Edition 1 | January 2026

HALEON HEALTH PARTNER TIMES

Orthopedic edition

Introduction:

Welcome to this edition of our Orthopedic Newsletter, where evolving evidence, surgical innovation, and real-world practice intersect. From changing techniques to emerging technologies shaping joint reconstruction, this issue highlights what's influencing decision-making in orthopedics today and what lies ahead.

NEXT-GEN ORTHOPEDICS

Robotics in Orthopedics: The Shift Toward Shoulder Arthroplasty

Robotic systems are becoming an integral part of orthopedic surgery, functioning as surgeon-controlled tools that enhance precision rather than replace expertise. *"While robotic-assisted knee and hip arthroplasty have seen rapid adoption, attention is now turning toward shoulder arthroplasty."* Digital workflows and robotic guidance are being investigated to improve deformity correction and component placement, particularly in complex shoulder cases. The goal is to deliver more consistent and reproducible outcomes across varying surgeon experience levels. As adoption evolves, considerations around cost, training, implant compatibility, and long-term clinical outcomes continue to shape discussions around broader implementation.

Reference: Vanderstappen M, van Ochten JHM, Verborgt O. Robotics in arthroplasty: how good are they? *JSES Int.* 2024;9(3):968-973.

Persona® OsseoTi®Keel Tibia for Cementless Total Knee Arthroplasty

Persona® OsseoTi® Keel Tibia is a cementless tibial solution within the Persona Knee System, designed to deliver stable initial fixation and biologic integration. The anatomic tibial design supports proper rotation and bone coverage, while intraoperative flexibility allows conversion between cemented and cementless techniques up to final implantation. OsseoTi® porous metal technology promotes early osseointegration.

Reference: Zimmer Biomet India. Available at https://www.zimmerbiomet.com/en/products-and-solutions/specialties/knee/persona-osseotikeeltibia.html accessed on January 09, 2026.

The Shift Toward Shoulder Arthroplasty Achilles Tendon Repair in the Cross-legged Position: A Novel Set Up

Achilles tendon repair is moving away from routine prone positioning. A supine, cross-legged "figure-of-4" setup is gaining attention as a safer and more efficient alternative, reducing anesthetic and positioning risks while improving surgeon ergonomics. By allowing medial incision placement and better tendon tension assessment without added staffing or setup complexity, this approach reflects a broader shift toward techniques that prioritize safety, efficiency, and reproducibility alongside clinical outcomes.

Why it matters?: A safer supine approach reduces anesthetic risk, improves surgeon ergonomics, and streamlines operating room efficiency without compromising surgical access or outcomes.

Reference: Moloney D, Coveney E, Donnelly M. Achilles tendon repair in the cross-legged position: a novel set up. *Techniques in Orthopaedics.* 1997;10:97.

KNOWLEDGE SPOTLIGHT

Calcium Citrate Malate:
A Smarter Calcium Choice for Bone Health

A Well-Researched Calcium Option

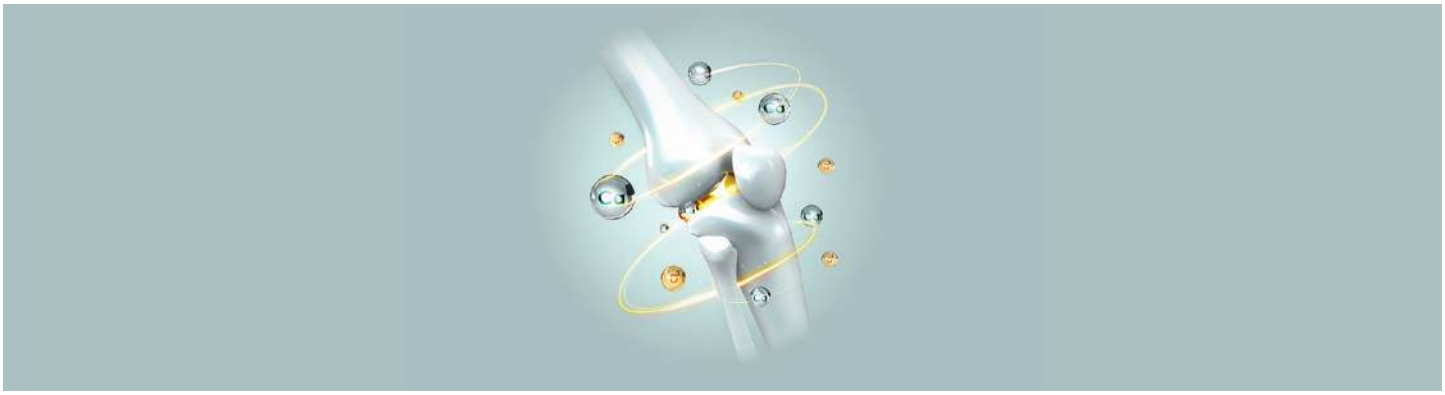
- Patented in the late 1980s, calcium citrate malate combines calcium with citrate and malate anions, giving it high solubility, superior absorption, and excellent bioavailability. It reduces the risk of fractures in the elderly and supports nutritional needs across all age groups.

Clinical Advantages Over Other Calcium Salts

- Better absorption and retention than calcium carbonate, even in patients with low stomach acid.
- Supports bone mineral density and skeletal health, crucial for postmenopausal women and for patients with osteoporosis.
- Protects against tooth erosion, supports colon health, and does not increase kidney stone risk.
- Compatible with tablets, fortified foods, and beverages, including juices, milk, and plant-based milks.

Pregnancy and Maternal Health

- Calcium citrate malate is essential for pregnant and lactating women, supporting fetal skeletal development, improving maternal bone density, and potentially reducing complications such as hypertension and low birth weight. Combined with vitamin D3 and trace minerals such as magnesium, calcium citrate malate ensures optimal calcium delivery for both mother and child.



Myths vs. Facts
About Calcium Supplementation

Myths	Facts
All calcium supplements are the same.	Calcium citrate malate has superior absorption, retention, and bioavailability compared to calcium carbonate and other salts.
Calcium supplements always cause kidney stones.	Calcium citrate malate does not increase the risk of kidney and may even help prevent stone formation.
Calcium only benefits bones.	Calcium citrate malate supports bone and tooth health, colon health, and may aid in blood pressure regulation.
Pregnant women do not need extra calcium if they eat dairy.	Pregnancy increases calcium demand; Calcium citrate malate ensures adequate supply for fetal skeletal development and maternal bone preservation.

For patients requiring reliable calcium supplementation, including the elderly, postmenopausal women, or pregnant women- calcium citrate malate is a clinically proven superior option, combining enhanced absorption, retention, tolerability, and broader skeletal benefits.

Reference: Kwatra B, Balakrishnan A, Raheema N, *et al.* Clinical applications and properties of calcium citrate malate. *Int J Pharm Sci Rev Res*. 2021 Jul-Aug;69(1):51-67.

Topical Diclofenac in Knee Osteoarthritis (OA): Practical Insights

Treatment-seeking behavior in knee osteoarthritis (OA) is shaped by symptom severity, patient beliefs, prior experiences, and expectations of therapy. Studies consistently show a significant delay in medical consultation, with many patients seeking outpatient care only when pain becomes severe enough to interfere with daily activities. A consultation lag of several months is common, reflecting a tendency to ignore early symptoms until functional impairment becomes unavoidable. Before consulting a physician, many knee OA patients rely on home remedies and self-directed treatments, often cycling through multiple options in search of pain relief. When outcomes fail to meet expectations, adherence to prescribed therapy declines. Over time, repeated therapeutic failures can erode patient confidence in both treatment and clinicians, further affecting adherence.[1]

Given the delayed presentation, fluctuating adherence, and strong preference for quick symptom relief seen in knee OA, outpatient management strategies must prioritize effective pain control, safety, and ease of use. In this setting, topical non-steroidal anti-inflammatory drugs (NSAIDs), particularly topical diclofenac, play a pivotal role.[1,2]

Topical diclofenac aligns well with real-world OPD scenarios where patients often present with moderate-to-severe pain affecting daily function, but may be reluctant to initiate or continue long-term oral therapy due to fear of adverse effects or comorbidities. By delivering targeted analgesia at the site of pathology with minimal systemic absorption, topical diclofenac offers substantial pain relief, an important consideration in elderly patients with knee OA.[2]

A recent meta-analysis of 12 randomized controlled trials confirms that topical diclofenac formulations such as gel, solution, and patches provide meaningful pain relief and functional improvement in knee OA, with a consistently favorable safety profile. Formulation-specific advantages allow clinicians to tailor therapy based on symptom severity, treatment duration, and patient preference.[2]

Topical Diclofenac: Formulation Comparison Strip[2]

Feature	Patch	Gel	Solution
Onset of relief	Fastest (1–2 weeks)	Gradual	Gradual
Peak benefit	Short-term	Mid- to long-term	Mid- to long-term
Pain reduction	Highest early effect (standardized mean difference [SMD] −0.64)	Sustained	Sustained
Functional improvement	Yes	Yes	Yes
Skin tolerability	Good	Good	Good
Systemic adverse events	Low	Low	Low
Best suited for	Acute flare, early pain control	Chronic use, maintenance therapy	Patients preferring non-gel application

References: 1. Sharma M, Dhillon MS, Singh A. Treatment-seeking behavior of knee osteoarthritis patients in northern India. *J Postgrad Med Educ Res.* 2019 Sep 1;53(3):109-12.
2. Chen ZR, Chen BK, Li P, *et al.* Efficacy and safety of different topical diclofenac formulations for the treatment of knee osteoarthritis: a meta-analysis of short-term and long-term treatment comparisons. *BMC Musculoskelet Disord.* 2025 Mar 10;26(1):230.

Top 5 game-changing insights from

Indian Orthopaedic Rheumatology Association 2025 Study

Osteoarthritis (OA) is an escalating epidemic

- Knee OA: 48.4 million; Hand OA: 25.5 million; Hip OA: 3.6 million in India alone (2021)
- Peak onset: 50–54 years; Peak prevalence: 60–64 years
- Urban populations hit hardest: 33% prevalence in big cities vs. 18% in rural areas

Nonsteroidal Anti-inflammatory Drugs (NSAIDs): Efficacy comes at a cost

- Oral diclofenac and etoricoxib are most effective for pain and function
- But serious risks: GI bleeding, CV events, renal issues, especially in older adults
- Topical NSAIDs = almost same relief, but with up to 50% lower GI risk and better safety profile

Nutraceuticals & Targeted Supplements: The Cartilage Allies

- Undenatured type II collagen (UC-II): In patients with OA (grades 1,2 and early grade 3), the initial step in the management recommends UC-II with paracetamol. UC-II reduces pain (Western Ontario and McMaster Universities Osteoarthritis Index [WOMAC] & Visual Analogue Scale [VAS]) improves function, supports cartilage repair, enhances physiotherapy outcomes
- Vitamins & minerals: Vitamin D3, K2, calcium, zinc, copper, manganese all promote cartilage integrity and slow OA progression
- Symptomatic Slow-Acting Drugs for OsteoArthritis (SYSADOAs) (glucosamine/chondroitin): Modest symptomatic benefit, limited disease modifications

Opioids: High Risk, Minimal Reward

- No meaningful improvement in pain or function compared to placebo
- Severe adverse effects: nausea, constipation, dizziness, somnolence; high treatment dropout

Reference: Khanna M, Mukherjee AN, Sarkar P, *et al.* Pharmacological management of osteoarthritis: Position statement of the Indian Orthopaedic Rheumatology Association. *IP Int J Orthop Rheumatol.* 2025;11(1):4–16.

HCPs' Perspective on Undenatured Collagen Type II (UC-II) in Osteoarthritis (OA)

Why UC-II?

- NSAIDs and opioids relieve pain but have CV/GI risks and do not slow disease progression
- UC-II is a nutraceutical alternative with potential cartilage-protective effects

Mechanism

- Preserves cartilage collagen structure
- Modulates immunity via regulatory T cells, reducing inflammation
- Supports cartilage repair and joint health

Clinical Benefits

- UC-II reduces WOMAC, VAS, and Lequesne scores more than glucosamine + chondroitin
- Enhances muscle strength and knee mobility when combined with physiotherapy

UC-II is a safe, long-term adjuvant that provides symptomatic relief while protecting joints, making it an ideal option for patients at risk from long-term NSAID use.

Abbreviations: NSAIDs: Nonsteroidal anti-inflammatory drugs; CV: Cardiovascular; GI: Gastrointestinal; WOMAC: (Western Ontario and McMaster Universities Osteoarthritis Index; VAS: Visual Analogue Scale

Reference: Khanna M, Mukherjee AN, Sarkar P, *et al.* Pharmacological management of osteoarthritis: Position statement of the Indian Orthopaedic Rheumatology Association. *IP Int J Orthop Rheumatol.* 2025;11(1):4–16.

THE AI HUB

AI in Orthopedic Bioengineering – Key Highlights

Transforming Diagnostics and Preoperative Planning

AI/ML algorithms enhance imaging interpretation, detecting bone lesions and osteoarthritis with sensitivity up to 94% and specificity up to 91%. 3D anatomical models generated by AI reduce planning time from weeks to minutes and improve surgical precision.

Precision Surgery and Robotics

Robotic-assisted systems achieve sub-millimeter accuracy in implant placement. AI reduces operative time (30%), blood loss (35%), and radiation exposure (70%) while enhancing recovery. Semi-autonomous haptic systems combine human expertise with robotic precision for safer, reproducible procedures.

Smart Implants and Remote Monitoring

AI-enabled implants with biosensors allow real-time monitoring of gait, load, and healing. Early detection of complications (loosening, infection) improves intervention and long-term outcomes. Integration with predictive analytics enables personalized postoperative care.

Bone Regeneration and Neuroprosthetics

AI-driven scaffold design, 3D printing, and bioceramics optimize bone repair and accelerate healing by up to 40%. Adaptive neuroprosthetics restore mobility and improve motor control for patients with neurological impairments.

Ethical, Regulatory, and Practical Considerations

Challenges include data bias, deskilling of surgeons, algorithm transparency, patient privacy, and cybersecurity. Regulatory gaps require standardized clinical validation for AI-assisted orthopedic devices.

Multidisciplinary collaboration is essential to ensure safe, ethical, and equitable AI adoption.

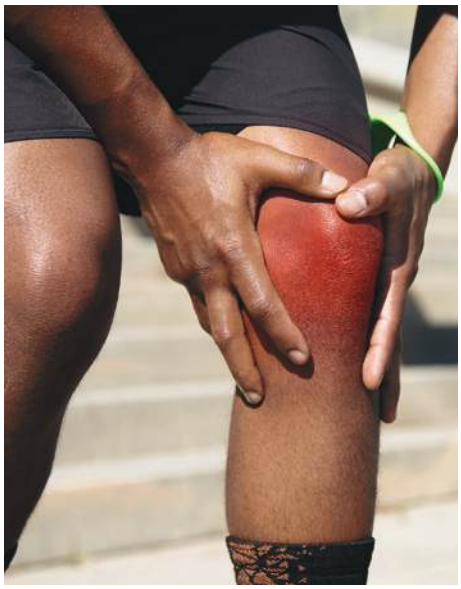
Future Directions

AI combined with 3D bioprinting, advanced biomaterials, and predictive models is shaping patient-specific care. Focus areas include large-scale clinical trials, algorithm transparency, and integration of AI with personalized implants. The goal is precision, accessibility, and improved quality of life in orthopedic care worldwide.

Abbreviations: AI: Artificial intelligence; ML: Machine learning.

Reference: Kumar R, Sporn K, Ong J, *et al.* Integrating Artificial Intelligence in Orthopedic Care: Advancements in Bone Care and Future Directions. *Bioengineering (Basel).* 2025;12(5):513.

HSS Study Uses AI to Identify Risk Factors Linked to More Severe Pain After TKA



A study at HSS used AI to analyze 17,200 TKA patients and identified two pain archetypes: Severe versus well-controlled postoperative pain. Key risk factors for severe pain included younger age, higher BMI, greater physical/mental impairment, and preoperative opioid or gabapentinoid use. These findings enable personalized pain management for high-risk patients.

Future Directions

- Track long-term pain trajectories and recovery
- Identify optimal strategies pre-, intra-, and postoperatively for high-risk patients
- Further leverage AI to improve patient outcomes and pain management

Recognition

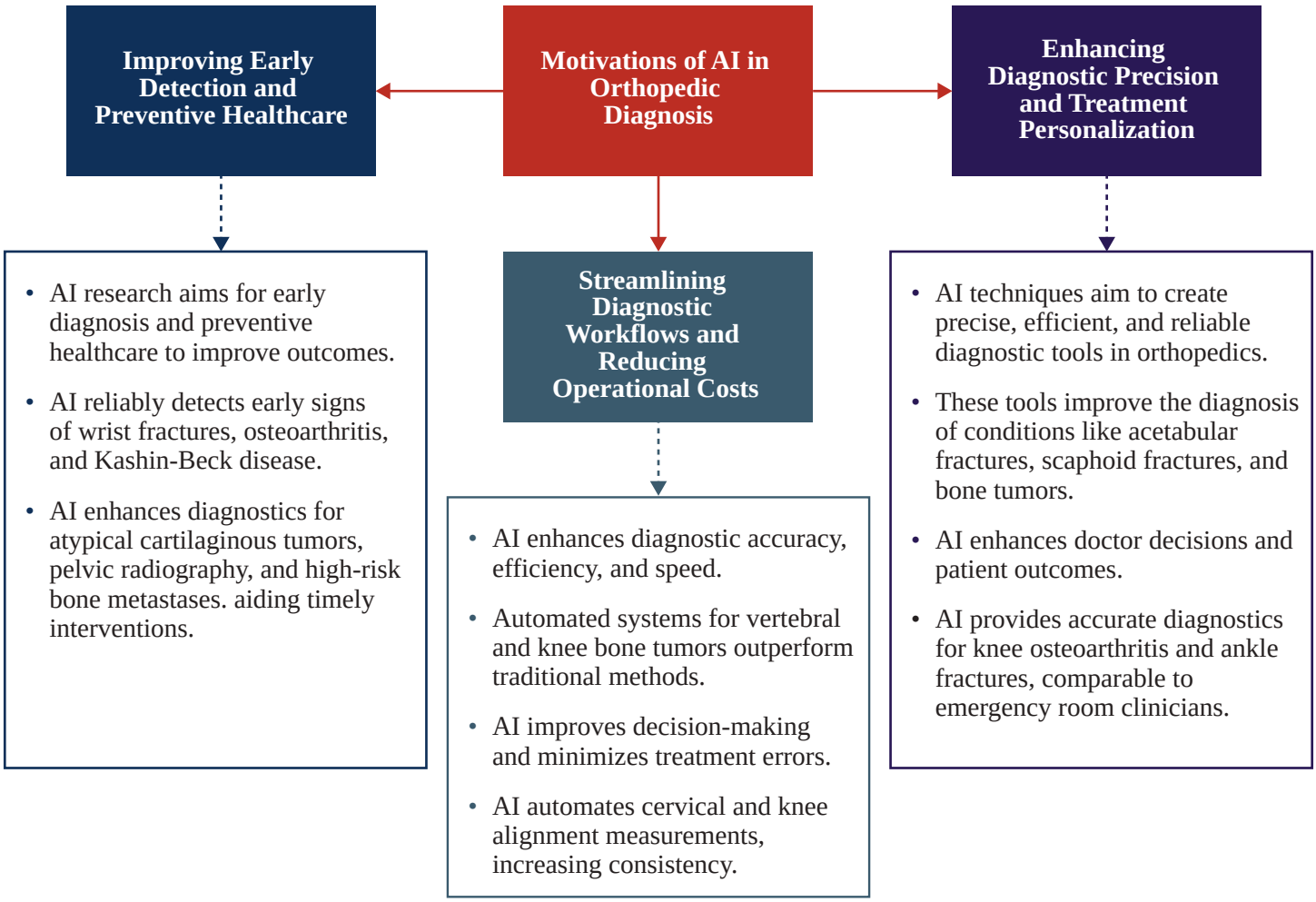
The study was awarded **Best of Meeting** at the 50th Annual ASRA Meeting

Abbreviations: HSS: Hospital for special surgery; TKA: Total knee arthroplasty.

Reference: HSS Study Uses AI to Identify Risk Factors Linked to More Severe Pain After TKA. Available at https://foreonline.org/hss-study-uses-ai-to-identify-risk-factors-linked-to-more-severe-pain-after-tka/ accessed on January 09, 2026.

AI in Orthopedic Disease Detection: AI in Orthopedics: Motivations vs. Challenges

AI in orthopedics holds strong promise to improve diagnostic accuracy, reduce subjectivity, and enable earlier detection of complex fractures and bone tumors. However, challenges such as limited diverse datasets, anatomical complexity, and the need for clinically trustworthy and explainable tools must be addressed to ensure reliable, real-world adoption.



While growing evidence highlights strong clinical motivation for AI adoption, several technical and practical challenges continue to influence its effective integration into routine orthopaedic practice.

Motivations

- Enhance accuracy in complex fracture and bone tumor diagnosis
- Reduce subjectivity and clinician-dependent interpretation errors
- Enable earlier detection of high-risk conditions to improve outcomes
- Integrate AI across X-ray, CT, and MRI for consistent decision-making
- Establish AI credibility by matching or exceeding human performance

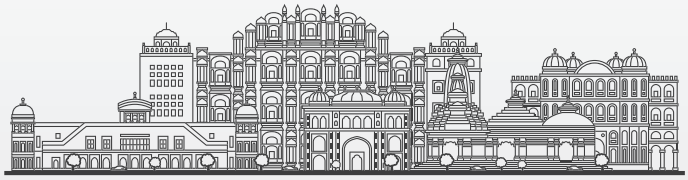
Challenges

- Limited access to large, diverse, well-annotated datasets
- Poor generalizability across patient demographics and disease variants
- Anatomical complexity (pelvis, acetabulum) limiting diagnostic precision
- Difficulty distinguishing subtle or atypical pathologies
- Need for reliable, clinically trusted, and explainable AI tools

Reference: Mohammed TJ, Xinying C, Alnoor A, *et al.* A systematic review of artificial intelligence in orthopaedic disease detection: a taxonomy for analysis and trustworthiness evaluation. *Int J Comput Intell Syst.* 2024;17:303.

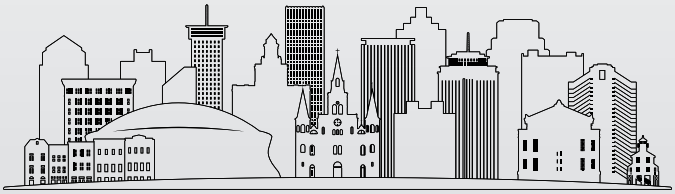
CONFERENCE SNAPSHOTS:

Global & International Conference



25th Congress of the Asia Pacific Orthopaedic Association (APOA)

Feb 4–7, 2026 in Jaipur, India
A major regional gathering focusing on advances and future directions in orthopedic care.



AAOS Annual Meeting 2026

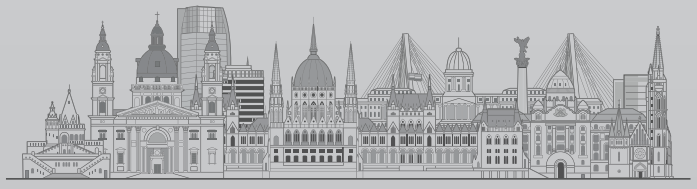
Mar 2–6, 2026 in New Orleans, USA
One of the world's largest orthopedic meetings with extensive clinical and scientific sessions.

Global Summit on Orthopedics & Rheumatology

Mar 26–28, 2026 in Rome, Italy
Covers diverse topics including trauma, arthroplasty, spine, sports medicine, and technological innovations.

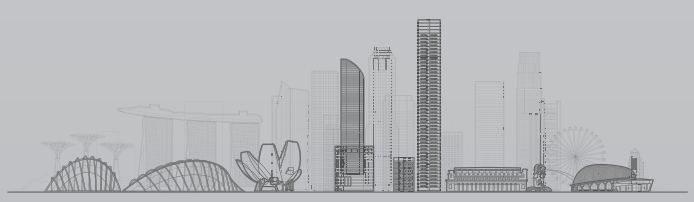
7th International Conference on Orthopedics

Apr 20–21, 2026 in Dubai, UAE
Theme: "Progress and Precision in Orthopedic Surgery," with hybrid participation.



2nd World Congress on Orthopedics, Rheumatology & Musculoskeletal Diseases

May 4–5, 2026 in Budapest, Hungary
Scientific exchange on orthopedic and musculoskeletal research.



4th World Symposium on Orthopaedics (WSO 2026)

May 27–29, 2026 in Singapore
Features clinical orthopedics, hip & pelvis, spine, foot & ankle, rheumatology, and more.

NP-IN-CNT-26-00002