# Why use AnyBody musculoskeletal modeling software?

- ◆ Shorten time-to-market and reduce research costs
- ◆ Understand the patient's anatomical function with/without medical devices
- ◆ Test virtually across populations of different body sizes and shapes
- ◆ Increase product ergonomics and improve documentation
- ◆ Patient-specific simulations based on imaging data
- ◆ Interface with finite-element software for physiological load cases

**AnyBody Technology also provides consultancy services ranging from guiding you in solving a problem, to partially or completely undertaking your modeling process.**

→ Extensive documentation with +900 published papers here

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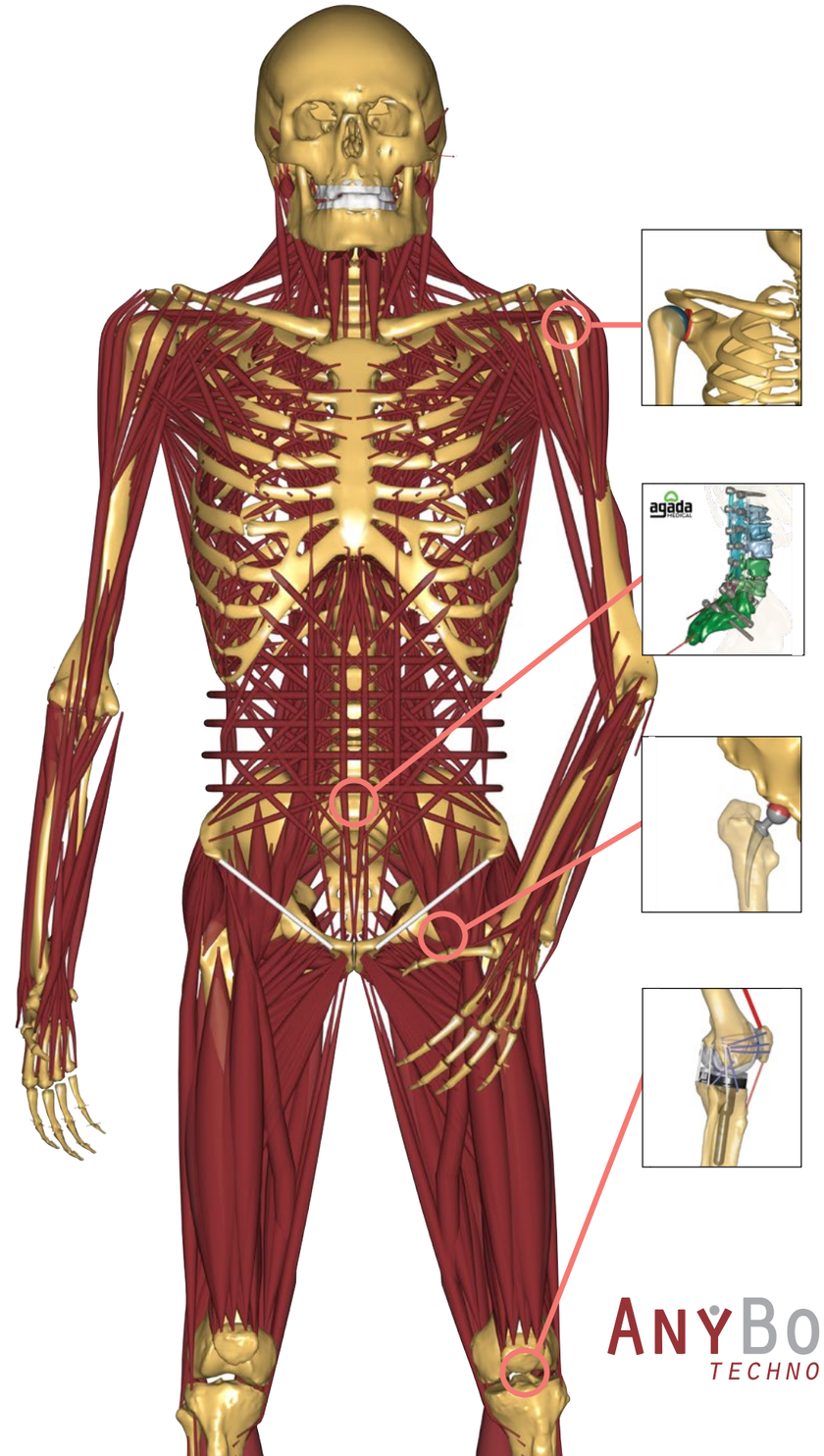
ANYBODY™ TECHNOLOGY

# Orthopedics

**Software that provides insight into what makes sense from a biomechanical perspective**



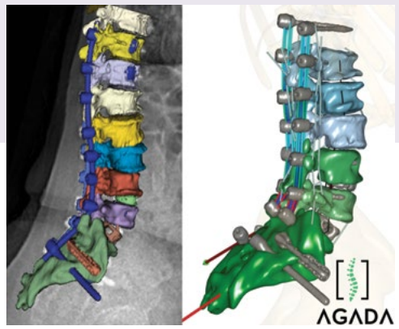

ANYBODY™ TECHNOLOGY

# Orthopedics

## Selected AnyBody use cases

### Prediction of surgical outcomes based on biomechanics and function

AnyBody Technology and Agada Medical.



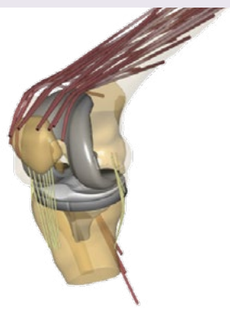

AnyBody Technology is contracted to develop an automated simulation module that generates a high-fidelity surgery-specific musculoskeletal model of the patient based on medical image data. This module quantifies the state of the patient's spine for a number of different pre-operative surgical strategies: different choice of spinal implant placement, various soft tissue resection strategies, etc.

**See the webcast here**

Reference: Patient-specific Spine Analytics. Lieberman et al 2023.

### Optimized pre-planning of Robotic-Assisted surgery

University of Twente together with other universities and Stryker.



Robotic-Assisted total knee arthroplasty can attain highly accurate implantation. However, the target for optimal positioning of the components remains debatable. Adjusting the implant position from the initial plan allows for a closer match with the pre-diseased biomechanical situation, which can be utilized to optimize the pre-planning of robotic- assisted surgery.

**Read the articel here**

Reference: Pre-Planning the Surgical Target for Optimal Implant Positioning in Robotic-Assisted Total Knee Arthroplasty. Tzanetis et al 2023. Bioeng.

**Get inspired by more than 200 orthopedic publications**

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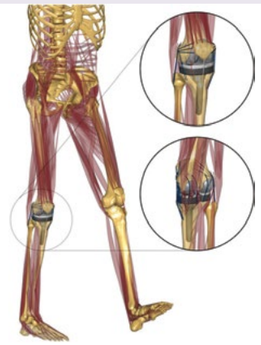
### Biomechanical effect of coronal alignment and ligament laxity

Corentec Co. Ltd., together with Seoul National University College of Medicine and other universities.



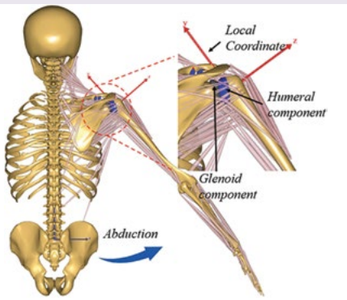
A cruciate-retaining total knee arthroplasty musculoskeletal model showed that 2° of valgus alignment adjustment with balanced ligament or neutral alignment with 2° of medial laxity can be safe without increasing contact force or ligament tension. However, 2° of varus alignment adjustment with balanced ligament or neutral alignment with 2° of lateral laxity may be unfavorable due to the overloading of the joints and knee ligaments.

**Read the articel here**

Reference: Biomechanical Effect of Coronal Alignment and Ligament Laxity in Total Knee Arthroplasty: A Simulation Study. Ro et al 2022: Front. Bioeng. Biotechnol.

### Deltoid forces under rotator cuff deficiencies

Chang'an University together with more universities.



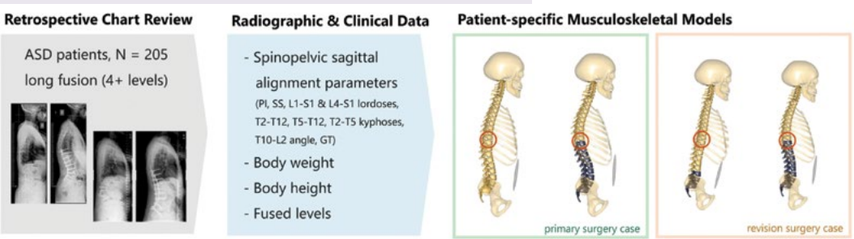

Deltoid forces were increased under the rotator cuff deficiencies, which may induce potential clinical pain and strenuous arm elevation. The Glenohumeral contact force was decreased under supraspinatus and infraspinatus deficiencies but increased under subscapularis deficiency.

**Read the articel here**

Reference: Effect of Rotator Cuff Deficiencies on Muscle Forces and Glenohumeral Contact Force After Anatomic Total Shoulder Arthroplasty Using Musculoskeletal Multibody Dynamics Simulation. Chen et al 2021. Front. Bioeng. Biotechnol.

### Spinal loads for patient-specific alignment profiles

ETH Zurich together with the European Spine Study Group and other universities.




Spinal loads were estimated for patient-specific full spinal alignment profiles in a large cohort of patients with adult spinal deformity pre-and postoperatively. Loads on the proximal segments were greater in association with sagittal malalignment and malorientation of proximal vertebra.

Reference: Association between sagittal alignment and loads at the adjacent segment in the fused spine: a combined clinical and musculoskeletal modeling study of 205 patients with adult spinal deformity. Ignasiak et al. 2022: Eur. Spine J.

**Read the articel here**