

Futuro de la cirugía robótica en los próximos años

Joan Leal-Blanquet MD, PhD

Hospital Sant Joan de Déu, Manresa
IMove Traumatologia, Barcelona



dis-close (dĭs-klōz') *v.* To make known or
open to view : expose. —**dis-clo'sure** *n.*

Research Support

Medcomtech
Stryker

Board member

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Consultant

Medcomtech
United Orthopedic Corporation
Stryker



20%

Reimann P, Brucker M, Arbab D, Lüring C. Patient satisfaction - A comparison between patient-specific implants and conventional total knee arthroplasty. J Orthop. 2019 Apr 8;16(3):273-277

Expectation.

Reality.



McGregor AH, Hughes S. The Evaluation of the Surgical Management of Nerve Root Compression in Patients with Low Back Pain: Part 2: Patient Expectations and Satisfaction. Spine 2002; 27(13):1471-6.



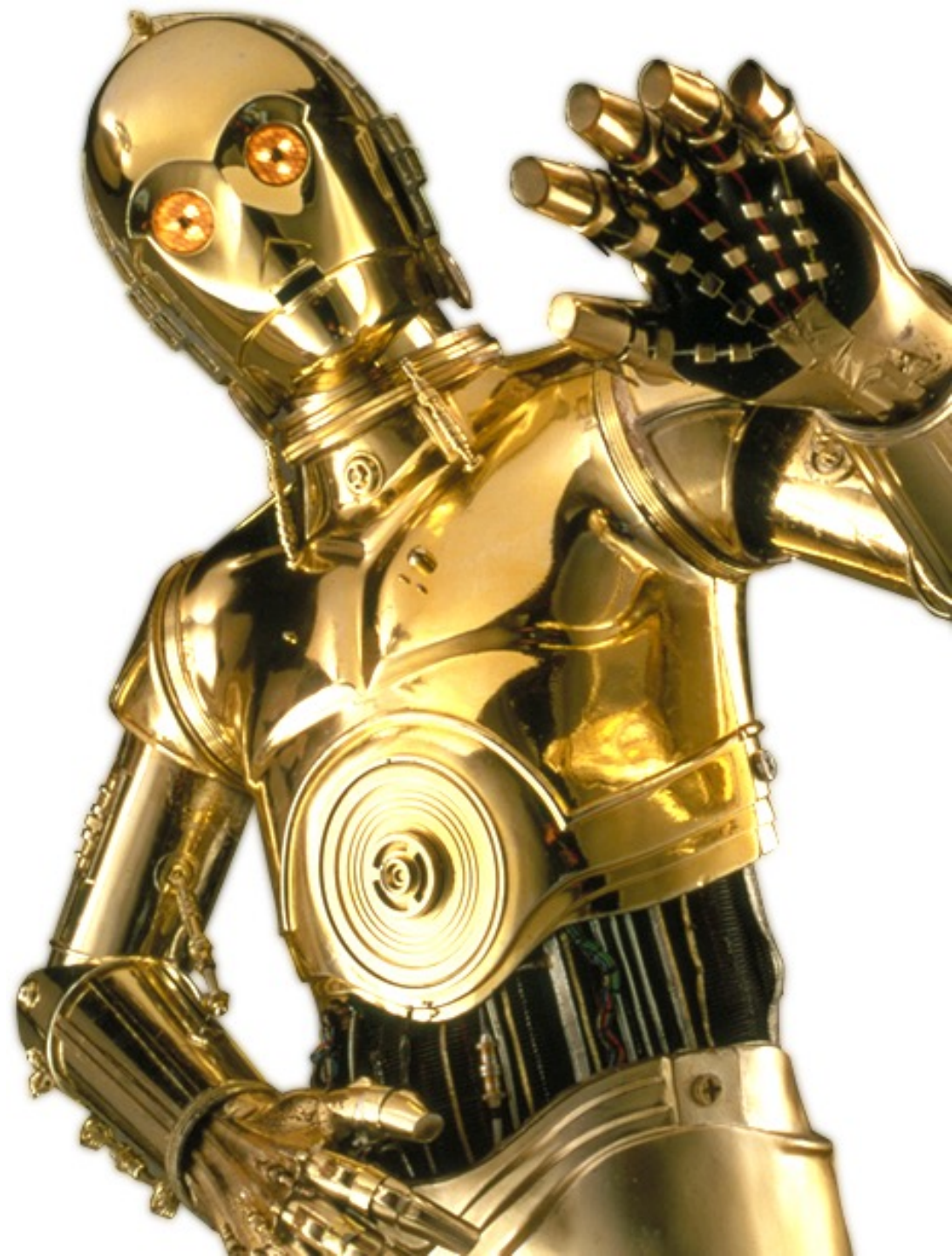


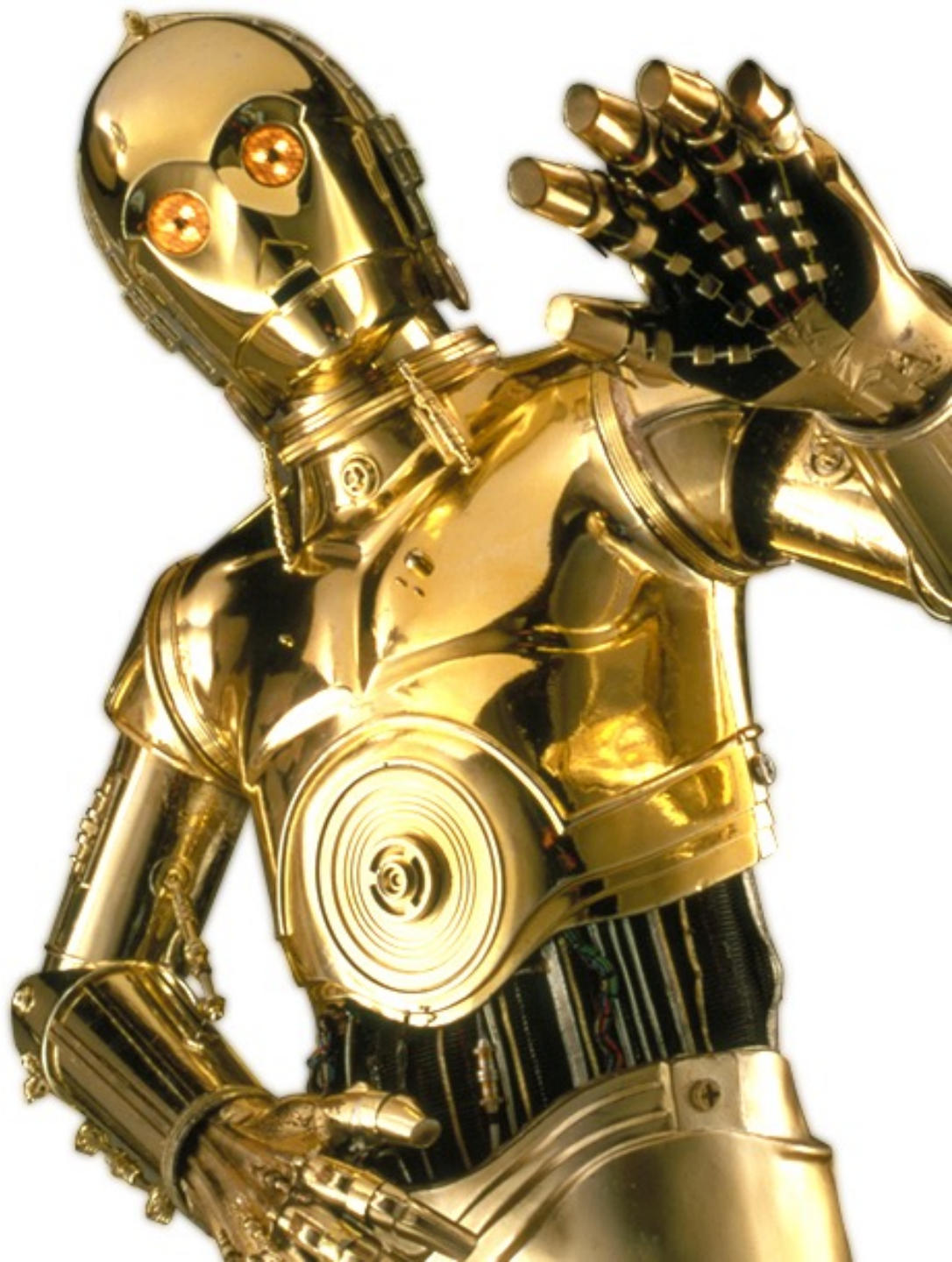
keep on...

Trends and developments in hip and knee arthroplasty technology

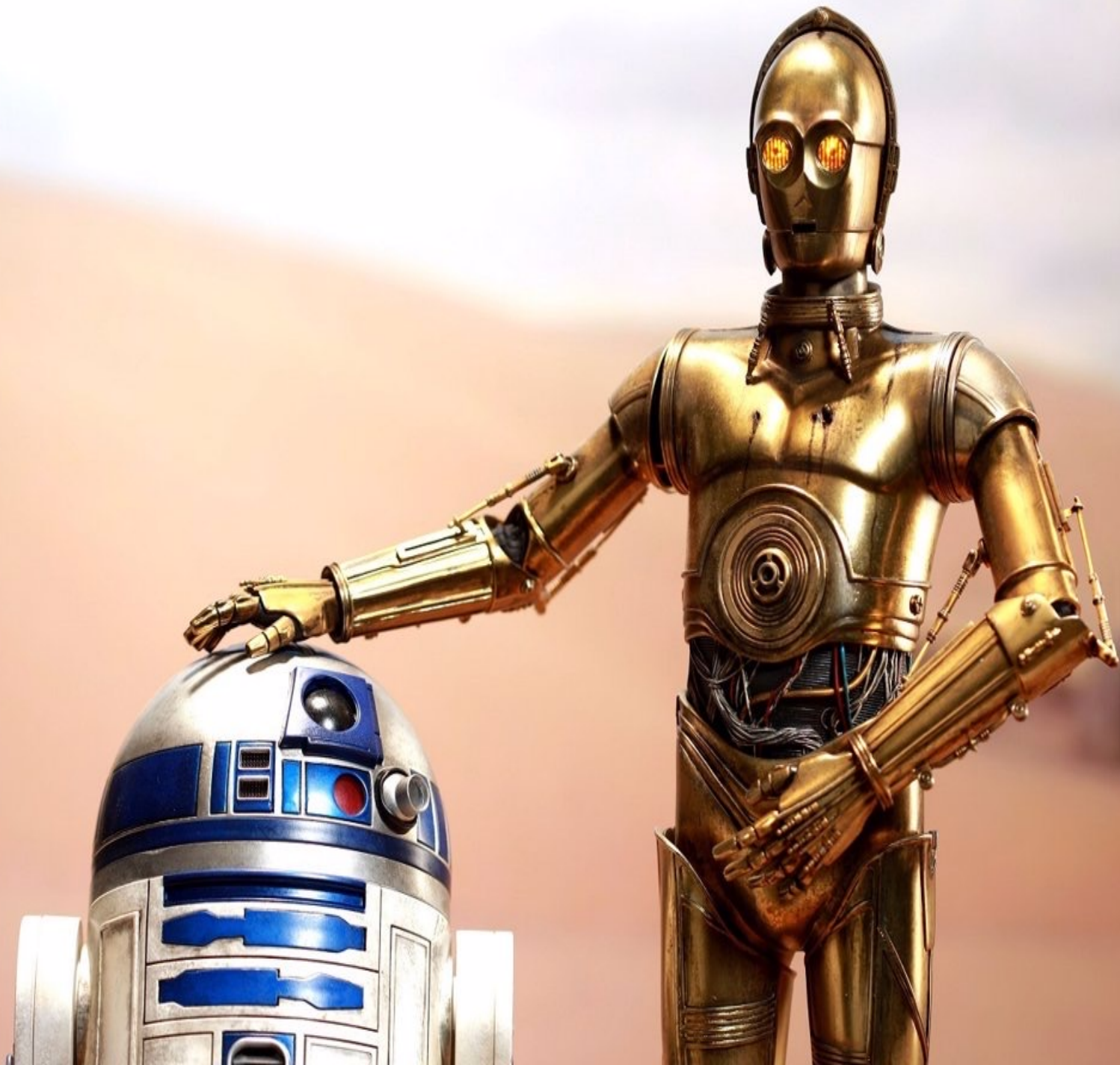
Martin Marsh  and Simon Newman

*'There is recognition that innovation, whilst essential, needs to be balanced with the critical role of **doctors to protect patients** from the potential harmful effects of novel technologies being brought to market without a prior rigorous evaluation'*









Online ahead of print.

Assistive technologies in knee arthroplasty: fashion or evolution? Rate of publications and national registries prove the Scott Parabola wrong

Cécile Batailler¹, Sébastien Parratte^{2 3}

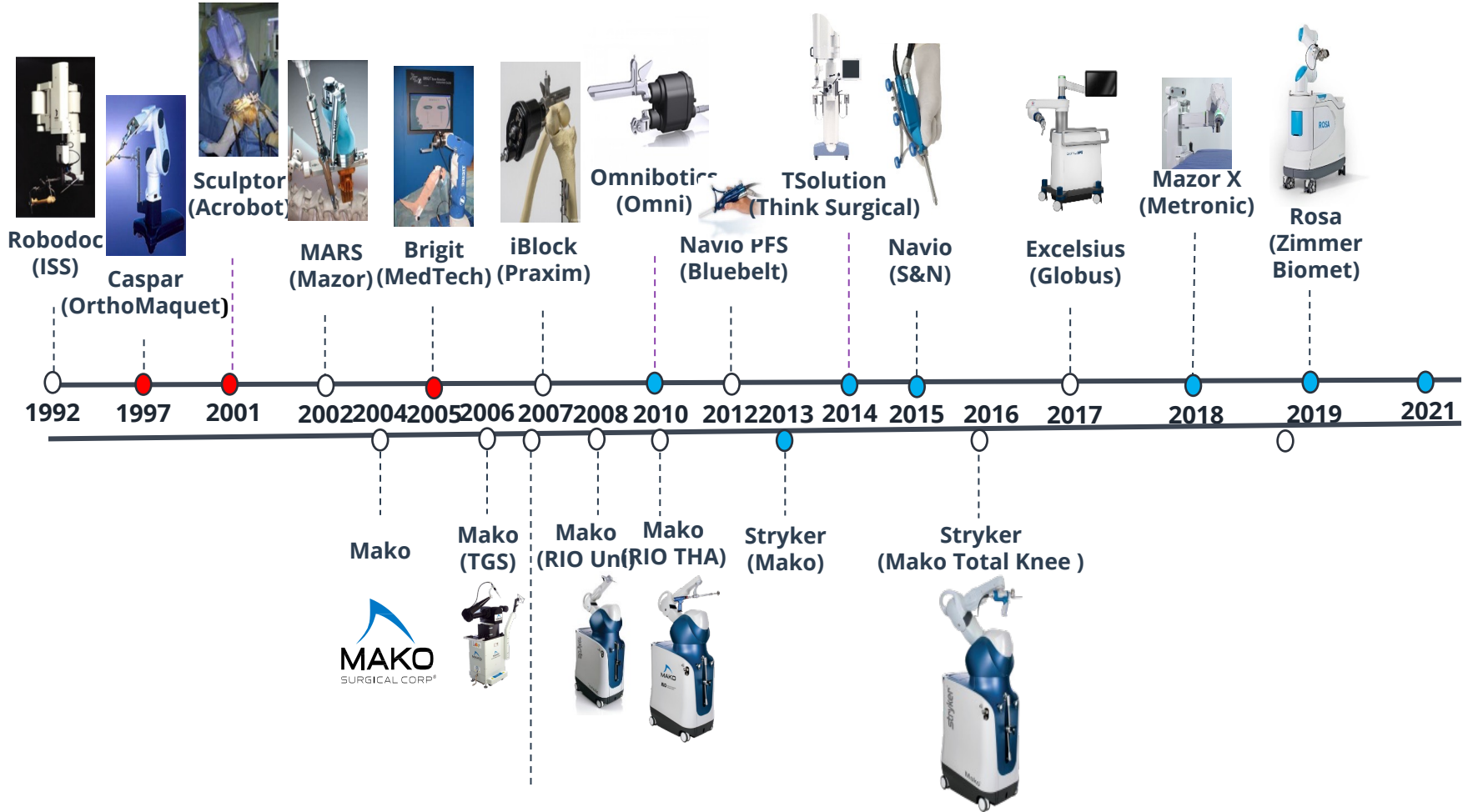
CA-TKA or PSI: stable number of publications over the last 6 years

*RA-TKA: The number of publications **continue to rise***

*In the Australian registry: increased from 2.4% in 2003 to **32% in 2019***

In the Norwegian registry: remained between 8 and 12% of primary TKA since 2007

Robotics in Orthopedics Timeline



Robotic-arm-assisted Knee Arthroplasty Associated With Favorable In-hospital Metrics and Exponentially Rising Adoption Compared With Manual Knee Arthroplasty

Ahmed K Emara ¹, Guangjin Zhou, Alison K Klika, Siran M Koroukian, Nicholas K Schiltz, Viktor E Krebs, Robert M Molloy, Nicolas S Piuizzi

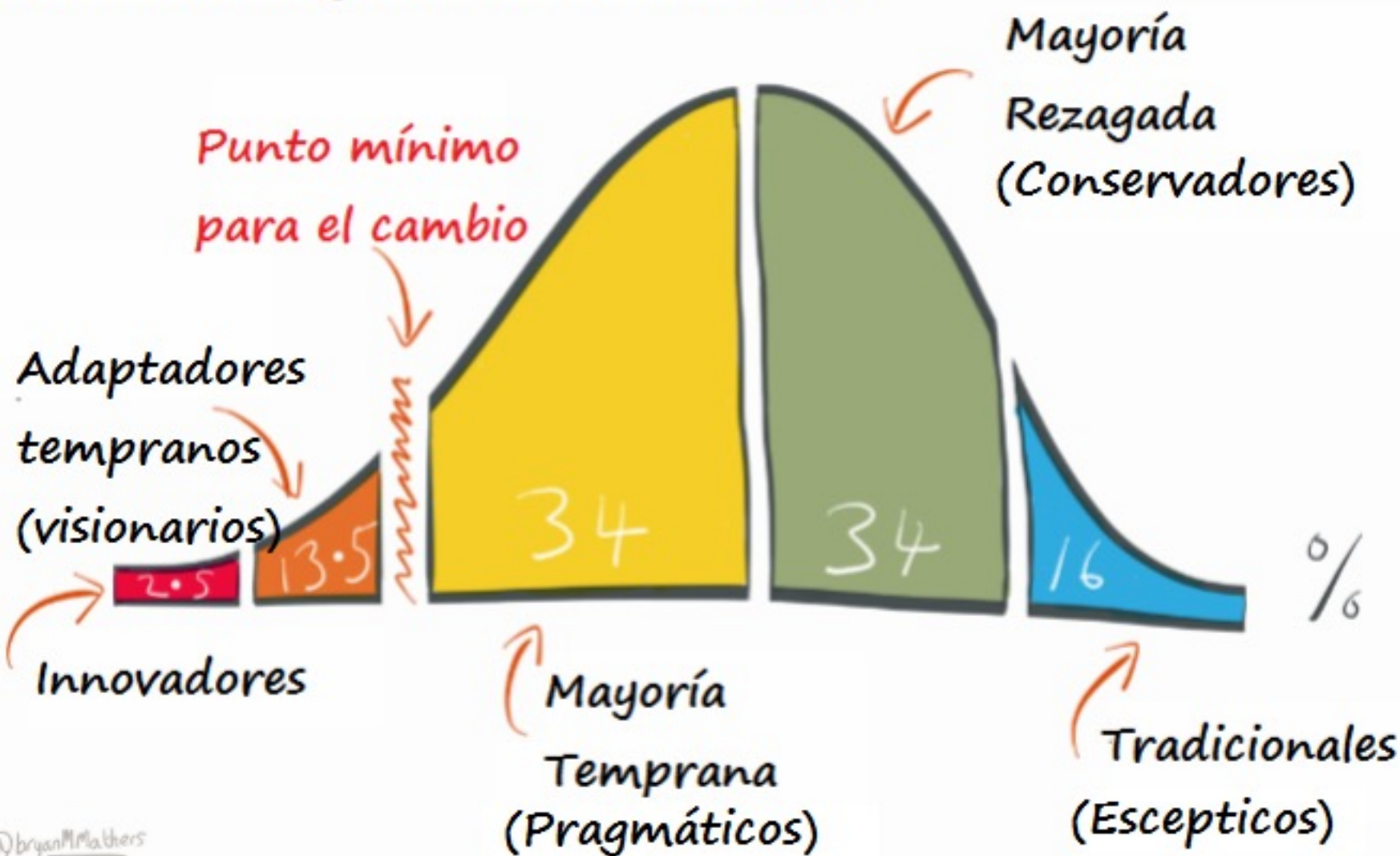
'...RA-KA may provide value through improving in-hospital metrics and mitigating net costs'

'Projections indicate that RA-KA will represent 49.9% (95% confidence interval, 41.1 to 59.9) of KAs by 2030'

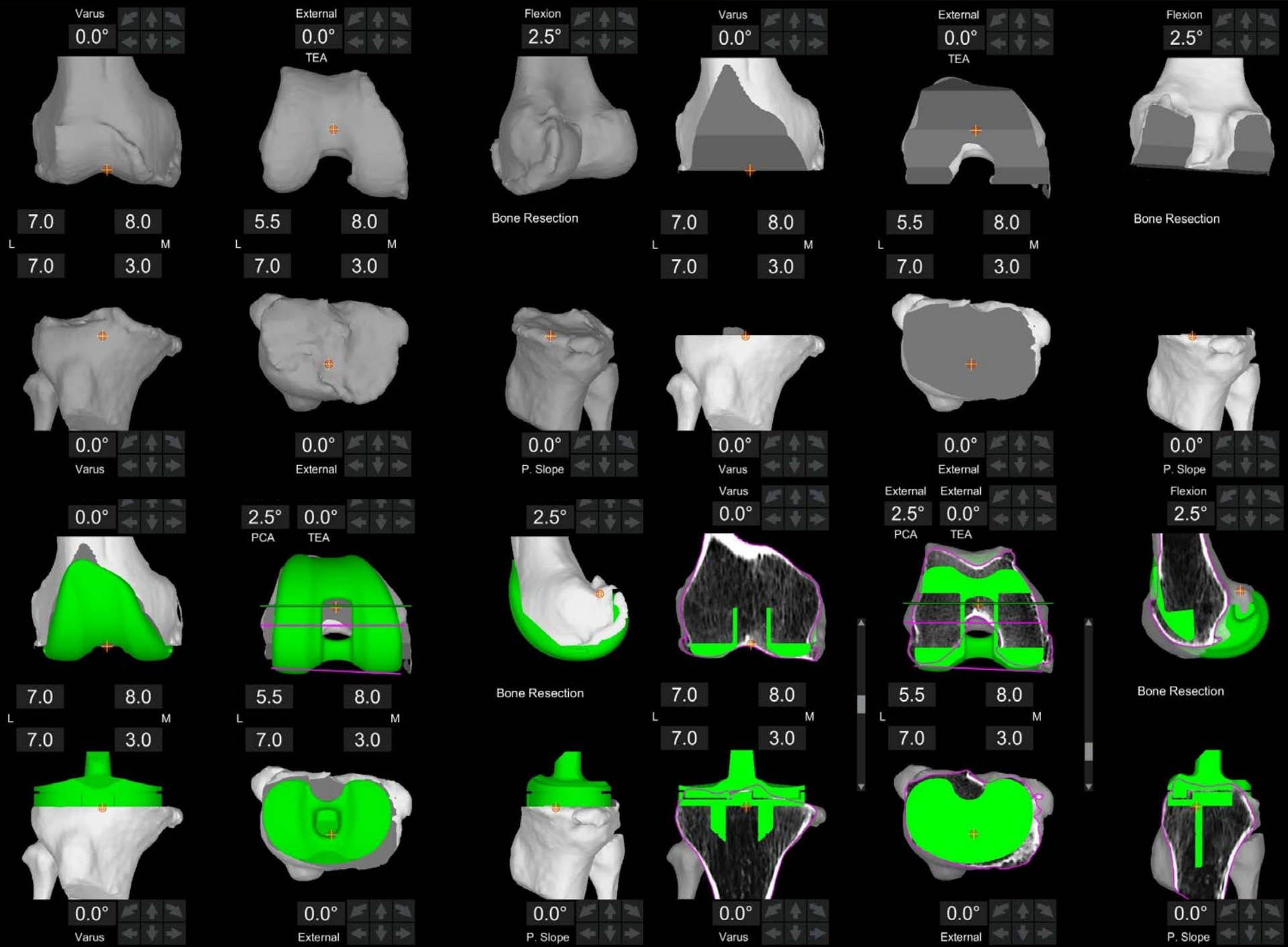


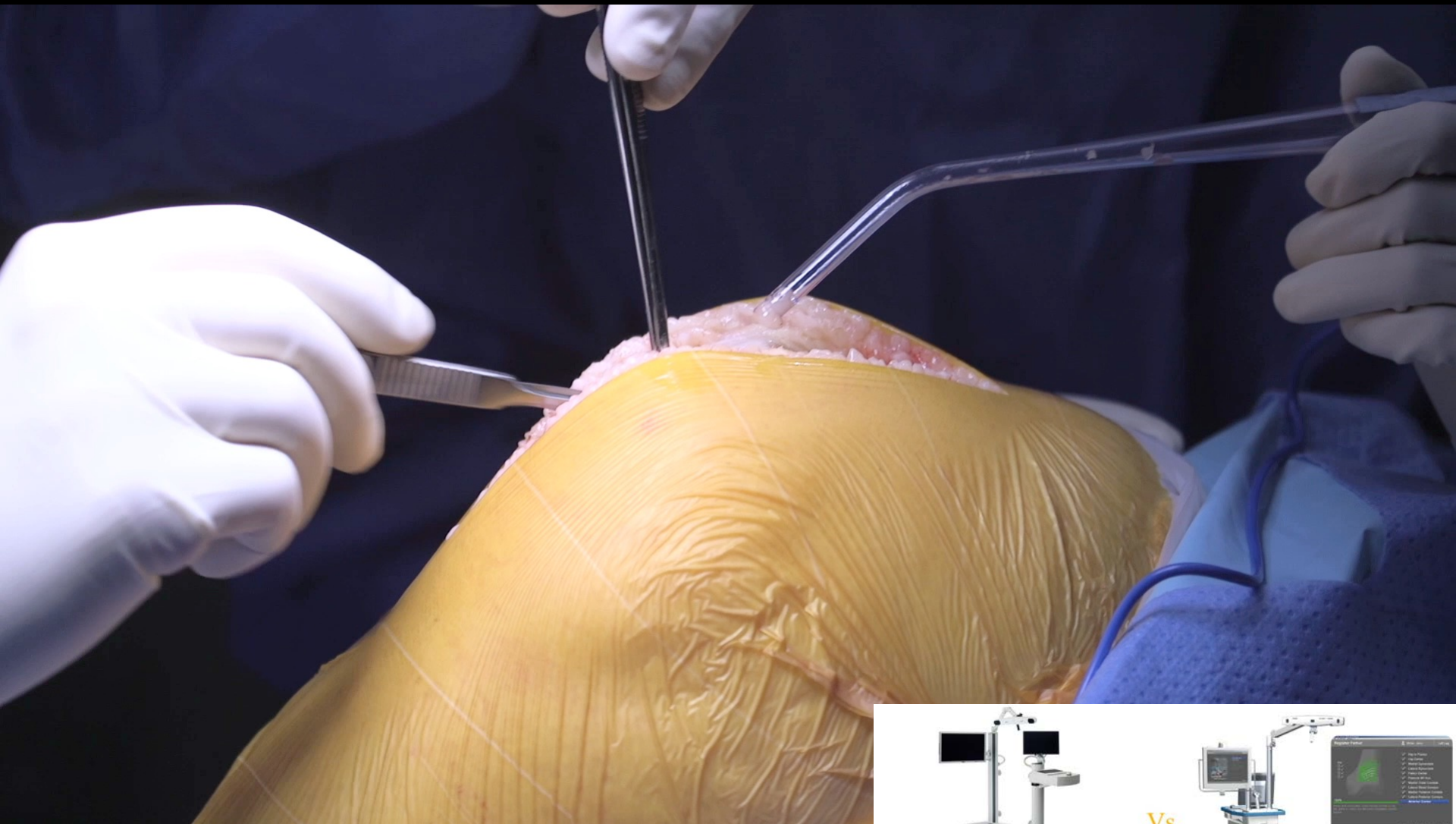
START

Curva de adopción de la innovación



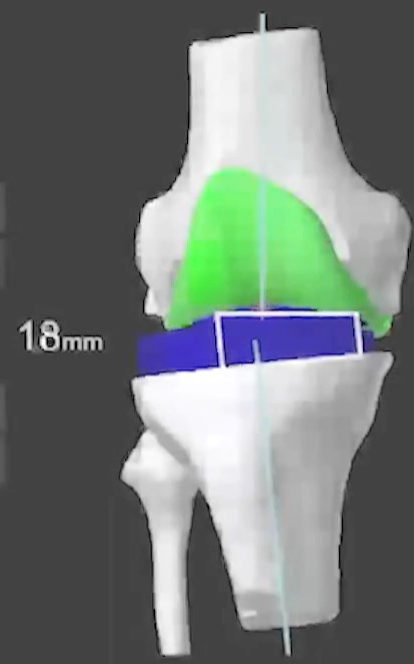
Mako™







*Precision
Safety
Less aggression*



13mm



Limb Flexion

1°

Limb Varus

6°

Planned Valgus

0°



Triathlon® CR Cruciform

Femur	-	5	+
Tibia	-	5	+
Poly	-	9	+

Extension

Flexion

L



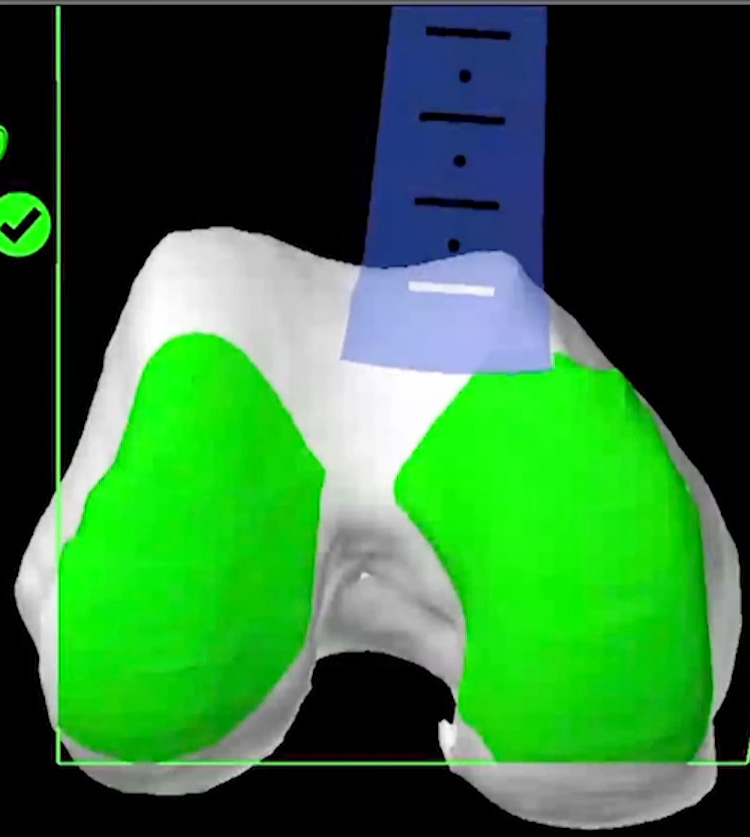


Distal



Flexion

89.0°



Side	Right
Femur	4
Tibia	4 x 9mm
Tool	Angled Saw, Standard
Mode	Cutting

< 1: Distal >





Tamaño real

26/04/2022 21:44:56
BIEL CIMORRA , JOSE JAVIER
3739786



Tamaño real

26/04/2022 21:43:02

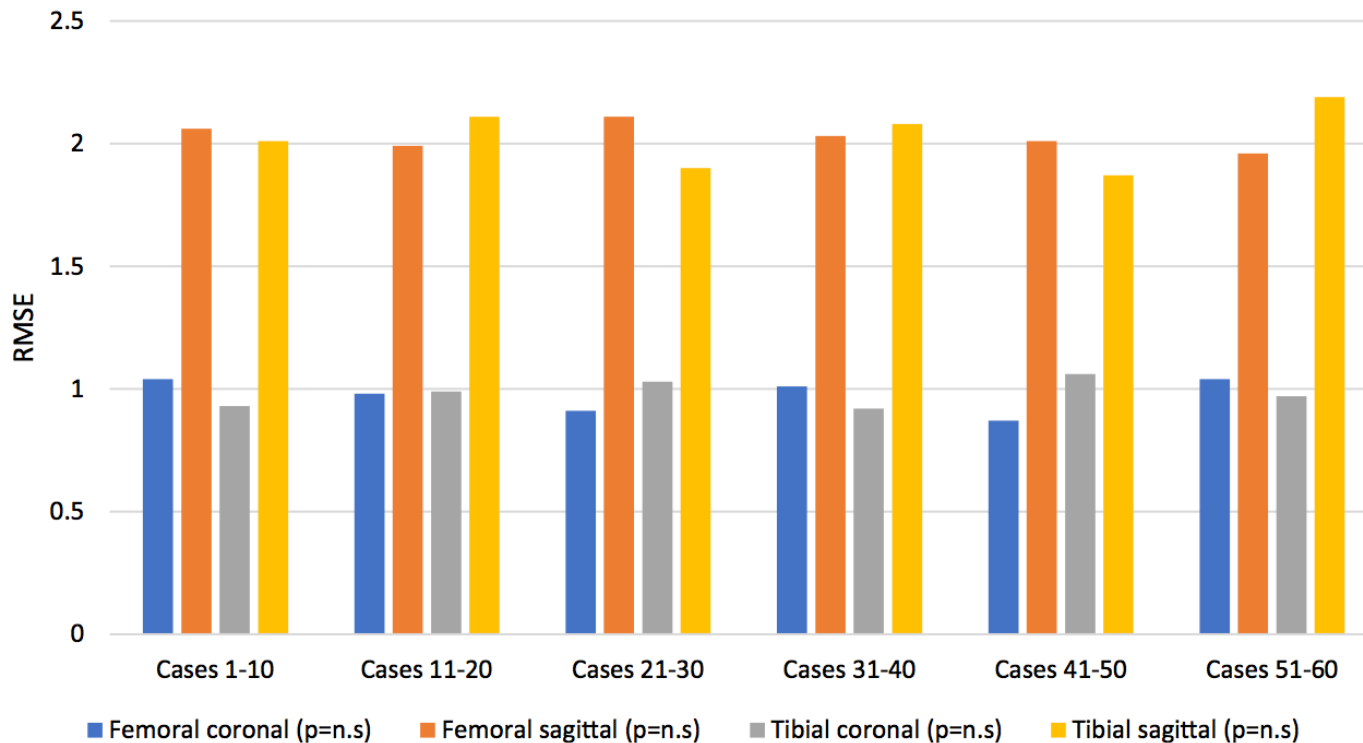
D

ENCAMADO

CLÍNICA TRES TORRES

Robotic-arm assisted total knee arthroplasty has a learning curve of seven cases for integration into the surgical workflow but no learning curve effect for accuracy of implant positioning

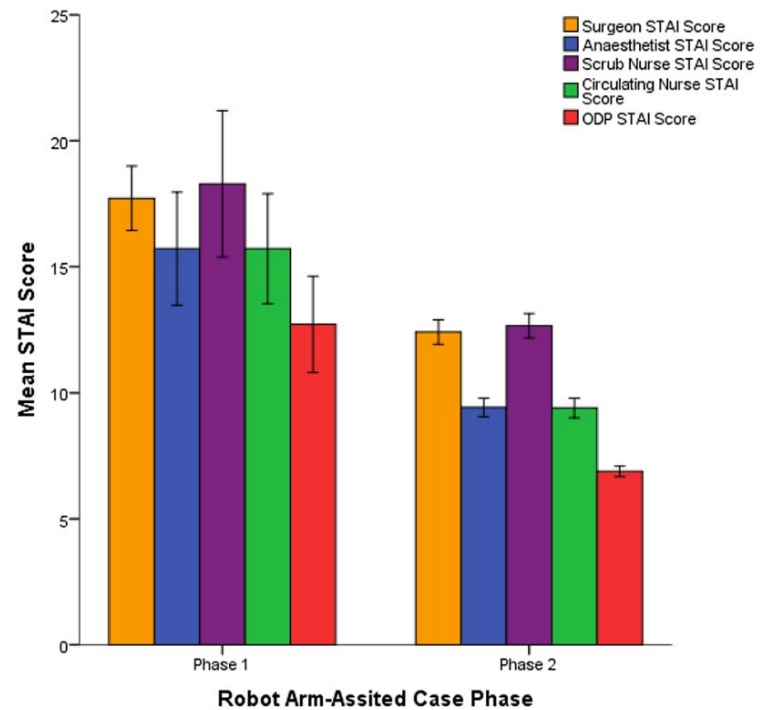
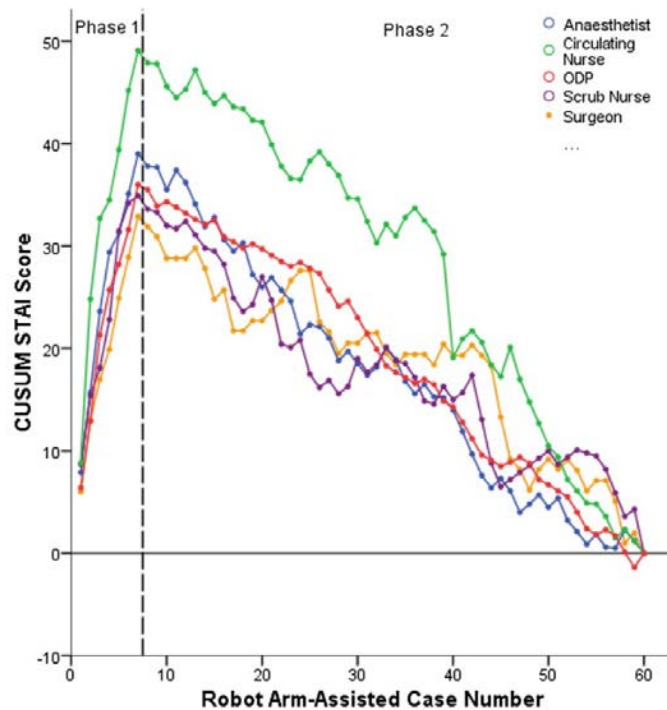
Babar Kayani^{1,2} · S. Konan^{1,2} · S. S. Huq^{1,2} · J. Tahmassebi¹ · F. S. Haddad^{1,2}



KNEE

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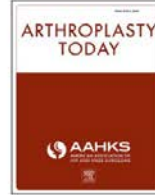


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Arthroplasty Today

journal homepage: <http://www.arthroplastytoday.org/>



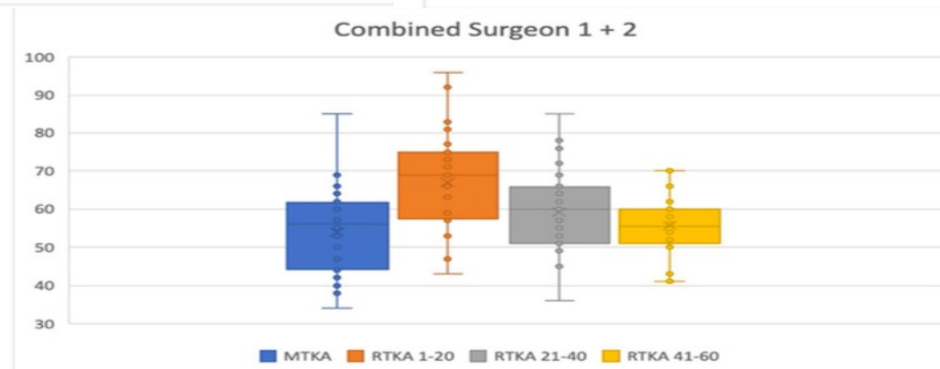
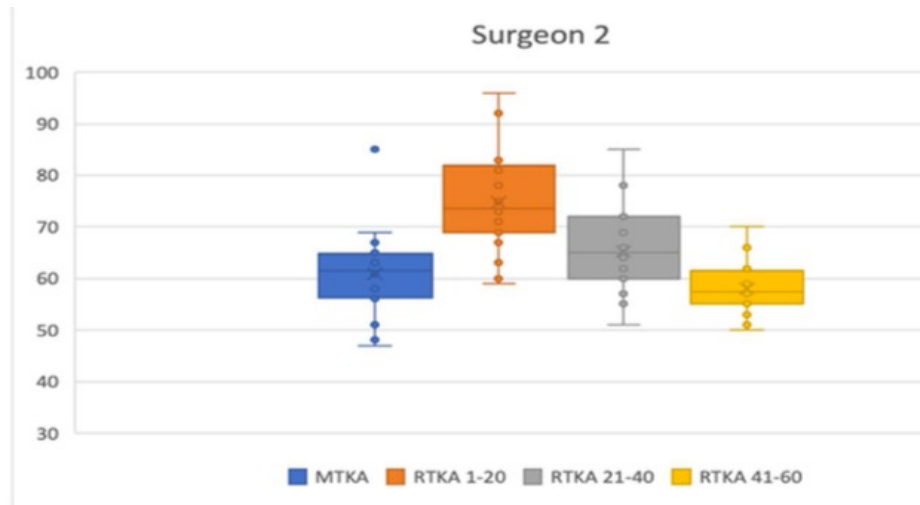
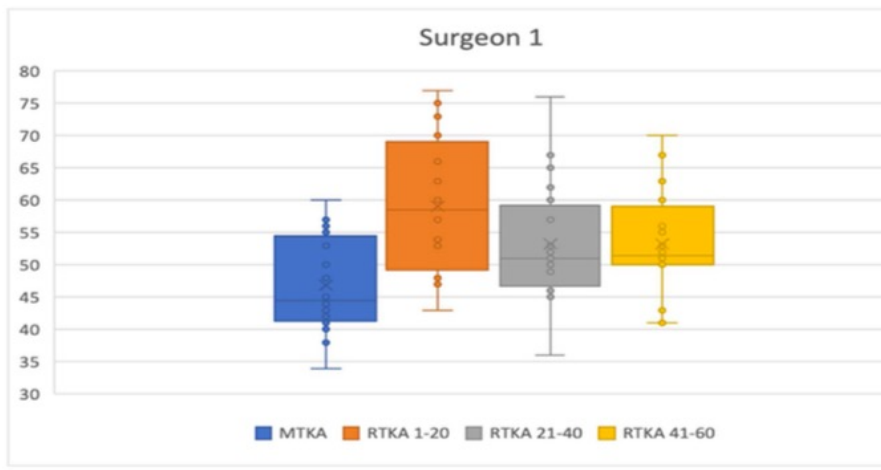
Original research

Learning Curve of Robotic-Assisted Total Knee Arthroplasty for Non-Fellowship-Trained Orthopedic Surgeons

Muzaffar Ali, DO ^a, David Phillips, DO ^a, Anthony Kamson, DO ^{a,*}, Isaac Nivar, DO ^a, Raymond Dahl, DO ^{a,b}, Richard Hallock, MD ^{a,b}

^a Department of Orthopedic Surgery, University of Pittsburgh Medical Center - Pinnacle, Harrisburg, PA, USA

^b Orthopedic Institute of Pennsylvania, Camp Hill, PA, USA









*future
proposals*



Stryker
(Mako)



Corin
(Omni)



Smith &
Nephew



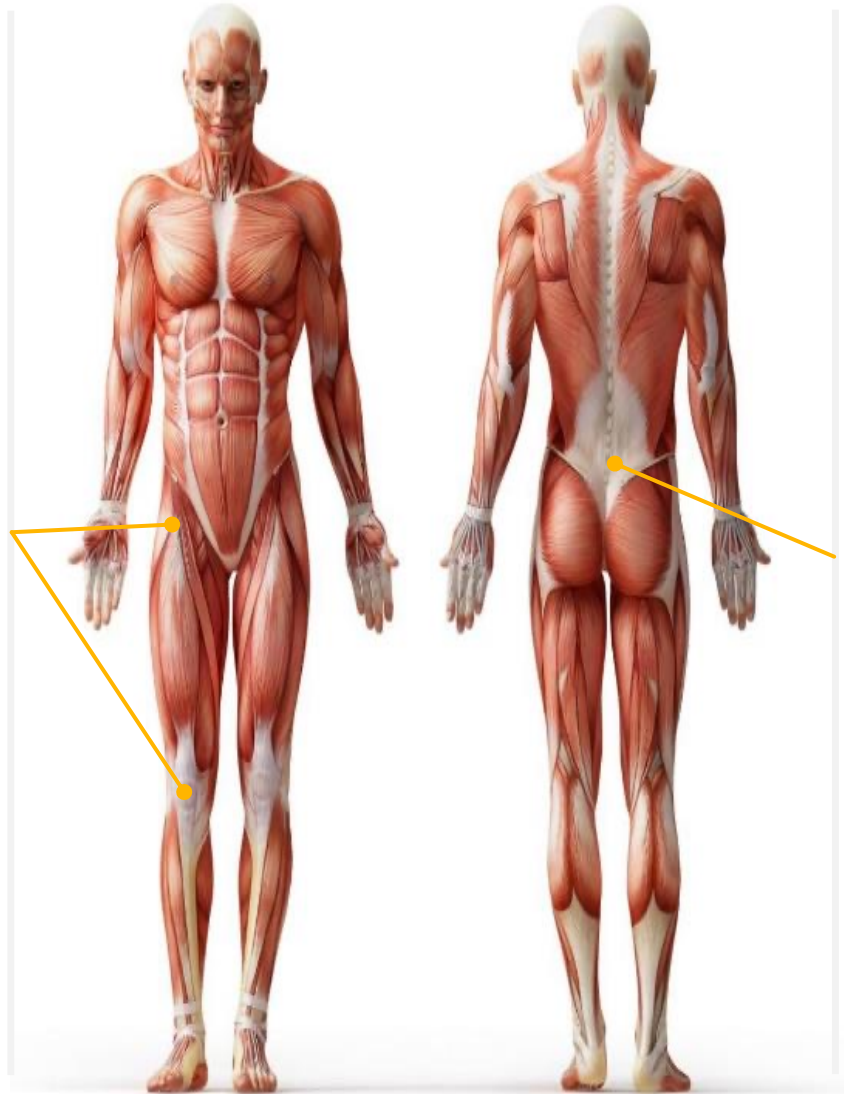
THINK
Surgical



Zimmer
Biomet
(Rosa)



J&J (Velys)



Medtronic
(Mazor)



Globus



Zimmer Biomet
(Rosa)



Brainlab



TINAVI





Stryker
(Mako)



Corin
(Omni)



Smith &
Nephew



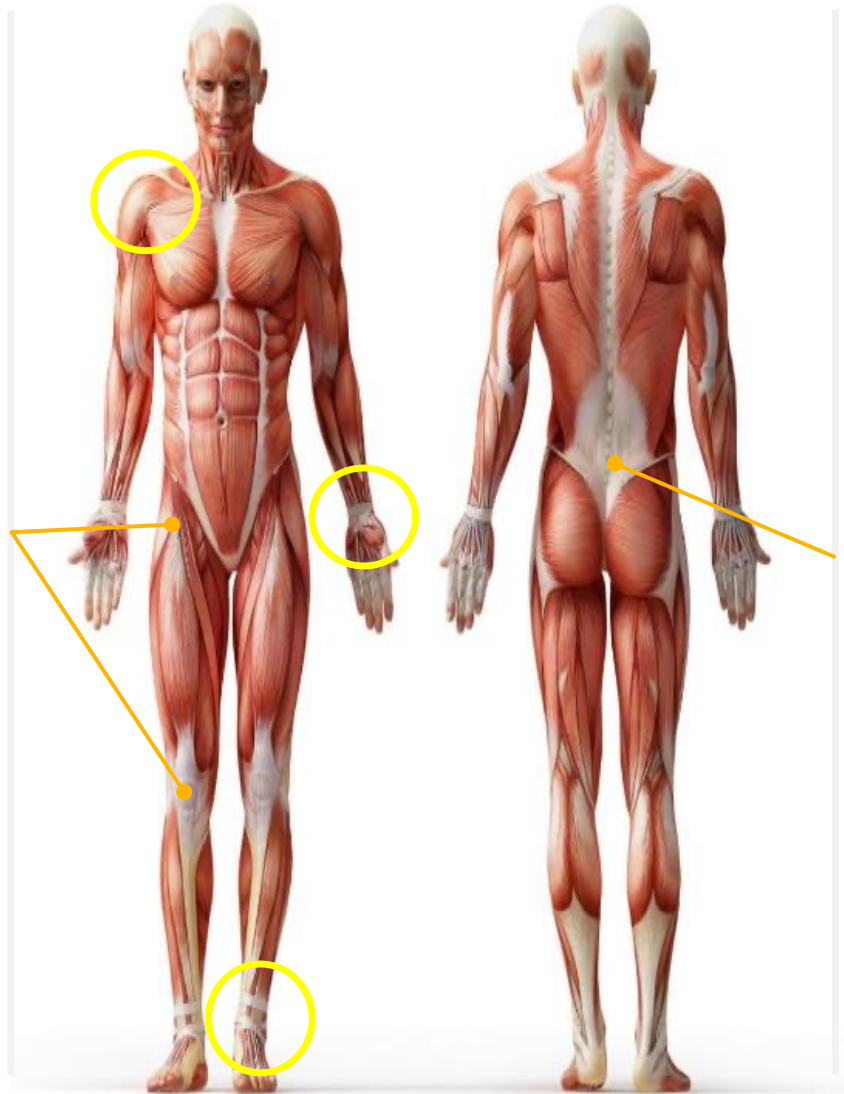
THINK
Surgical



Zimmer
Biomet
(Rosa)



J&J (Velys)



Medtronic
(Mazor)



Globus



Zimmer Biomet
(Rosa)

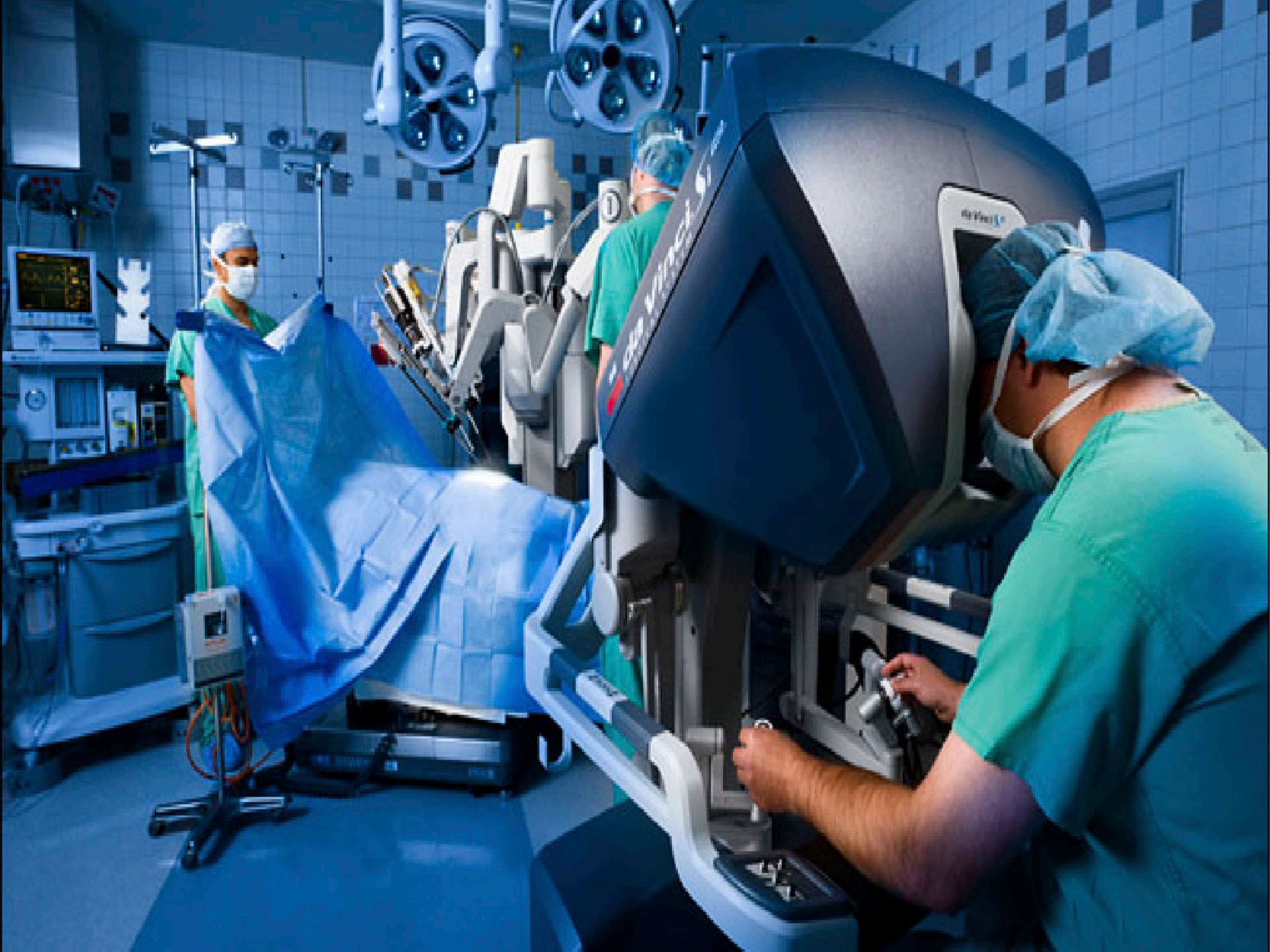


Brainlab



TINAVI





Review > J Telemed Telecare. 2022 Jan;28(1):3-23. doi: 10.1177/1357633X20919308.

Epub 2020 May 11.

Tele-orthopaedics: A systematic mapping study

Ali Behmanesh¹, Farahnaz Sadoughi², Farid Najd Mazhar³, Mohammad Taghi Joghataei⁴, Shahram Yazdani⁵

Neurospine

pISSN 2586-6583 eISSN 2586-6591

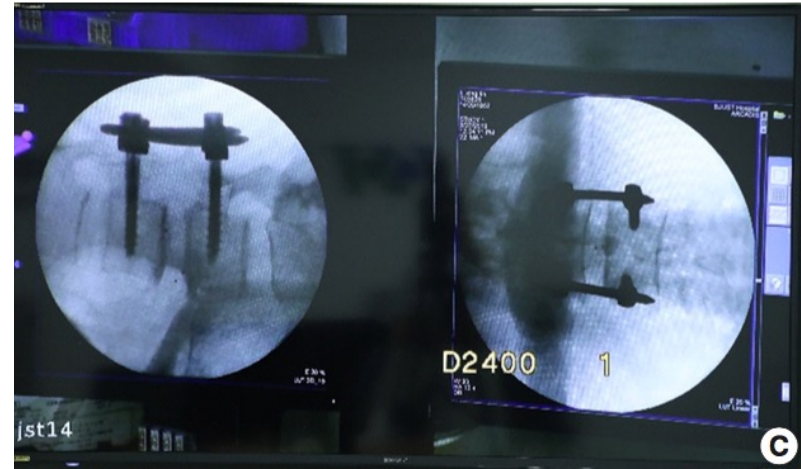
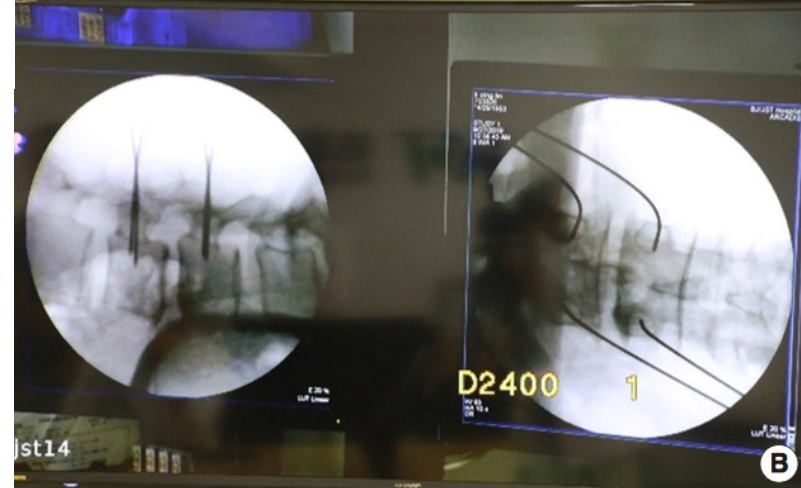
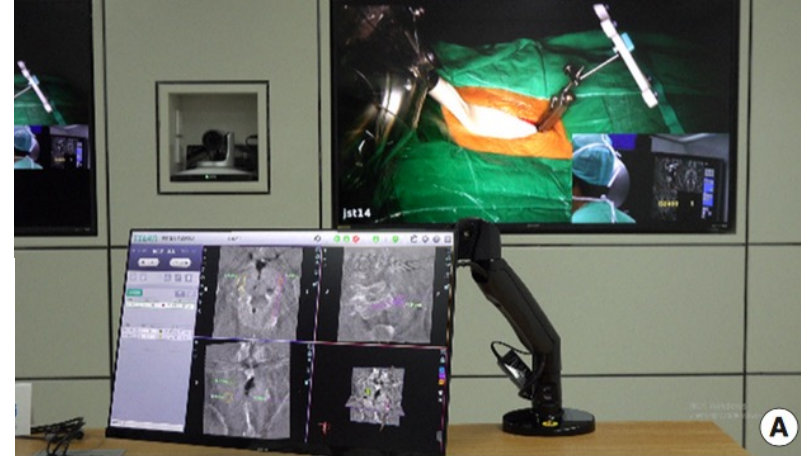


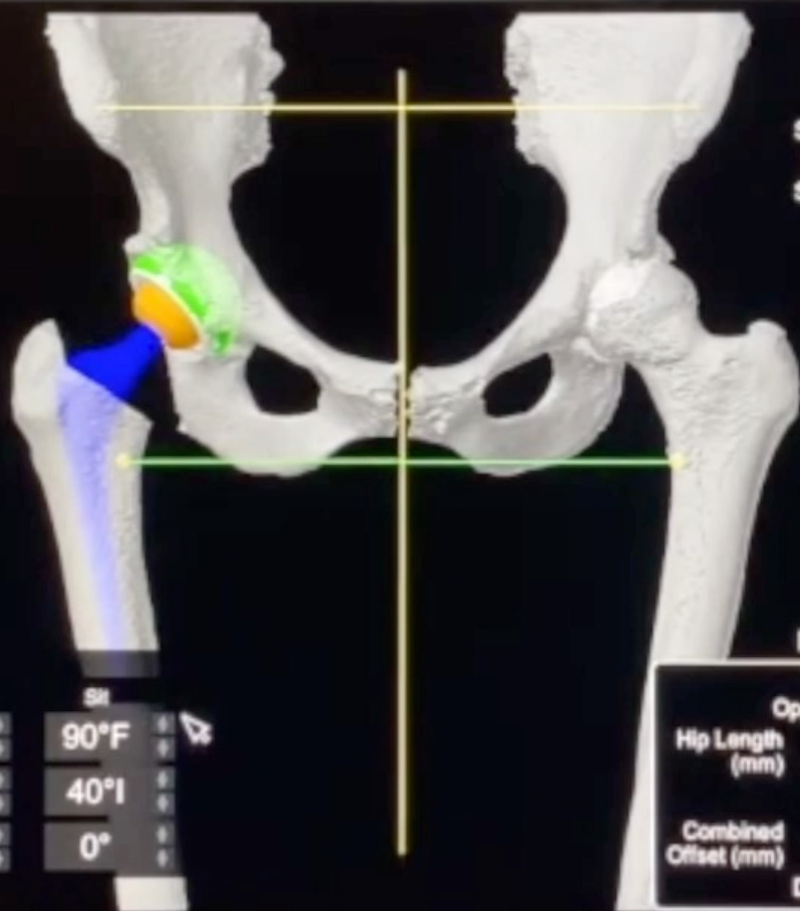
Telerobotic Spinal Surgery Based on 5G Network: The First 12 Cases

Wei Tian^{1,2}, Mingxing Fan¹, Cheng Zeng¹, Yajun Liu¹, Da He¹, Qi Zhang¹

¹Spine Department, Beijing Jishuitan Hospital, Beijing, China

²Beijing Key Laboratory of Robotic Orthopaedics, Beijing, China





Triaset 3 Titanium - Sizer	
Cup Size:	48 mm D
Liner Type:	X3 0°
Head Size:	32 mm
Head Type:	CoCr V40
Stem Offset:	44 mm
Stem Size:	No.0 L-150 mm
Head Length:	4 mm

Lateral View

Review planned implants in reduced view.

If necessary, update the implant components to achieve desired hip length and offset.

Lesser trochanter landmarks: orange

Implant Planning

RESEARCH

Open Access

Paradoxical spinopelvic motion: does global balance influence spinopelvic motion in total hip arthroplasty?



Yu-Hsien Lin^{1†}, Yu-Tsung Lin^{1†}, Kun-Hui Chen^{1,2,3}, Chien-Chou Pan^{1,4}, Cheng-Min Shih^{1,2,5} and Cheng-Hung Lee^{1,2,6*}

Sun et al. *J Orthop Traumatol* (2021) 22:41
https://doi.org/10.1186/s10195-021-00601-y

Journal of Orthopaedics
and Traumatology

ORIGINAL ARTICLE

Open Access

Factors influencing knee valgus alignment in Crowe type IV hip dysplasia after total hip arthroplasty



Jing-yang Sun^{1,2†}, Hai-yang Ma^{2†}, Jun-min Shen², Yin-qiao Du², Yu Dong², Yan-chao Zhang^{1,2}, Yong-gang Zhou^{1,2*} and Yan Wang^{1,2*}

does size matter?





Nanotherapeutics: An insight into healthcare and multi-dimensional applications in medical sector of the modern world

Minakshi Prasad ¹, Upendra P Lambe ², Basanti Brar ², Iqbal Shah ², Manimegalai J ², Koushlesh Ranjan ³, Rekha Rao ⁴, Sunil Kumar ⁴, Sheefali Mahant ⁵, Sandip Kumar Khurana ⁶, Hafiz M N Iqbal ⁷, Kuldeep Dhama ⁸, Jyoti Misri ⁹, Gaya Prasad ¹⁰







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Editorial

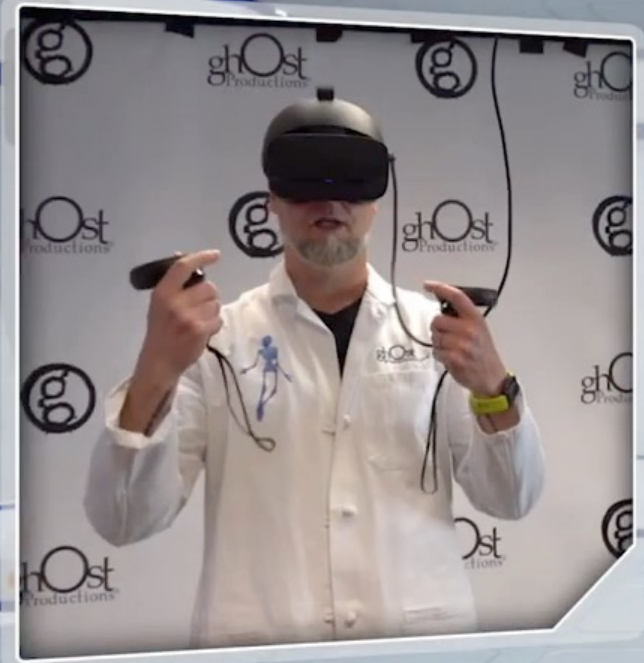
Near future image of orthopedics after COVID-19 pandemic

A B S T R A C T

The pandemic of the new coronavirus infection has swept the world and killed more than 5 million people, which has shocked all human beings who have believed in modern medical progress. Along with the sedation of infections, the balance between restriction and acceleration of socio-economic activities is difficult. With the spread of vaccines and the advent of viral therapeutic agents, we expect how to control this pandemic has finally become visible.

In this situation, we realize that data science and robotics innovations are quite important in many medical fields. Artificial intelligence (AI) diagnosis and remote medical care are becoming a reality, and this direction will accelerate further in 2022, the first year of post-pandemic. The trend of digital transformation (Dx) will also be rushing into Orthopedics next year. In addition, research on virtual reality and augmented reality is being actively conducted, and it has become possible to use it for surgical simulation and technical training. As, in the field of abdominal surgery, remote robotic surgery will soon become available in the field of orthopedics as well.

These Dx trend will prevail to our field instead of experience, and knowledge of medicine, which can change the medical care style dramatically in near future. It is crucial for orthopedic surgeons to always aim for its development and evolution.



Tab Orbit Camera
Shift + Tab POV Camera



1 - 5 Camera Positions



SCAN MODE
SIZE ASSES


ANALYSIS:

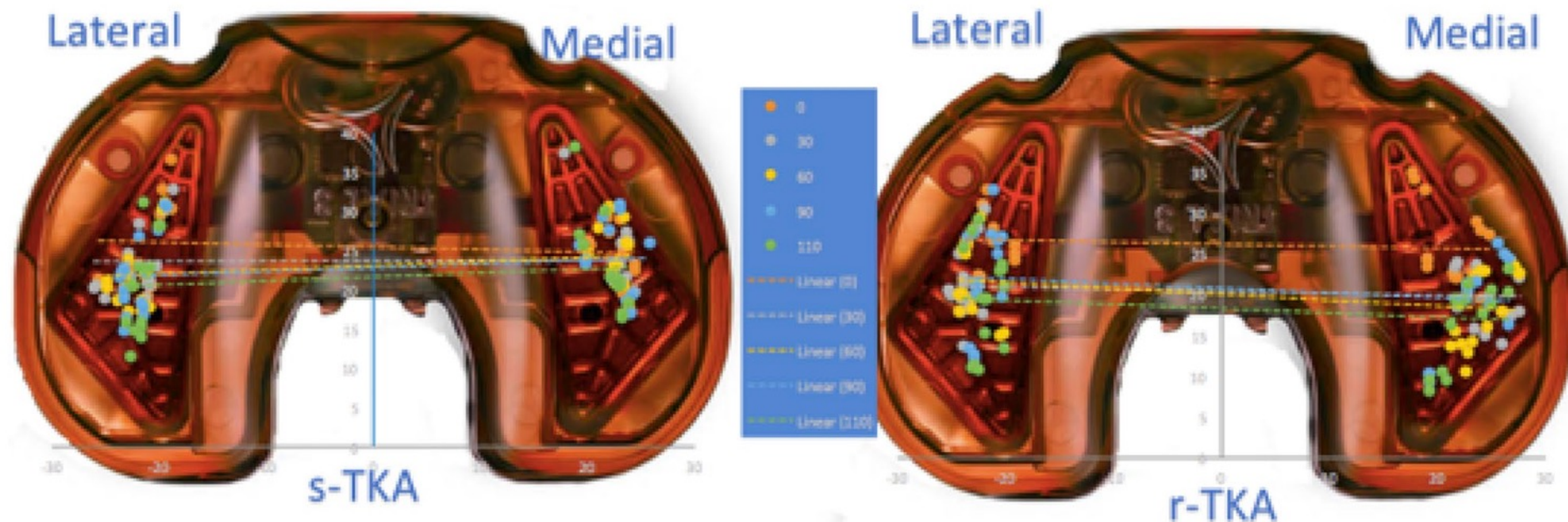
234654 453 90 880



KNEE

Improved mediolateral load distribution without adverse laxity pattern in robot-assisted knee arthroplasty compared to a standard manual measured resection technique

William Manning^{1,4} · Milton Ghosh^{1,4} · Ian Wilson² · Geoff Hide⁴ · Lee Longstaff³ · David Deehan^{1,4} 





REVIEW ARTICLE

Biomedical soft robots: current status and perspective

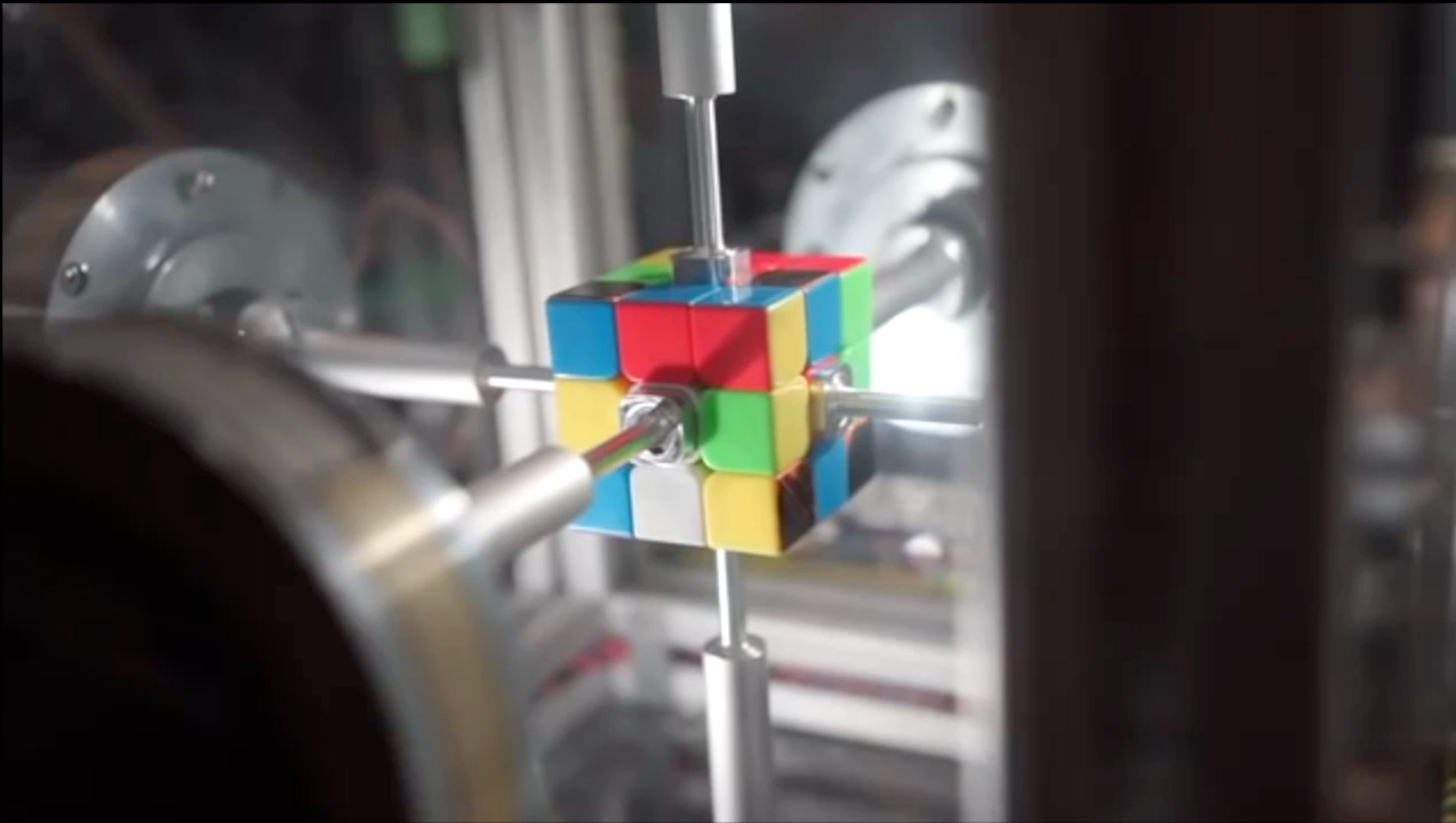
T. Ashuri¹  · A. Armani² · R. Jalilzadeh Hamidi³ · T. Reasnor¹ · S. Ahmadi⁴ · K. Iqbal⁵

For the medical field, the needs for biocompatible materials and systems continue to increase. Additional research into potential soft materials must be performed to uncover materials that can support living cells and tissues. As the development of new materials takes place, rapid prototyping processes are needed.



WALL-E

SOLAR CHARGE LEVEL





procedure for all surgeons

lack of control



5-01 06:43:59

翻攝畫面

268K+410 水上路段

LTN 自由時報

一輛**特斯拉**直接撞上
側翻在內側車道的貨車







'...human control must be preserved...'

REVIEW

Open Access

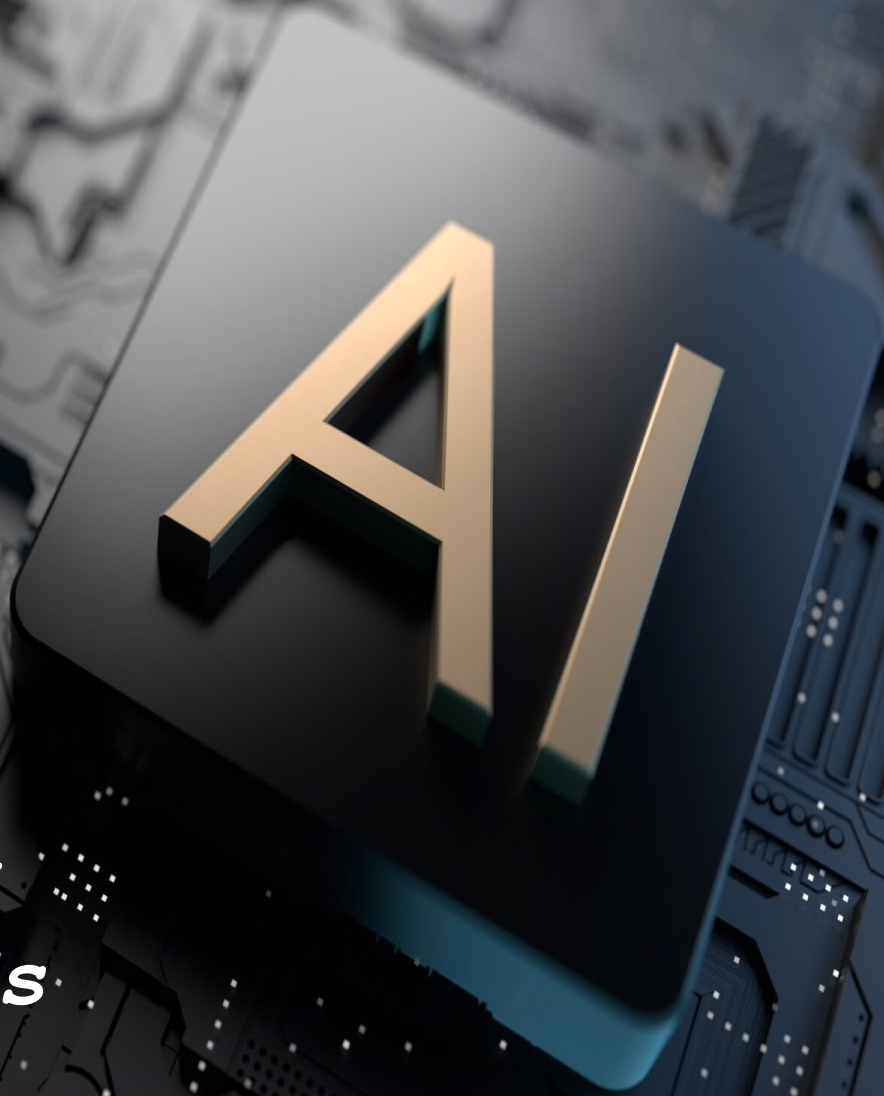


Artificial intelligence in orthopedic surgery: evolution, current state and future directions

Andrew P. Kurmis^{1,2*}  and Jamie R. Ianunzio^{2,3}

Artificial intelligence

The term ‘artificial intelligence’ was coined by John McCarthy in 1956 [8, 11], originally as a theoretical proposition of a *future* stage whereby computers would ‘learn’ to perform automated tasks through algorithmic pattern recognition with limited (if any) direct human input [8].



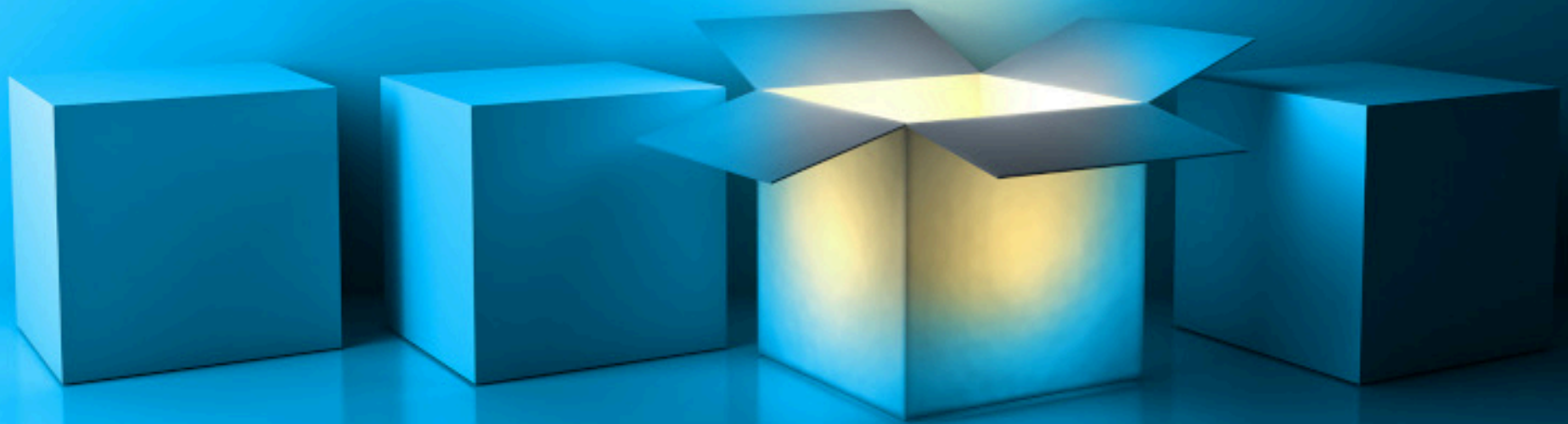
*robots learning
action proposals*



data analysis

*surgeons learning
technical evolution*

the magic box



- *navigation / robotics*
- *pre-op information*
- *customized*
- *new materials*
- *3D printing*
- *nano-technology*
- *ai*
- *smart tools*
- *...*



F I GB USA MEX

**ONE SIZE
DOES NOT
FIT ALL**



Von links bügeln/ Iron inside out/
repasser sur l'envers /只熨反面

THE
SAME
OLD
THINKING

THE
SAME
OLD
RESULTS

- *starting point*
- *more data / more proposals*
 - *more comfort*
- *sharing technologies*
 - *more autonomy*
 - *human control*



1000 070

jlealblanquet@gmail.com