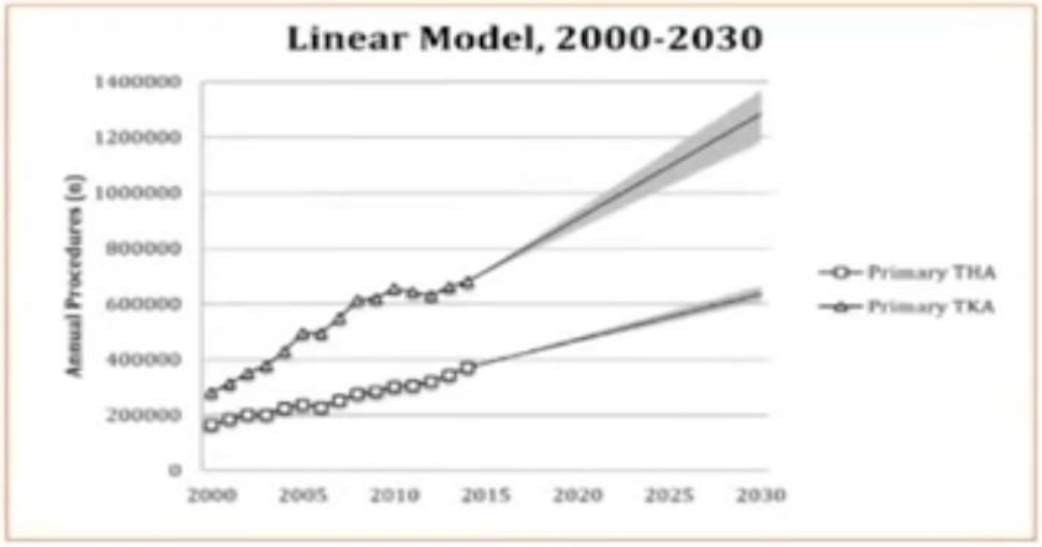
No conflicts of interest

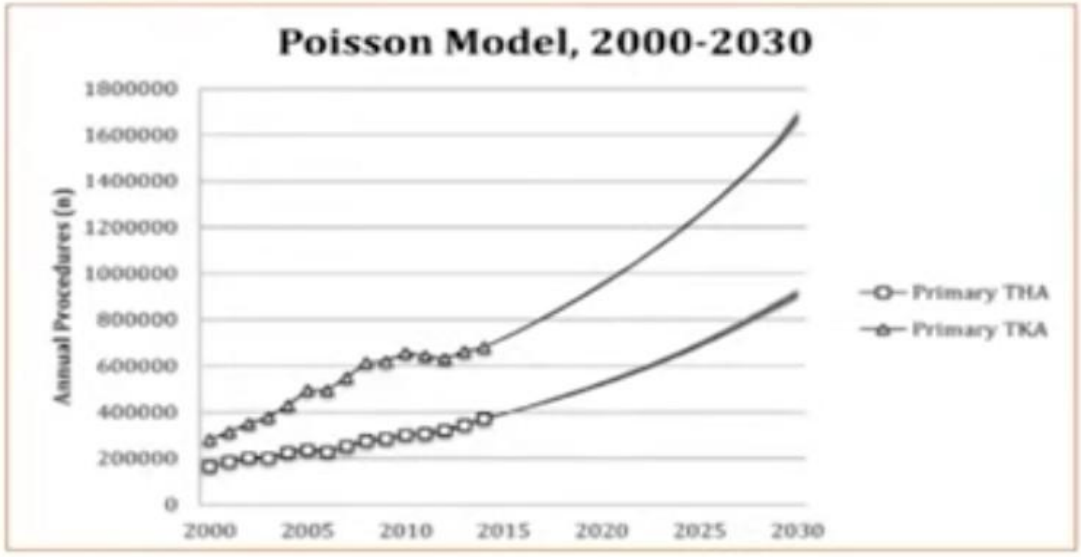
Videos and pictures have obtained consent by the patients

Major Public Health issue

Médecine Périopératoire pour PTG : un enjeu de santé publique

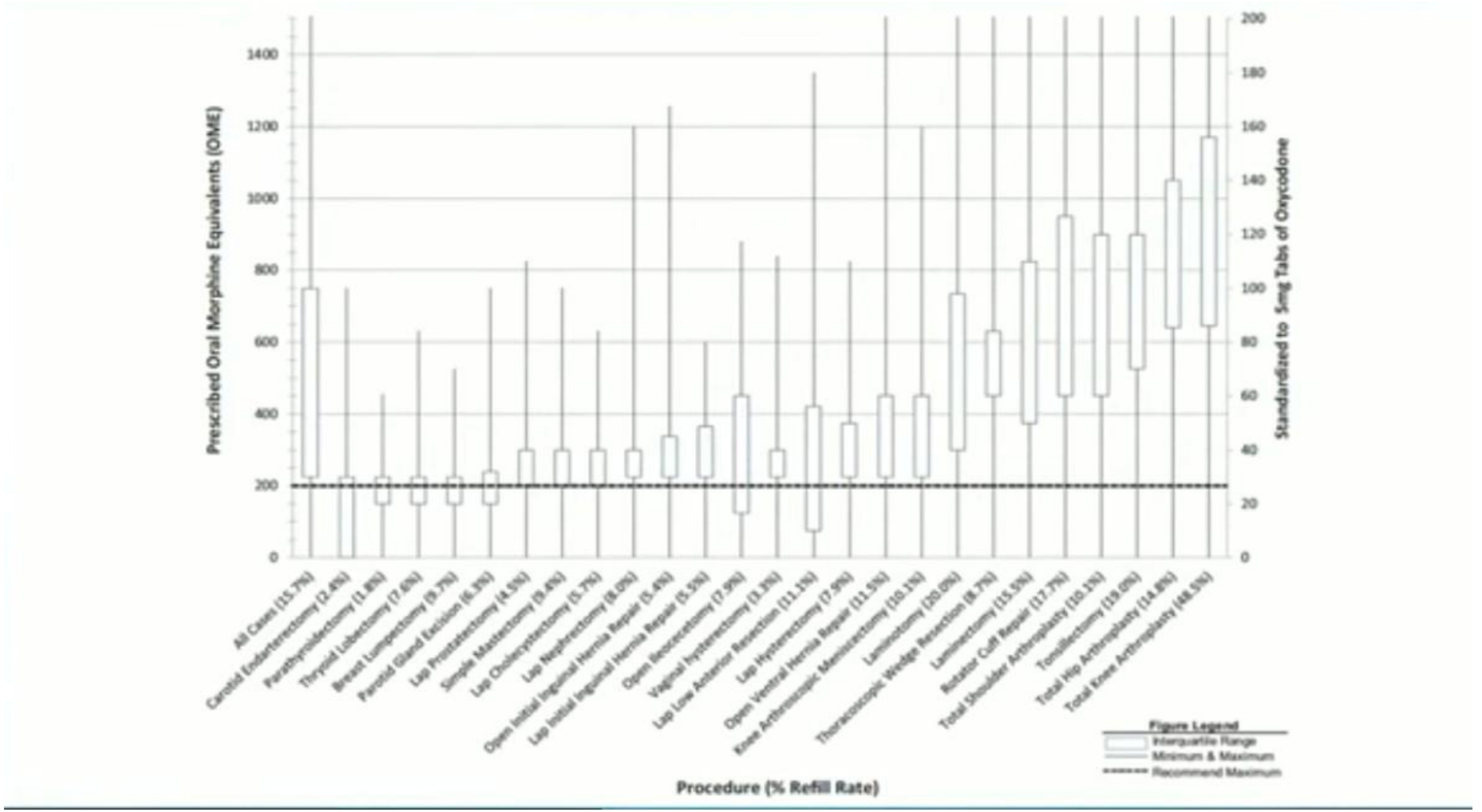
A 2030 : PTG + 103 à + 190 % en volume





n M, Premkumar A, Sheth NP: Projected Volume of Primary Total Joint Arthroplasty in the U.S., 2014 to 2030. J Bone Joint Surg Am 2018; 100:1455–60

Post –operative Pain: A Challenge



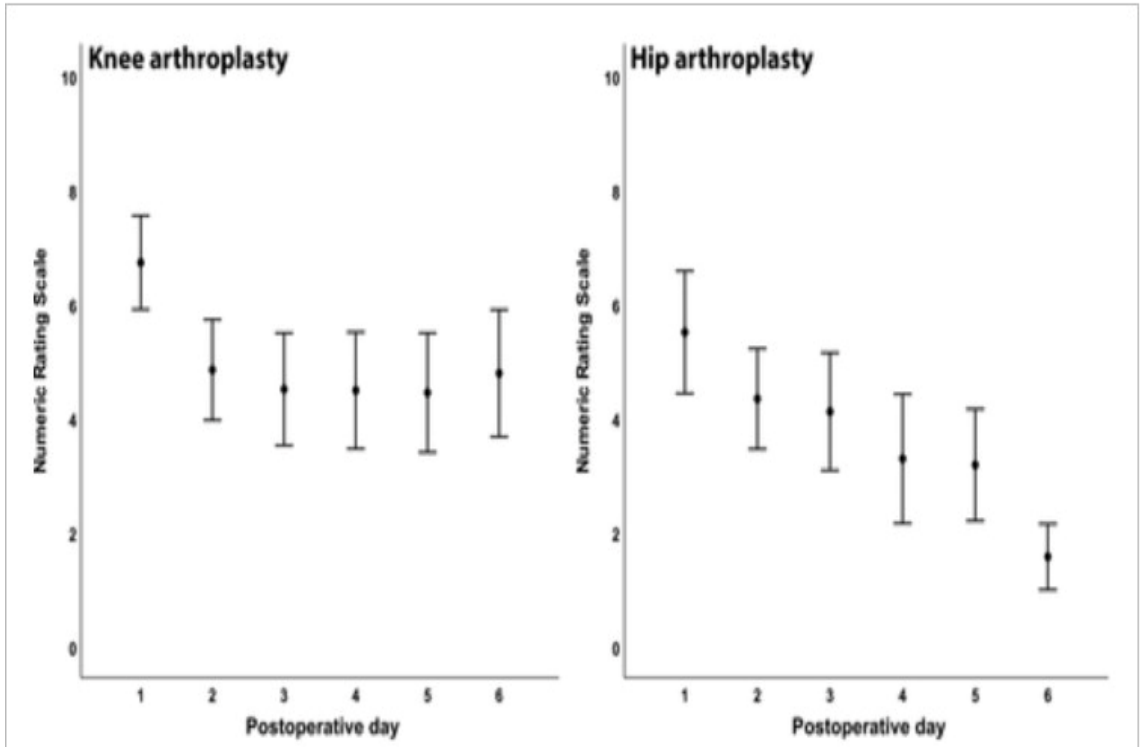
Should We prioritize Analgesia or Knee Function?

Anaesthesia 2021, 76, 165–169 doi:10.1111/anae.15067

Editorial

Using postoperative pain trajectories to define the role of regional analgesia in personalised pain medicine

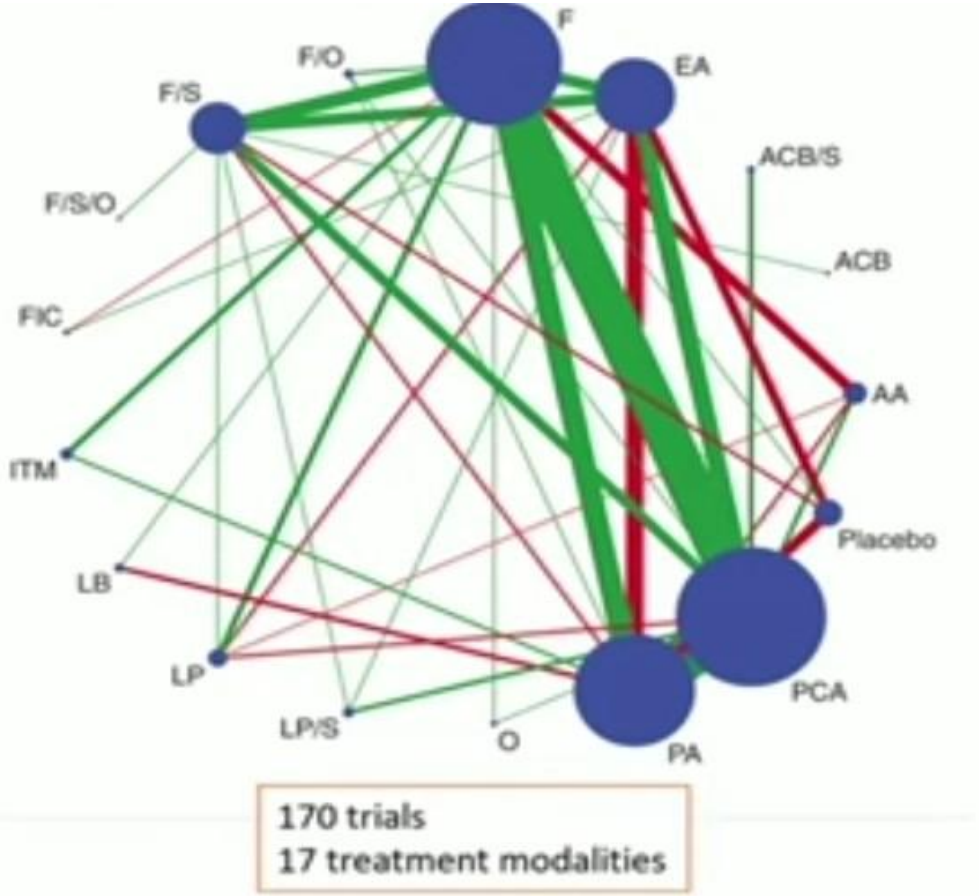
E. R. Mariano,[1,2] **K. El-Boghdadly**[3,4] and **B. M. Ilfeld**[5,6]



pain. Although we cannot extrapolate these data to every surgical population, we can conclude than any single-injection regional analgesic for total knee arthroplasty in all likelihood does not last long enough. As expectations grow

Continuous peripheral nerve block is the only technique currently available that enables titration of local anaesthetic solutions to a peripheral nerve or fascial plane 29. Using an electronic infusion pump with an external reservoir, the infusion duration is typically limited by the amount of local anaesthetic a patient is able to carry, and single-use elastomeric pumps with an internal reservoir for local anaesthetic rarely last beyond 3 days without replacement 29, which may not be long enough for certain surgical procedures like knee arthroplasty. Based on one systematic review and meta-analysis, patients who receive continuous peripheral nerve block: report lower maximal pain scores during infusion; experience less nausea; have decreased opioid dose requirements; sleep better; and are more satisfied with pain management for the first 2 days after surgery, when compared with single-injection blocks 30. The differences in maximal pain scores were generally between 1-2 on an 11-point numeric rating scale: effect size −1.29 (95%CI −2.19 to −0.40) on postoperative day 0; −1.87 (95%CI −2.44 to −1.31) on postoperative day 1; and −2.03 (95%CI −2.78 to −1.29) on postoperative day 2 30. Unfortunately, the studies included in this meta-analysis utilised only short-term infusions, and the benefits did not persist after catheter removal 30. These findings suggest that there is still much more work to do in terms of determining the optimal procedure-specific continuous peripheral nerve block regimen and matching analgesia to pain trajectory. Besides continuous peripheral nerve block, few other therapies in the realm of acute pain medicine offer the potential combination of titratability and flexible duration 31. Despite more than a decade of supportive data, adoption of continuous peripheral nerve block is still far from universal. A common obstacle to

What We Have available ?



170 trials
17 treatment modalities

C

treatment	ES (95% CI)
F/S/O	-2.00 (-3.19, -0.82)
F/O	-1.53 (-2.36, -0.71)
LP/S	-1.51 (-2.22, -0.80)
LP	-1.40 (-1.99, -0.80)
F/S	-1.33 (-1.67, -0.98)
EA	-1.20 (-1.57, -0.83)
FIC	-1.04 (-2.00, -0.09)
F	-0.75 (-0.96, -0.53)
LB	-0.74 (-1.42, -0.06)
Placebo	-0.74 (-1.33, -0.15)
ITM	-0.67 (-1.36, 0.02)
PA	-0.66 (-0.87, -0.44)
ACB	-0.64 (-1.09, -0.18)
AA	-0.41 (-1.19, 0.37)
O	-0.33 (-1.33, 0.67)

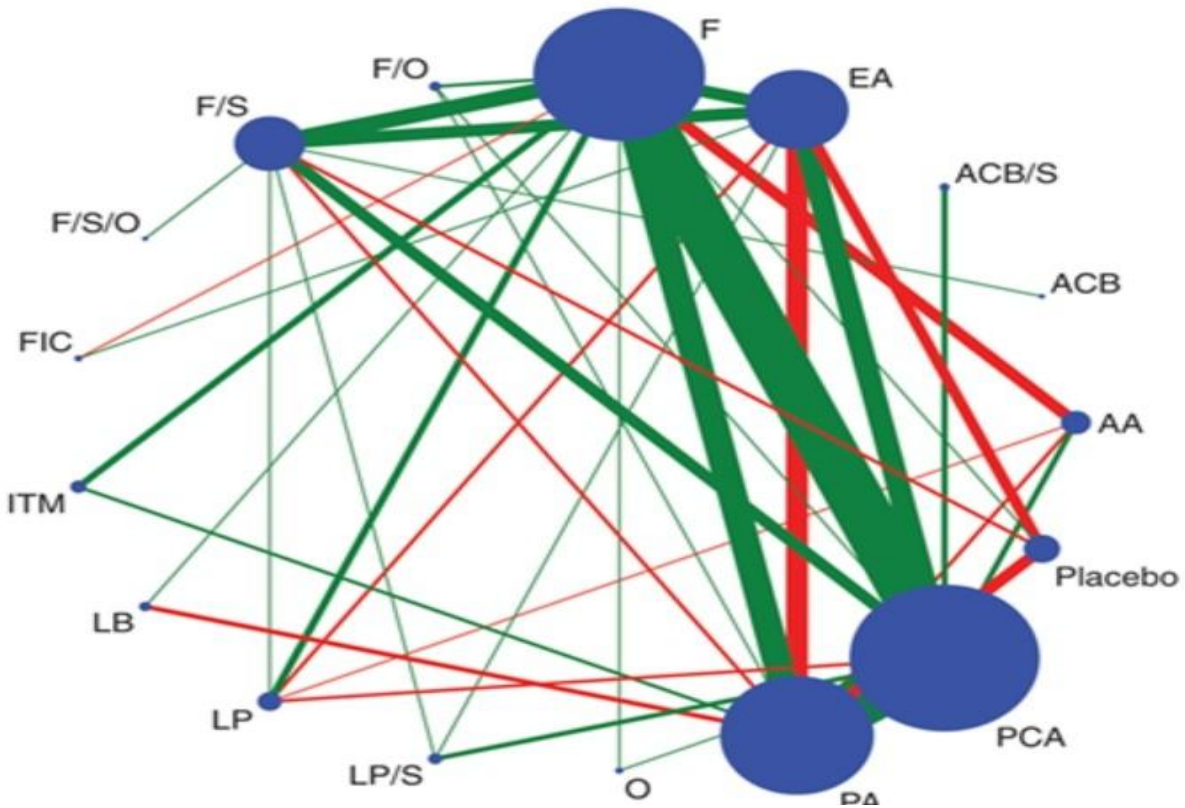
Terkawi AS, Mavridis D, Sessler DI, Nunemaker MS, Doais KS, Terkawi RS, Terkawi YS, Petropoulou M, Nemergut EC: Pain Management Modalities after Total Knee Arthroplasty: A Network Meta-analysis of 170 Randomized Controlled Trials. Anesthesiology 2017; 126:923–37

What We Have available ?

Pain Management Modalities after Total Knee Arthroplasty: A Network Meta-analysis of 170 Randomized Controlled Trials

FREE

Abdullah Sulieman Terkawi, M.D. ✉; Dimitris Mavridis, Ph.D.; Daniel I. Sessler, M.D.; Megan S. Nunemaker, M.S.L.S.; Khaled S. Doais, M.D.; Rayan Sulieman Terkawi, M.D.; Yazzed Sulieman Terkawi, M.S.; Maria Petropoulou, M.Sc.; Edward C. Nemergut, M.D.



Considerations

- Combination of two blocks provides better analgesia than one block alone.

- Complete Anaesthesia and Analgesia of the Knee:
  - Femoral nerve block

    +

  - Sciatic nerve block

    +

    Obturator nerve block

Blocchi nervosi Periferici e Mobilizzazione

- **IL Blocco Ideale:** Forte Potere analgesico

Nessun impatto sulla deambulazione

Recommandations Formalisées d'Experts

SFAR

Réhabilitation améliorée après chirurgie orthopédique lourde du membre inférieur
(Arthroplastie de hanche et de genou hors fracture)

Guidelines for enhanced recovery for major orthopaedic surgery
(Hip and knee arthroplasties)

2019

Le choix d'une technique d'analgésie en postopératoire d'arthroplastie du membre inférieur permet-elle de réduire la durée de séjour ou la survenue de complications ?
Sébastien Bloc (Neuillys/Seine), Julien Cabaton (Lyon)

R10.2 – Il est recommandé d'utiliser des techniques d'analgésie locale et/ou loco-régionale pour diminuer la douleur et la consommation de morphiniques en postopératoire d'arthroplastie de genou.

GRADE 1+ (accord FORT)

« La balance efficacité antalgique/déambulation précoce doit orienter le choix »

Eur J Anaesthesiol. 2022 Jul 20;39(9):743–757. doi: 10.1097/EJA.0000000000001691

Pain management after total knee arthroplasty

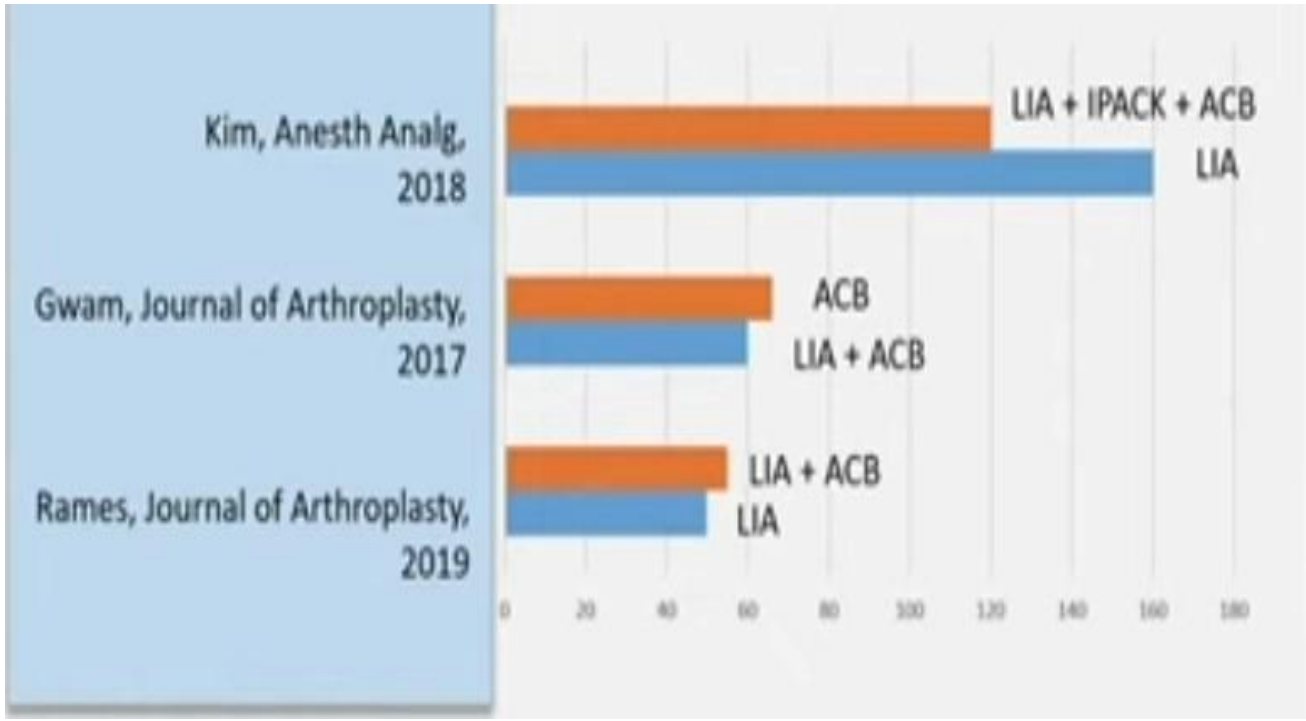
PROcedure SPEcific Postoperative Pain ManagemenT recommendations

Patricia M Lavand'homme [1], Henrik Kehlet [1], Narinder Rawal [1], Girish P Joshi [1], on behalf of the PROSPECT Working Group of the European Society of Regional Anaesthesia and Pain Therapy (ESRA)

Tecniche di Analgesia per PTG

- Expert teams
- Modern techniques of distal blocs
- Fairly good pain control
- Single shot

Consumption of morphine



Impact of Post-Operative Pain TKA

TABLE 2. Outcomes in the Propensity Score–Matched Cohort

Characteristics	Matched Cohort Total N = 20,926	Mean Score >4 n = 10,463	Mean Score 0–4 n = 10,463	*P*
Length of Stay				
≤3 d	10,680	49	53	<0.001
6-Apr	6286	32	28	
>6 d	3960	19	19	

Hsia, RAPM, 2018

TABLE 2. Outcomes in the Propensity Score–Matched Cohort

Characteristics	Matched Cohort Total N = 20,926	Mean Score >4 n = 10,463	Mean Score 0–4 n = 10,463	*P*
Prescription at Discharge				
Daily dose >30 Meq				
No	9988	42	53	<0.001
Yes	10,938	58	47	

Hsia, RAPM, 2018

Impact of Post-Operative Pain TKA

TABLE 2. Outcomes in the Propensity Score–Matched Cohort

Characteristics	Matched Cohort Total N = 20,926	Mean Score >4 n = 10,463	Mean Score 0–4 n = 10,463	*P*
Postoperative Opioid Use Beyond Day 90				
Dose in OMEs				
0	222	1	1	<0.001
1–5	9810	43	50	
6–15	5476	27	25	
16–30	2439	12	11	
>30	2979	16	12	

Hsia, RAPM, 2018

Consequences of acute pain: Chronic Pain

	No CPSP (n=211)	CPSP (n=34)	P value
American Society of Anesthesiologists physical status, n (%)			
2	142 (67)	28 (82)	0.11
3	69 (33)	4 (18)	
Primary insurance type			
Private	108 (51)	16 (47)	0.23
Medicare	100 (47)	16 (47)	
Medicaid	3 (2)	2 (6)	
Median household income (×1000)	65.5 (48.5–82.4)	61.5 (36.3 to 86.4)	0.45

Buvanendran, RAPM, 2019

	No CPSP (n=211)	CPSP (n=34)	P value
Weighted average pain score (0–72 hour) score/ hour	2.8 (1.8–3.7)	4.2 (2.0–5.0)	0.005
Pain Catastrophizing Scale	10 (4–18)	14 (6–28)	0.07
Missing, n (%)	7 (3)	1 (3)	
Beck's Depression Inventory II, n (%)	5 (2–9)	8 (4–12)	0.006

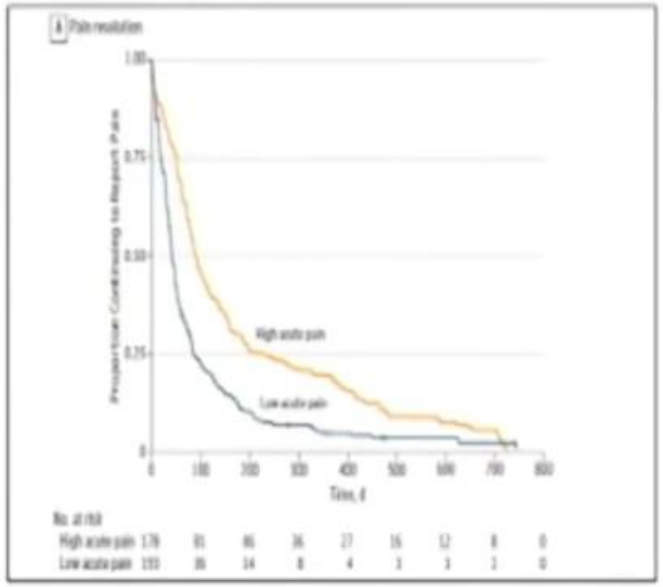
Buvanendran, RAPM, 2019

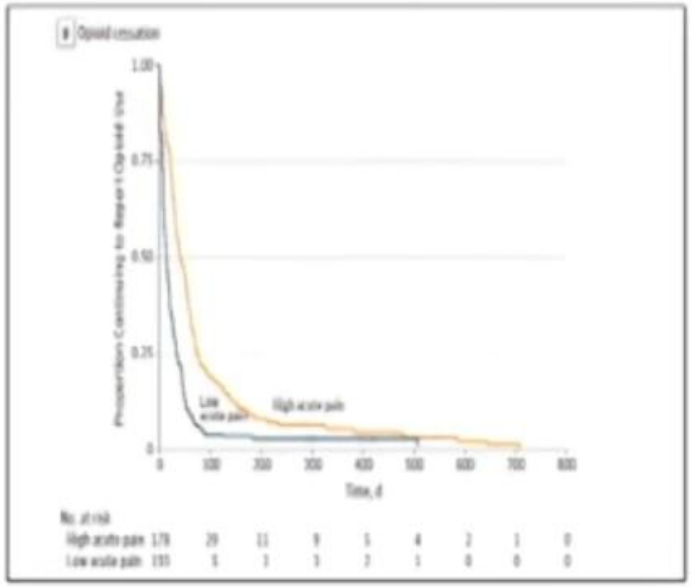
Impact of Post-Operative Pain TKA

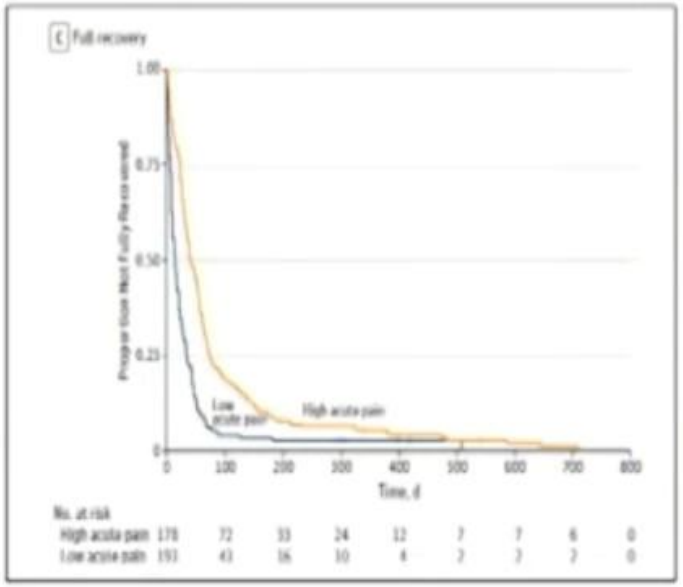
Factors Associated With Acute Pain Estimation, Postoperative Pain Resolution, Opioid Cessation, and Recovery
Secondary Analysis of a Randomized Clinical Trial

JAMA Network Open. 2019;2(3):e190168.

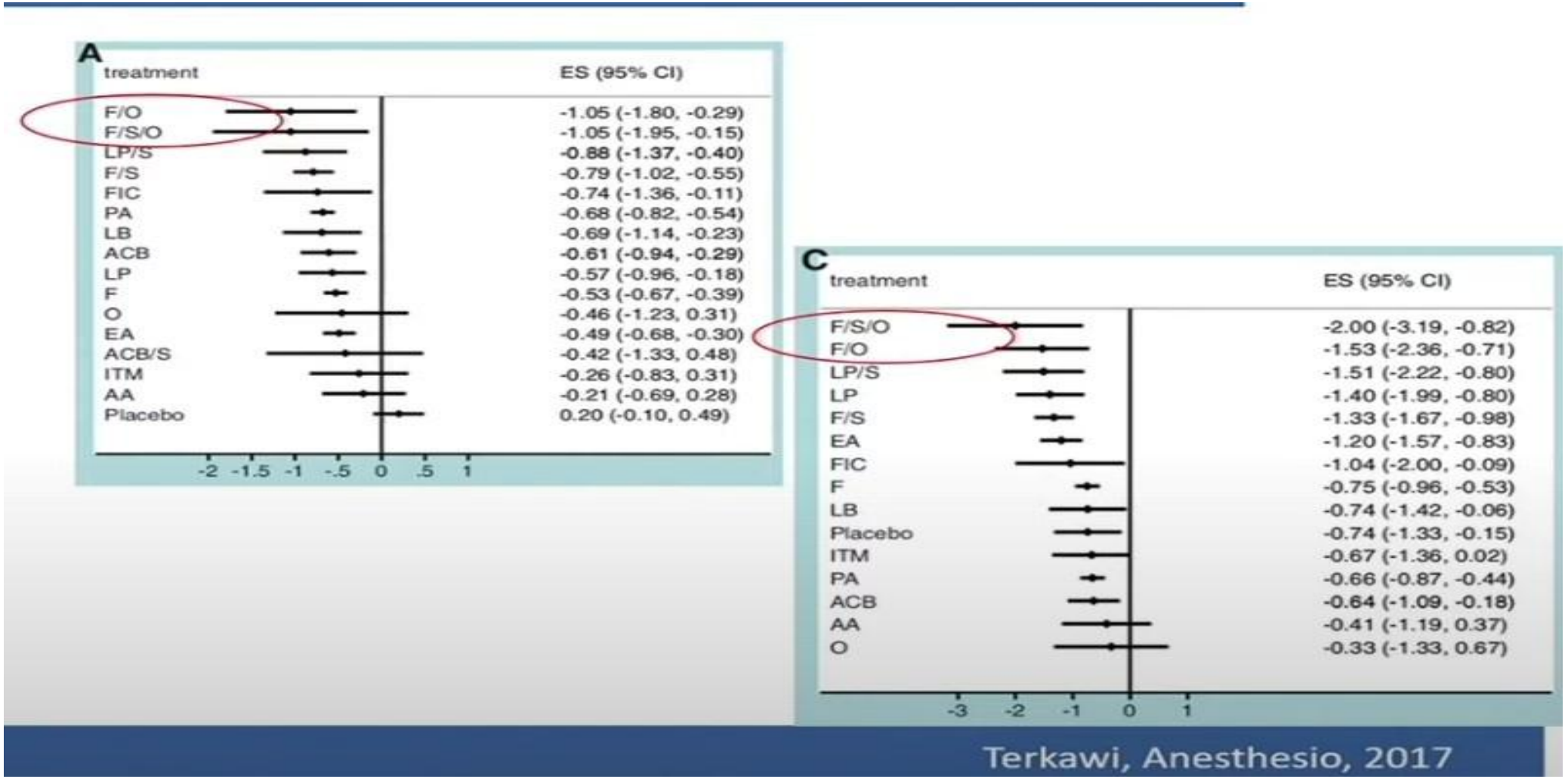
Jennifer M. Hah, MD, MS; Eric Cramer, BS; Heather Hilmoe, BS; Peter Schmidt, MD; Rebecca McCue, BS; Jodie Trafton, PhD; Debra Clay, BSN, RN; Yasamin Sharifzadeh, BS; Gabriela Ruchelli, BS; Stuart Goodman, MD, PhD; James Huddleston, MD; William J. Maloney, MD; Frederick M. Dirbas, MD; Joseph Shrager, MD; John G. Costouros, MD; Catherine Curtin, MD; Sean C. Mackey, MD, PhD; Ian Carroll, MD, MS







Associatio of Blocks: Analgesic power



Blocchi nervosi Periferici e Mobilizzazione

- **IL Blocco Ideale:**

Forte Potere analgesico

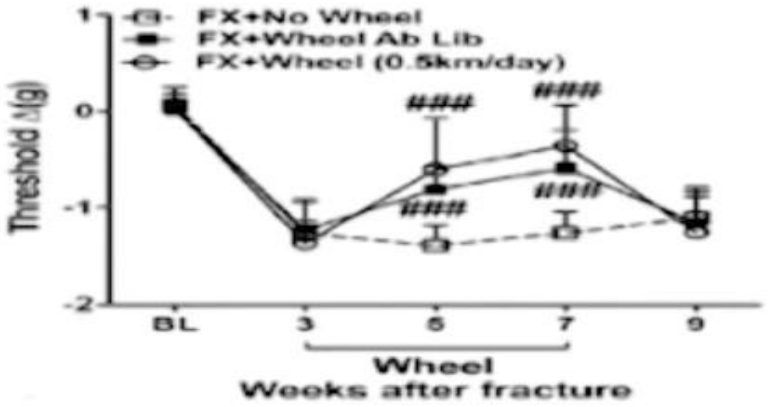
Nessun impatto sulla deambulazione

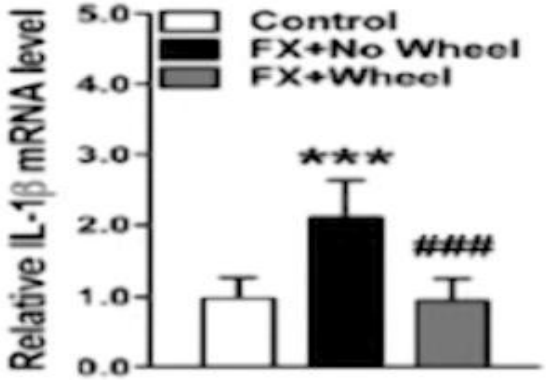
Primary TKA: Should we prioritize Analgesia or Function ?

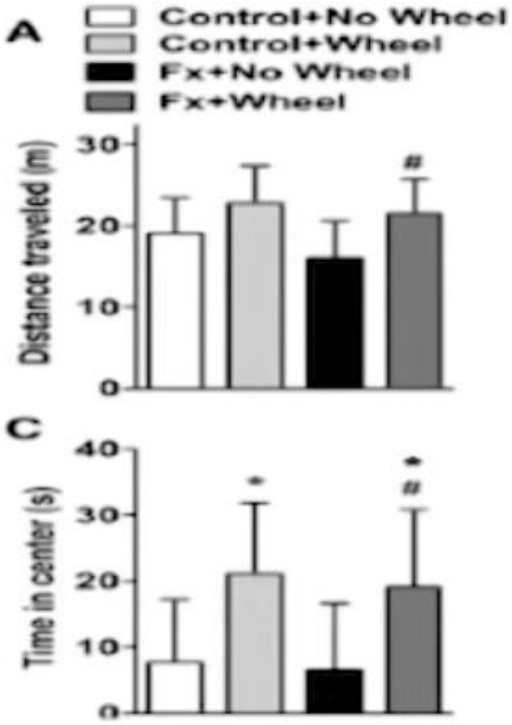
Exercise Reverses Nociceptive Sensitization, Upregulated Neuropeptide Signaling, Inflammatory Changes, Anxiety, and Memory Impairment in a Mouse Tibia Fracture Model

ANESTHESIOLOGY 2018; 129:557-75

Xiaoyou Shi, M.D., Tian-zhi Guo, M.D., Wenwu Li, Ph.D., Peyman Sahbaie, M.D., Kenner C. Rice, Ph.D., Agnieszka Sulima, Ph.D., J. David Clark, M.D., Ph.D., Wade S. Kingery, M.D.







What This Article Tells Us That Is New

- Exercise significantly improved mobility, reduced allodynia and unweighting, and attenuated behavioral consequences of anxiety and memory loss. Exercise also had a salutary effect on systemic inflammation. Of interest, suspension of exercise recapitulated allodynia, unweighting of the fractured limb, and inflammation.
- The results suggest that exercise can improve long-term outcomes after tibial injury in experimental models.

Primary TKA: Should we prioritize Analgesia or Function ?

Possible effects of mobilisation on acute post-operative pain and nociceptive function after total knee arthroplasty

Acta Anaesthesiol Scand 2012; 56: 1234–1240

T. H. Lunn[1,2,3], B. B. Kristensen[1,2,3], L. Gaarn-Larsen[3] and H. Kehlet[3,4]

Pre-operatively:

- Pain and nociceptive function (assessed 1 to 4 weeks before surgery)

First post-operative morning (7:30 a.m.):

- Administration of basic analgesics (slow release paracetamol celecoxib, gabapentin)

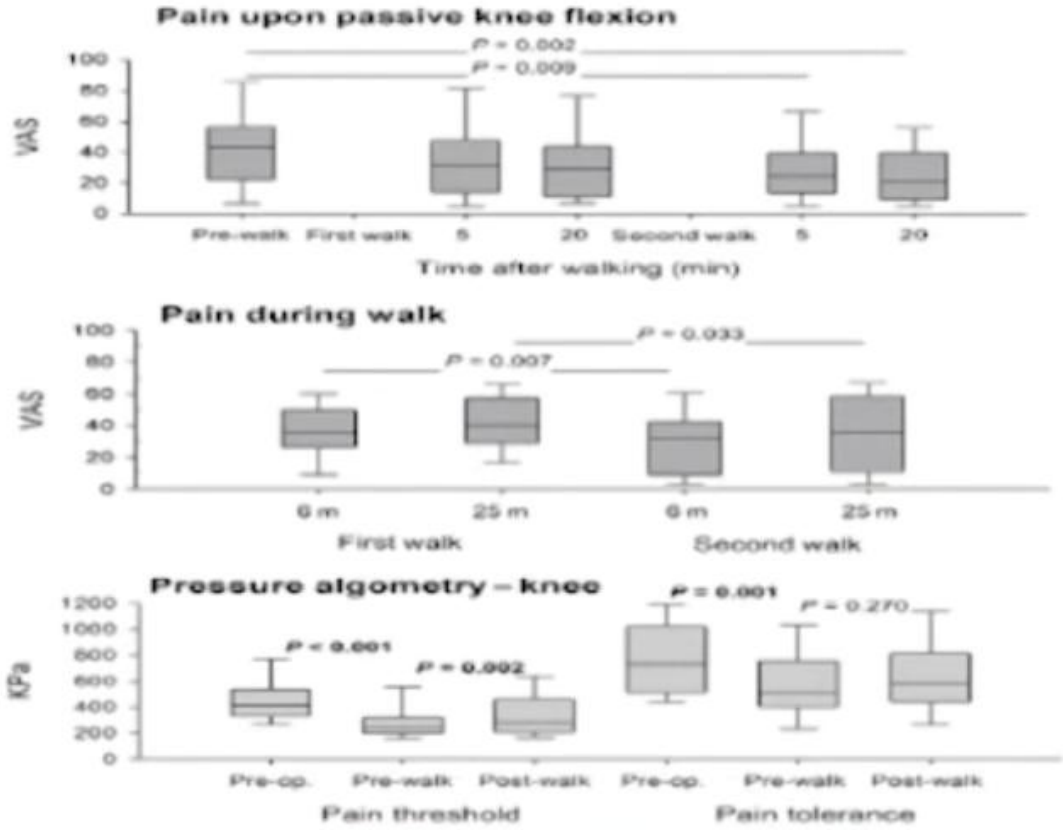
First test scenario (9:00 a.m.):

- Pain at rest (supine), during passive hip flexion, and during passive knee flexion
- Nociceptive function
- Pain during walking (after 6 and 25 m)
- Pain at rest (supine), during passive hip flexion, and during passive knee flexion (5 and 20 min after first walk)

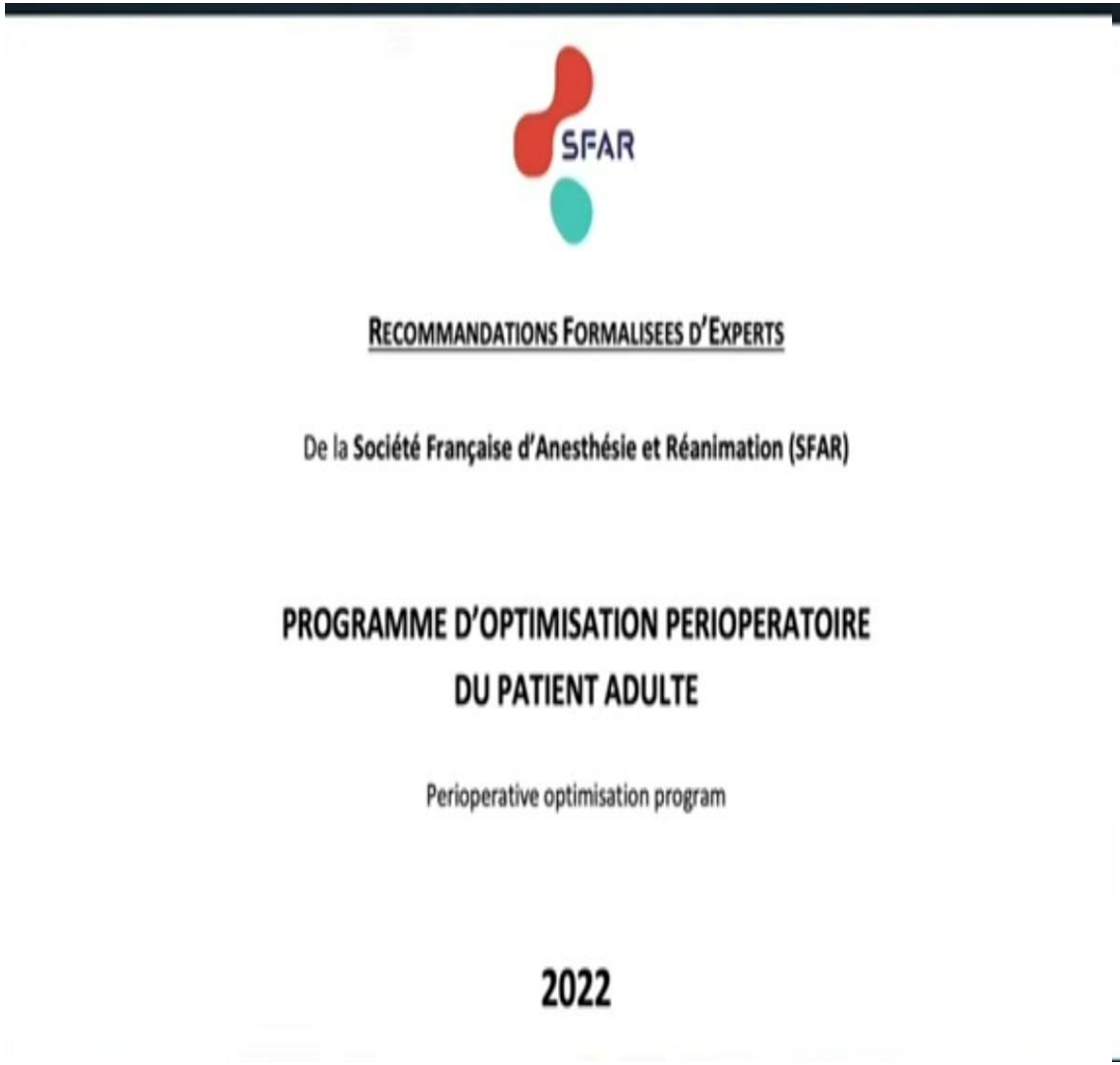
Second test scenario (20 min after first walk):

- Pain during walking (after 6 and 25 m)

  Pain at rest (supine), during passive hip flexion, and during passive knee flexion (5 and 20 min after second walk)
- Nociceptive function (5 min after second walk)



Primary TKA: Should we prioritize Analgesia or function?



SFAR

RECOMMANDATIONS FORMALISEES D'EXPERTS

De la Société Française d'Anesthésie et Réanimation (SFAR)

PROGRAMME D'OPTIMISATION PERIOPERATOIRE DU PATIENT ADULTE

Perioperative optimisation program

2022

Question : La déambulation précoce a-t-elle un impact sur la durée de séjour ou la survenue de complications ?

Expert : Laurent Zieleskiewicz (Marseille)

R4.5.1 - Il est recommandé de faire déambuler le patient idéalement dans les premières 12 heures et dans tous les cas avant la 24e heure postopératoire pour réduire la durée de séjour.
GRADE 1+ (Accord fort)
R4.5.2 - Il est probablement recommandé de faire déambuler le patient idéalement dans les premières 12 heures et dans tous les cas avant la 24e heure postopératoire pour réduire les complications postopératoires.
GRADE 2+ (Accord fort)
Argumentaire : Le lever précoce inclut les termes déambulation précoce (« early ambulation ») ou mobilisation précoce (« early mobilisation »). L'analyse de la littérature est rendue difficile par deux paramètres. D'une part la définition de la « précocité » de la déambulation est très variable selon les études, allant de 1 heure à plusieurs jours. Cependant, la définition la plus fréquemment retrouvée et retenue dans cette recommandation de la déambulation précoce est une déambulation le jour de la chirurgie ou dans les 12 premières heures suivant la chirurgie [1-4]. La distance minimale définissant la déambulation étant également mal codifiée, les

What does Early Mobilization Mean ?

Article

CLINICAL REHABILITATION

Clinical Rehabilitation
2015, Vol. 29(9) 844–854

DOI: 10.1177/0269215514558641
cre.sagepub.com
SAGE

Early mobilization of patients who have had a hip or knee joint replacement reduces length of stay in hospital: a systematic review

Mark L Guerra[1], Parminder J Singh[2] and Nicholas F Taylor[3,4]

Results: Five randomized controlled trials (totaling 622 participants) were included for review. A meta-analysis of 5 trials found a reduced length of stay of 1.8 days (95% confidence interval 1.1 to 2.6) in favor of the experimental group. In 4 of the 5 trials the experimental group first sat out of bed within 24 hours post operatively. In 4 of the 5 trials the experimental group first walked within 48 hours post operatively. Individual trials reported benefits in range of motion, muscle strength and health-related quality of life in favor of the experimental group. There were no differences in discharge destinations, incidence of negative outcomes or adverse events attributable to early mobilization when compared to the comparison groups.

- Mobilizzazione precoce : Sedersi a J0

  Camminare entro prime 48 ore

What does Early Mobilization Mean ?

Article

Early mobilization of patients who have had a hip or knee joint replacement reduces length of stay in hospital: a systematic review

Mark L Guerra[1], Parminder J Singh[2] and Nicholas F Taylor[3,4]

Mobilization after joint arthroplasty surgery: who benefits from standing within 12 hours?

Conclusion: Early mobilization as part of an enhanced recovery programme was associated with decreased LOS for patients having THA; however, this was not the case for KA patients.

Early Deambulation: Day Zero Following

Physical Therapy on Postoperative Day Zero Following Total Knee Arthroplasty: A Randomized Controlled Trial of 394 Patients

Daniel D. Bohl, M.D., M.P.H.[1]

	Intention-to-treat		
	POD 0 PT	POD 1 PT	P-value
Hospital stay in hours (median [IQ range])*	32.0 (28.0-51.0)	31.0 (28.0-52.0)	0.65
Hospital stay in number of nights			0.39
1 night	110 (60.1%)	106 (54.4%)	
2 nights	59 (32.2%)	64 (32.8%)	
3 nights	11 (6.0%)	20 (10.3%)	
≥4 nights	3 (1.6%)	5 (2.6%)	

Bohl, J Arthroplasty, 2019

- Camminare il giorno del ‘intervento no riduce la durata media del ricovero

Early Deambulation: Following

Effect of adding one 15-minute-walk on the day of surgery to fast-track rehabilitation after total knee arthroplasty: a randomized, single-blind study

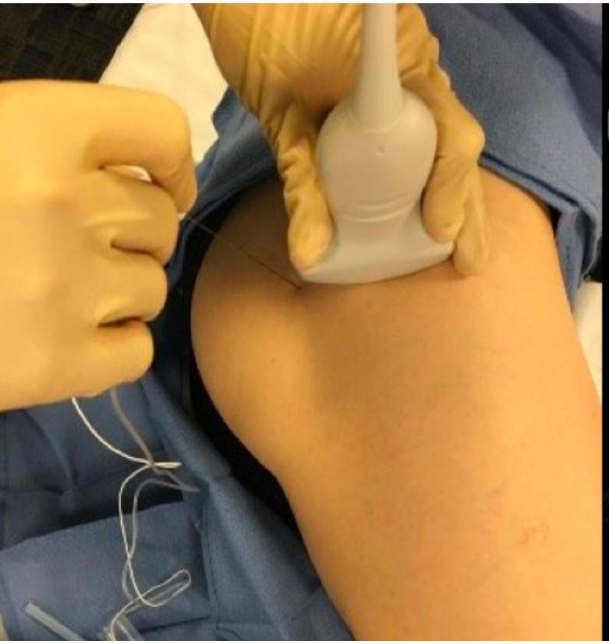
TABLE III.—*Functional Results of Patients 2 Weeks after Total Knee Arthroplasty treated with an Intensive Fast-Track Rehabilitation Protocol or a Standard Fast-Track Rehabilitation Protocol*

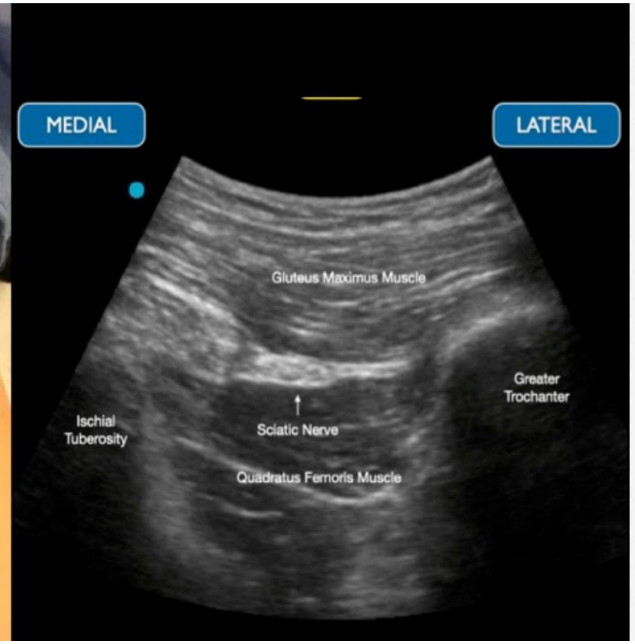
Characteristic[a]	Intensive Fast-Track Protocol, n=31 Mean (SD) [Median)]	Standard-Track Protocol, n=31 Mean (SD) [Median]	P
Knee Society score	74.9 (12.5) [79]	71.2 (14.3) [75]	0.29
Knee Society score function	51.6 (16.2) [55]	46.3 (16.1) [45]	0.21
Flexion, degrees	98.8 (14.0) [97.5]	98.7 (12.9) [95]	0.62
Extension deficit, degrees	2.5 (5.4) [0]	3.4 (5.7) [0]	0.45

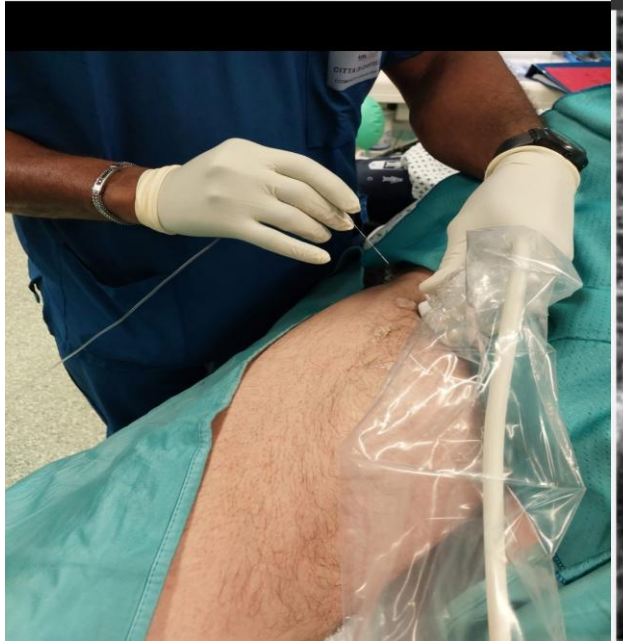
[a] See text for an explanation of the scores used

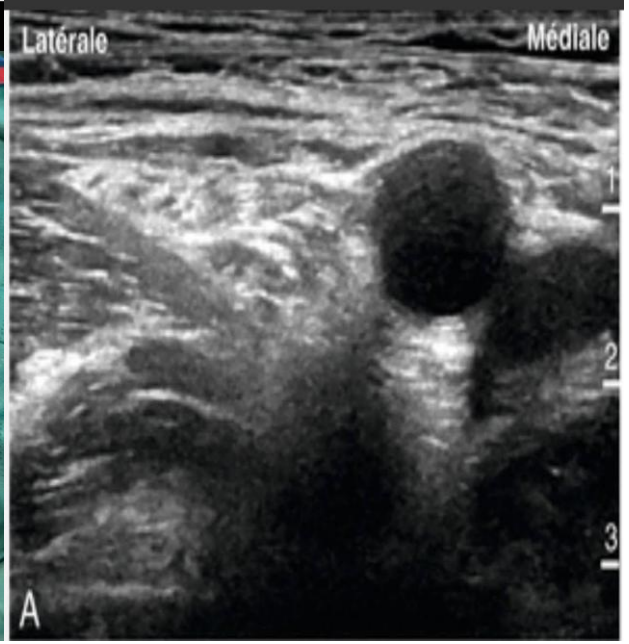
Zietek, 2019

Camminare a D0 non migliora la prognosi funzionale a D15




MEDIAL
LATERAL
Gluteus Maximus Muscle
Greater Trochanter
Ischial Tuberosity
Sciatic Nerve
Quadratus Femoris Muscle

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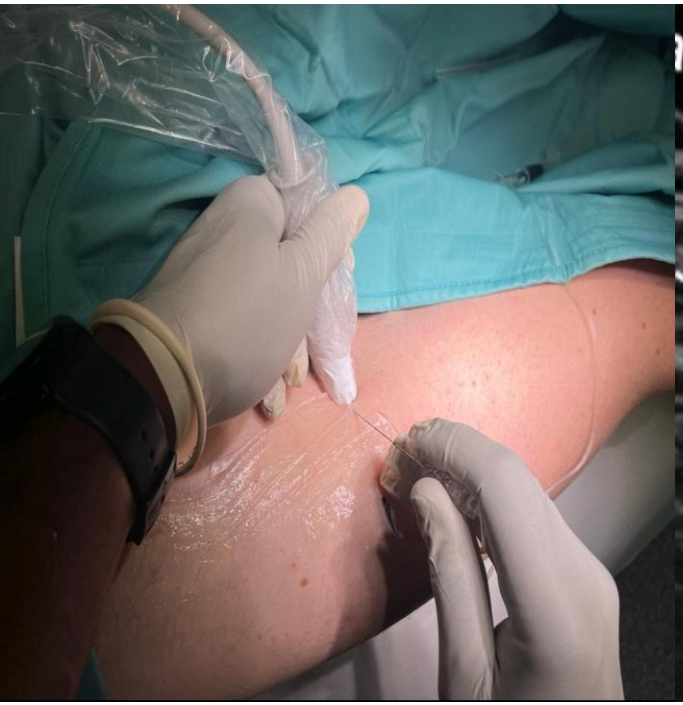

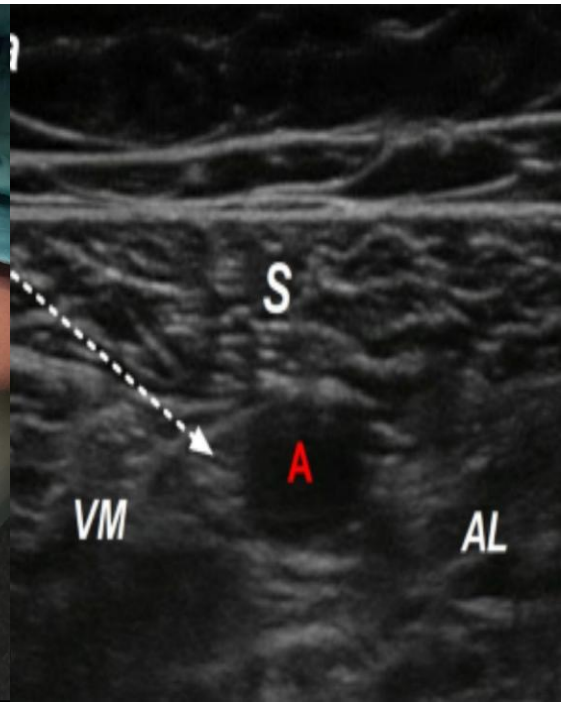
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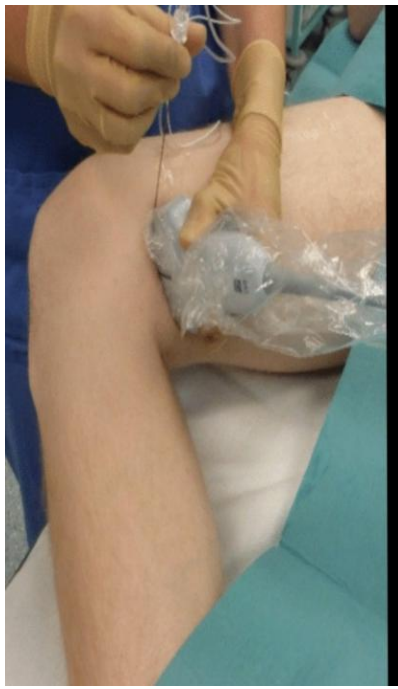
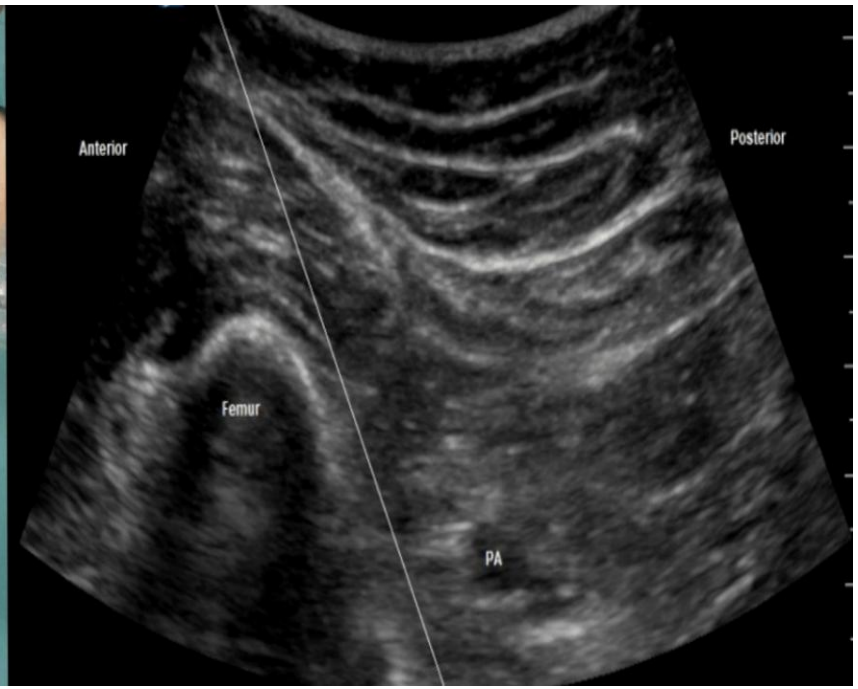



Anterior
Posterior
Femur
PA

Which blocks to associate for an early ambulation ?

› BMC Musculoskelet Disord. 2022 Aug 12;23(1):768. doi: 10.1186/s12891-022-05735-6.

Significantly earlier ambulation and reduced risk of near-falls with continuous infusion nerve blocks: a retrospective pilot study of adductor canal block compared to femoral nerve block in total knee arthroplasty

Yutaka Fujita [1 2], Hisashi Mera [3], Tatsunori Watanabe [4], Kenta Furutani [4 5], Haruna O Kondo [6], Takao Wakai [6], Hiroyuki Kawashima [7], Akira Ogose [1]

Background: Near-falls should be detected to prevent falls related to the earlier ambulation after Total knee arthroplasty (TKA). The quadriceps weakness with femoral nerve block (FNB) has led to a focus on adductor canal block (ACB). We purposed to examine the risk of falls and the earlier ambulation in each continuous infusion nerve block.

Methods: Continuous infusion nerve block (FNB or ACB) was performed until postoperative day (POD) 2 or 3. Pain levels and falls/near-falls with knee-buckling were monitored from POD 1 to POD 3. The score on the manual muscle test, MMT (0 to 5, 5 being normal), of the patients who could ambulate on POD 1, was investigated.

Results: A total of 73 TKA cases, 36 FNB and 37 ACB, met the inclusion criteria. No falls were noted. But episodes of near-falls with knee-buckling were witnessed in 14 (39%) cases in the FNB group and in 4 (11%) in the ACB group ($p = 0.0068$). In the ACB group, 81.1% of patients could ambulate with parallel bars on POD 1, while only 44.4% of FNB patients could do so ($p = 0.0019$). The quadriceps MMT values in the ACB group was 2.82, significantly higher than 1.97 in the FNB group ($p = 0.0035$). There were no significant differences in pain as measured with a numerical rating scale (NRS) and rescue analgesia through POD 3.

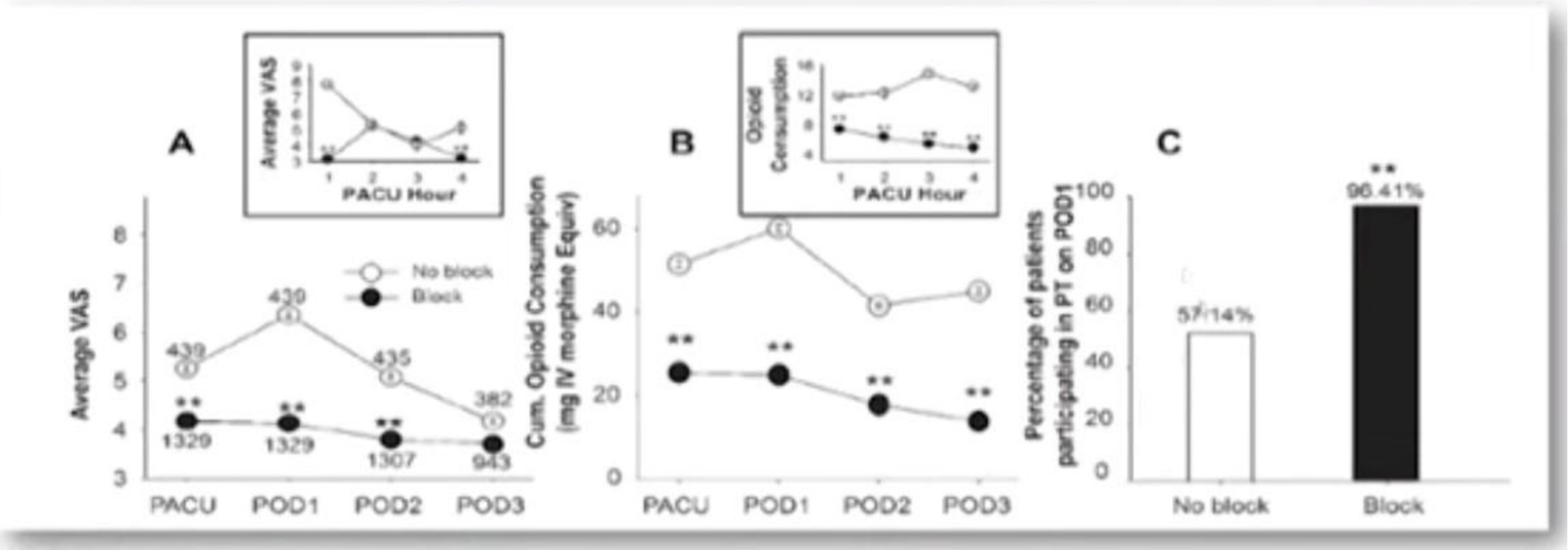
Conclusion: ACB was associated with significantly less knee-buckling and earlier ambulation post-TKA, with better quadriceps strength. Our study indicated the incidence of falls and near-falls with continuous infusion nerve blocks, and support the use of ACB to reduce the risk of falls after TKA. It is suggested that a certain number of the patients even with continuous ACB infusion should be considered with the effect of motor branch to prevent falls.

Keywords: Continuous infusion nerve blocks; Early ambulation recovery; Risk of falls and near-falls; Total knee arthroplasty.

Impact of Peripheral Nerve Block with Low Dose Local Anesthetics on Analgesia and Functional Outcomes Following Total Knee Arthroplasty: A Retrospective Study

Qing Liu, MD, PhD,*
Jacques E. Chelly, MD, PhD, MBA,†
John P. Williams, MD,* and Michael S. Gold, PhD*,‡,**

Pain Medicine 2015; 16: 998–1006



Risk factors for falls

Femoral nerve block using ropivacaine 0.025%, 0.05% and 0.1%: effects on the rehabilitation programme following total knee arthroplasty: a pilot study

J. J. Paauwe,[1] B. J. Thomassen,[2] J. Weterings,[3] E. van Rossum[4] and M. E. Ausems[3]

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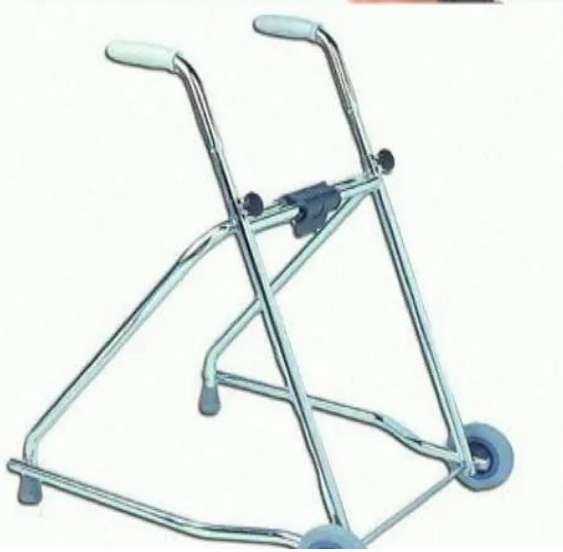
4 Associated Professor, Department of Health Studies, Zuyd University, AN Heerlen, the Netherlands

The Journal of Arthroplasty Vol. 25 No. 1 2010

Postoperative Patient Falls on an Orthopedic Inpatient Unit

Duncan B. Ackerman, MD, Robert T. Trousdale, MD, Patti Bieber, MS, RN, Joan Henely, MS, APRN-BC, Mark W. Pagnano, MD, and Daniel J. Berry, MD



Falls Associated with Lower-Extremity–Nerve Blocks: A Pilot Investigation of Mechanisms

Samuel I. Muraskin, M.D., Bryan Conrad, M.Eng., Naiquan Zheng, Ph.D., Timothy E. Morey, M.D., and F. Kayser Enneking, M.D.

IPACK Combined with Adductor canal Block

Meta-Analysis > J Orthop Surg Res. 2022 Aug 12;17(1):387. doi: 10.1186/s13018-022-03272-5.

iPACK block (local anesthetic infiltration of the interspace between the popliteal artery and the posterior knee capsule) added to the adductor canal blocks versus the adductor canal blocks in the pain management after total knee arthroplasty: a systematic review and meta-analysis

Jiao Guo [1], Minna Hou [1], Gaixia Shi [2], Ning Bai [1], Miao Huo [3]

Conclusion: The addition of iPACK lowers postoperative VAS scores, cumulative morphine consumption, and hospital stays. Meanwhile, the addition of iPACK improves postoperative patients' activity performance without extra side effects. iPACK combined with ACB proves to be a suitable pain management technique after TKA.

> Braz J Anesthesiol. 2022 Jan-Feb;72(1):110-114. doi: 10.1016/j.bjane.2021.04.012. Epub 2021 Apr 26.

The impact of IPACK combined with adductor canal block under ultrasound guidance on early motor function after total knee arthroplasty

Fang-Yu Zheng [1], Yong-Bo Liu [2], Hui Huang [3], Shuai Xu [4], Xiao-Jun Ma [3], Ying-Zhi Liu [5], Hai-Chen Chu [3]

Results: The quadriceps femoris muscle strength score was significantly higher in I group than in FS group (p = 0.001), while the modified Bromage score were significantly lower and walking distance results were significantly higher in I group than in FS group (both p = 0.000).

Conclusion: Compared with femoral nerve block combined with superior popliteal sciatic nerve block, IPACK combined with adductor canal block had a mild impact on early motor functions after TKA.

Randomized Controlled Trial > J Knee Surg. 2023 Oct;36(12):1273-1282. doi: 10.1055/s-0042-1755368. Epub 2022 Aug 9.

Comparison of Different Concentrations of Ropivacaine Used for Ultrasound-Guided Adductor Canal Block + IPACK Block in Total Knee Arthroplasty

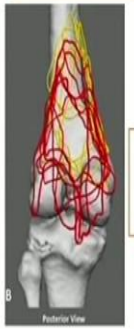
Qiuru Wang [1], Jian Hu [2], Ting Ma [1], Dongmei Zhao [1], Jing Yang [2], Pengde Kang [1]

IPACK Block in Total Knee arthroplasty

iPACK

Niveau de ponction | Etudes cadavériques

Diffusion supra patellaire antéro-médiale



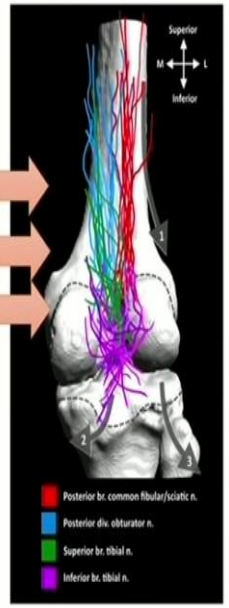
Large diffusion épicondyles et antéro-latérale

Proximité capsule articulaire

métaphysodiaphysaire

supracondylien

intercondylien



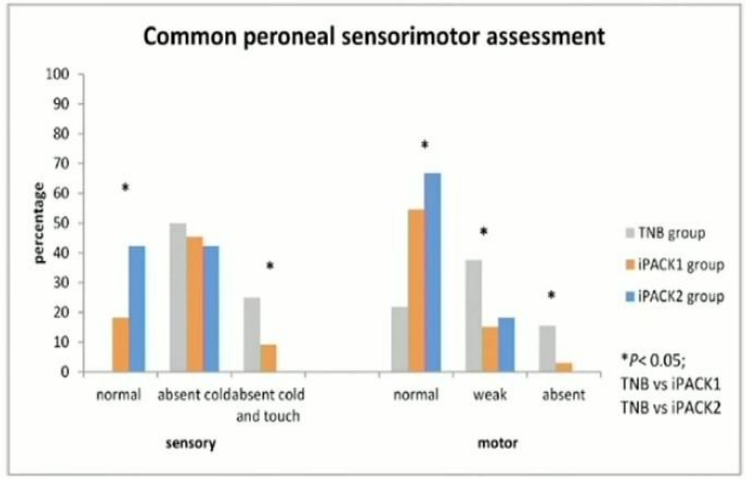
Tran J, Giron Arango L, Peng P, Sinha SK, Agur A, Chan V: Evaluation of the iPACK block injectate spread: a cadaveric study. Reg Anesth Pain Med 201 44:689–94

Tran J, Peng PWH, Gofeld M, Chan V, Agur AMR: Anatomical study of the innervation of posterior knee joint capsule: implication for image-guided intervention. Reg Anesth Pain Med 2019; 44:234–8

iPACK

Etudes Cliniques

RCT



Incidence Bloc SM Fib C supérieure dans le groupe N Tibial

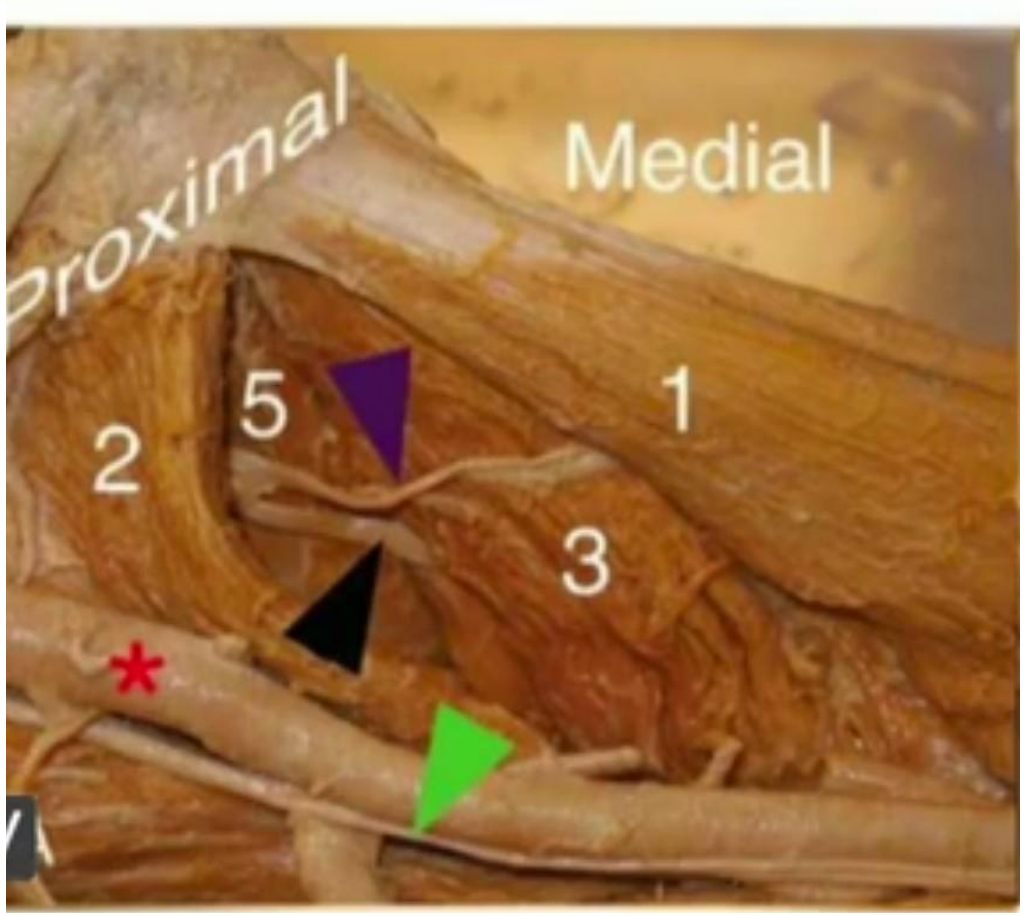
Kampitak W, Tanavalee A, Ngarmukos S, Tantavisut S: Motor-sparing effect of iPACK (interspace between the popliteal artery and capsule of the posterior knee) block versus tibial nerve block after total knee arthroplasty: a randomized controlled trial. Reg Anesth Pain Med 2020; 45:267–76

IPACK: Points To Clarity ?

- Ideal puncture level ?
- Ideal volume and concentration of LA ?
- Integration into the ALR protocol: LIA
  ACB
  FNB
  ONB
- Adjuvants ?

Obturator Nerve

Thomas F Bendtsen et al. The optimal Analgesic Block for Total Knee Artroplasty. Reg Anesth and Pain Med 2016



- The anteroir branch will contribute to the innervation of the internal and infrapatellar surface with the saphenous nerve

- The posterior branch will cross the great adductor and contribute to the innervation of the posterior face of the knee with the sciatic nerve

Is the obturator Nerve block is effective?

The Analgesic Effect of Obturator Nerve Block Added to a Femoral Triangle Block After Total Knee Arthroplasty

A Randomized Controlled Trial

Charlotte Runge, MD, Jens Børglum, MD, PhD,† Jan Mick Jensen, MD,‡ Tina Kobborg, MD,* Anette Pedersen, MD,* Jon Sandberg, MD,* Lone Ramer Mikkelsen, PhD,* Morten Vase, MD,* and Thomas Fichtner Bendtsen, MD, PhD‡*

Regional Anesthesia and Pain Medicine • Volume 41, Number 4, July-August 2016

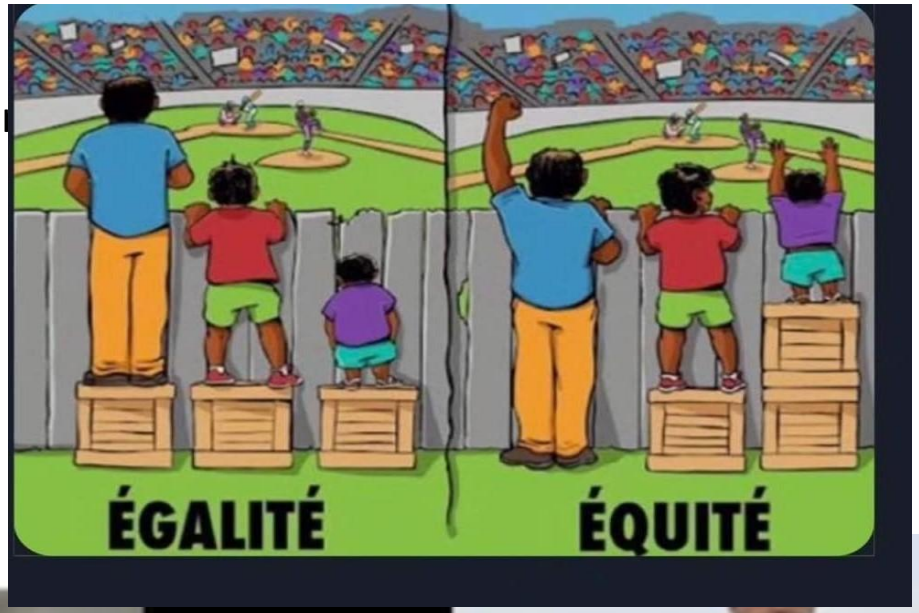
TABLE 2. Nerve Block Outcome Estimates

	OFB (n = 26)	FTB (n = 23)	LIA (n = 26)	*P*
Morphine total 0–24 h postoperatively, mg	2 (0–15)	20 (10–26)†	17 (10–36)†	<0.001
Morphine total 0–48 h postoperatively, mg	18 (3–31)	36 (20–63)*	40 (20–64)†	0.002
Morphine total 24–48 h postoperatively, mg	7.5 (0–19)	15 (5–33)	24.5 (11–32)*	0.046
Morphine total after hospital discharge, mg/d	3 (0–14)	14 (0–23)	16 (0–32)	0.105
Frequency of vomiting 0–24 h postoperatively	0 (0)	0 (0–1)	0 (0–2)†	0.004
Ondansetron total 0–24 h postoperatively, mg	0 (0)	0 (0–8)	4 (0–8)†	0.009
Time from surgery to pain NRS > 3, h	21 (5–43)	7 (4–17)	8 (3–18)	0.08

Values are presented as median (IQR) or count.
*$P < 0.025$ compared with OFB group.
†$P < 0.0025$ compared with OFB group.

Conclusione

- **Protocollo Integarto**
- **Team:** Ortopedico+ Paziente + Anestesita + fisiatria + Fisioterpista + Infermier
- **Rivalutazione e personalizzazione** dei protocolli ALR



Merçi pour votre Attention

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