ANYBODY™
POWERFUL BODY SIMULATIONS

Welcome to a presentation hosted by AnyBody Technology

...Public webcasts on AnyBody-related topics are regularly hosted by AnyBody Technology. The webcasts typically address research projects, related technologies and workflows, or instructions on how to use and benefit from the AnyBody Modeling System™.

This presentation will begin shortly...

We hope you will have a good experience. Please take time to respond to the poll after the presentation - it only takes a few seconds. Thank you!

The AnyBody Modeling System™

- Full-body musculoskeletal simulations for activities of daily living
- Muscle and joint force computation + many other features
- Unprecedented model detail and validity

ANYBODY™
POWERFUL BODY SIMULATIONS

Today's webcast presentation: New Features in AnyBody version 4.2

Presenter

Søren Tørholm, Ph.D
AnyBody Technology

Host

Arne Kiis
AnyBody Technology

Panelist

Sebastian Dendorfer, Ph.D
AnyBody Technology

The AnyBody Modeling System™

· Full-body musculoskeletal simulations for activities of daily living
· Muscle and joint force computation + many other features
· Unprecedented model detail and validity

Outline

- Overview of the AnyBody modeling system (AMS)
- Virtual design process
- AMS Ver. 4.2 new features
- Live demo of AMS Ver. 4.2 and AMMR Ver. 1.2 : From C3D file to musculoskeletal model
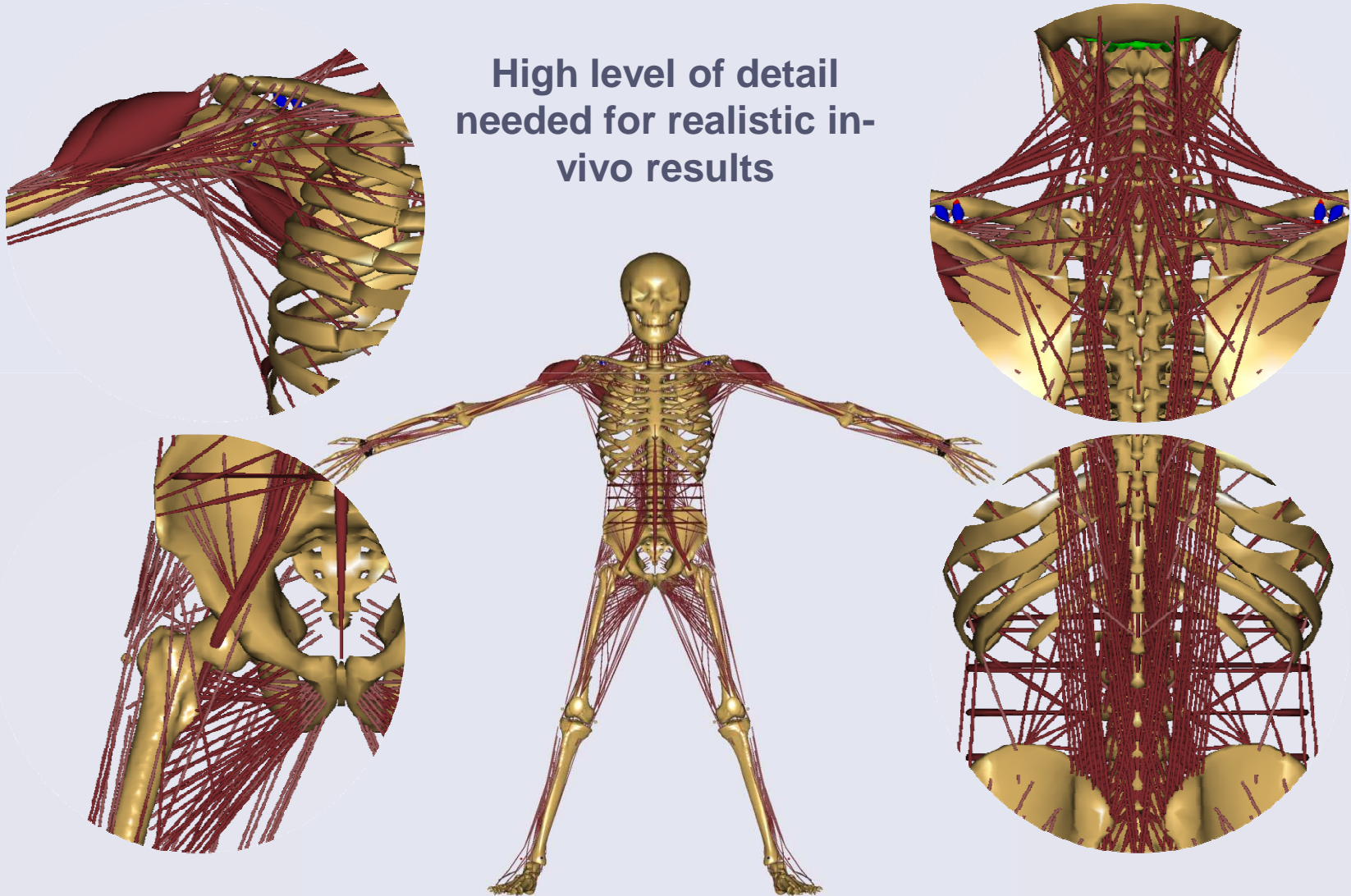
The AnyBody Modeling System: Musculoskeletal analysis for activities of daily living

- Product design evaluation and optimization
- Ergonomic analyses and documentation
- In-vivo load cases for Finite Element Analysis
- Surgical procedure evaluation and pre-op planning
- Gait analysis

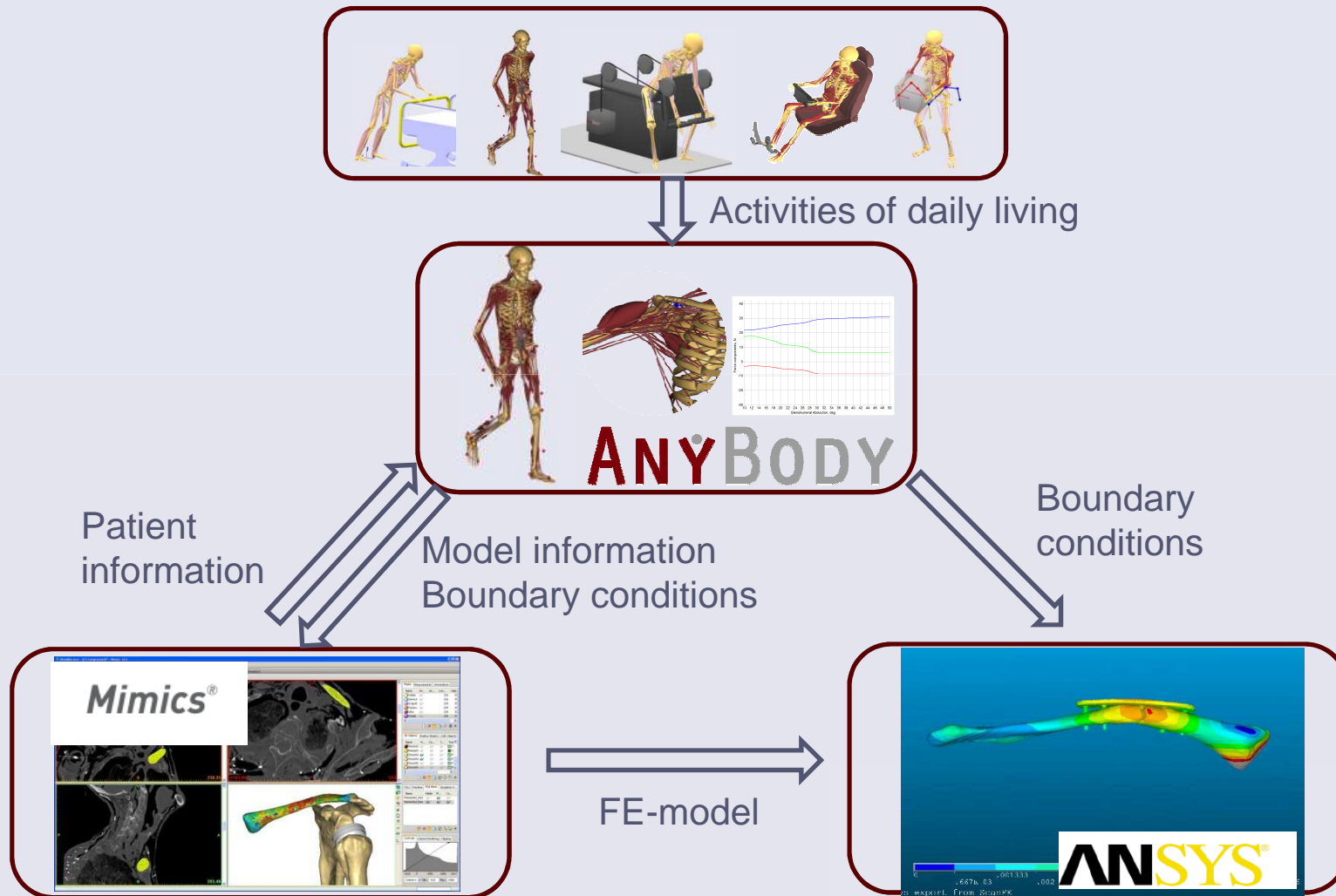- Individual muscle forces
- Joint forces
- FE load case
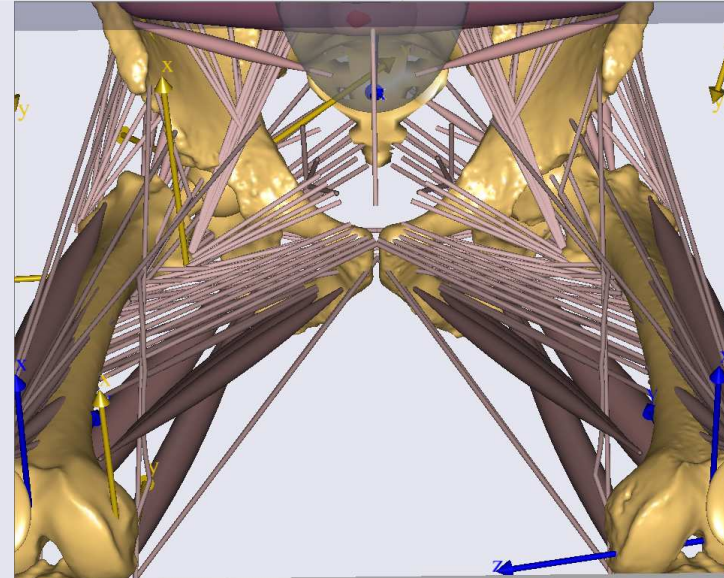
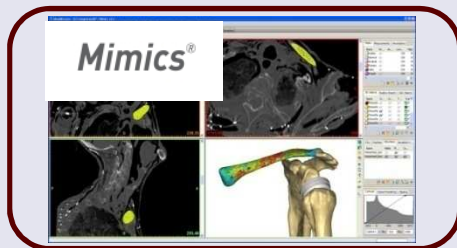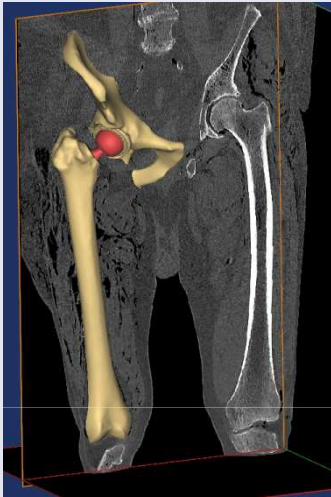# Full Musculoskeletal Human Body Model

High level of detail needed for realistic in-vivo results

Activities of daily living

**Activities needed for
realistic in-vivo results**

Virtual design process

Activities of daily living

Patient information

Model information
Boundary conditions
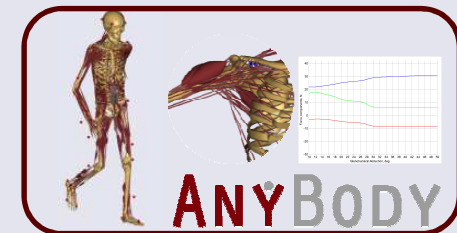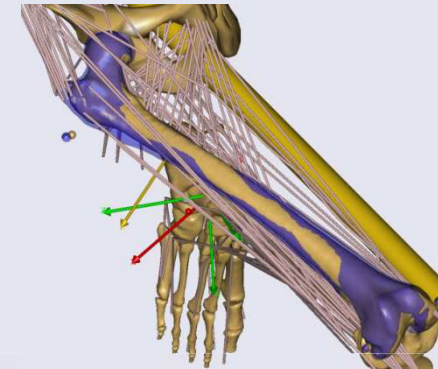
Boundary conditions

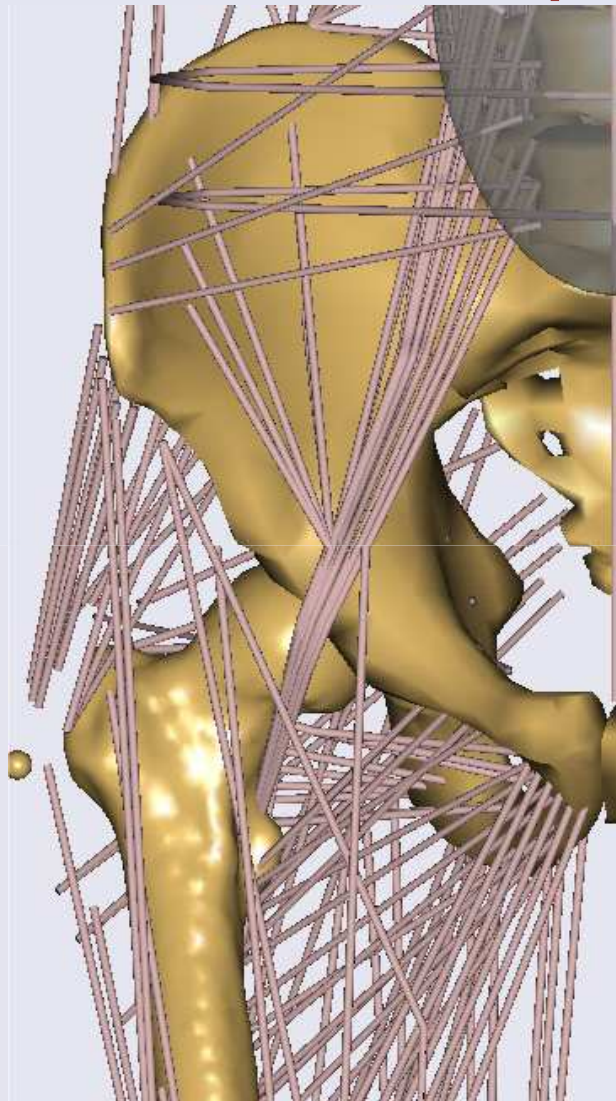FE-model

Mimics – AnyBody integration

- .stl geometry
- Bony landmarks
- Muscle attachment points
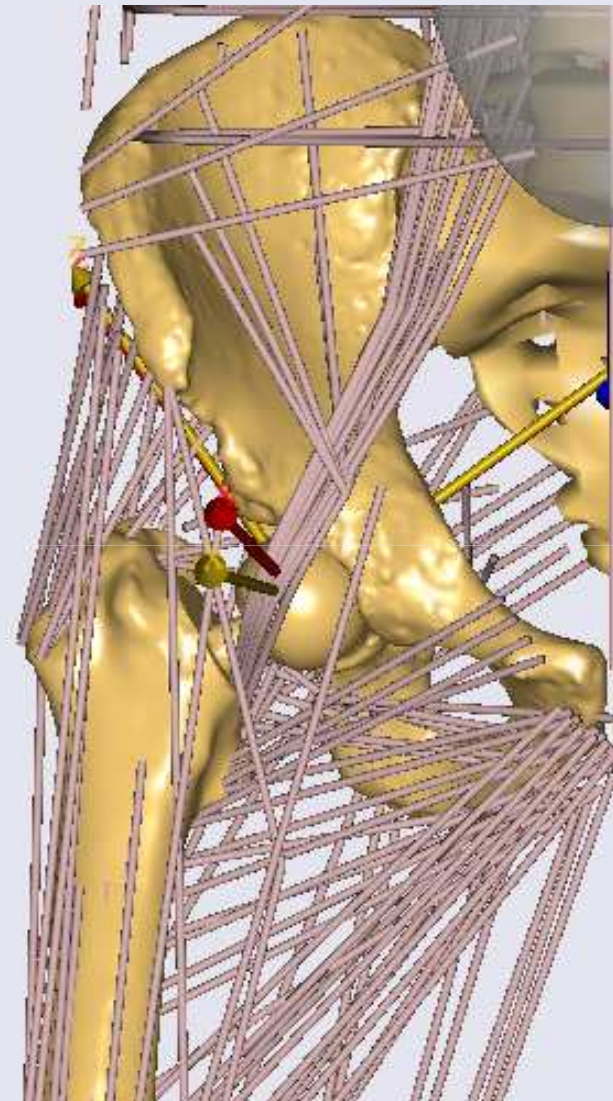- Muscle geometries
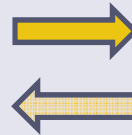
- Model information
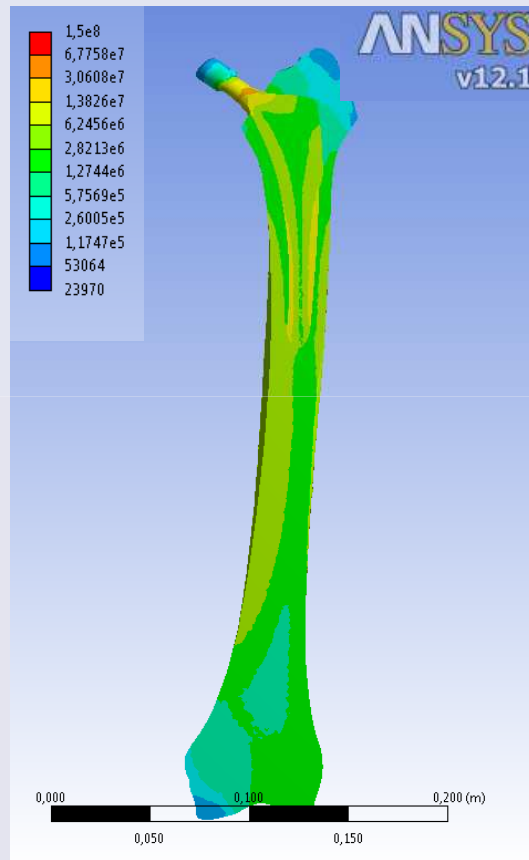- Boundary conditions

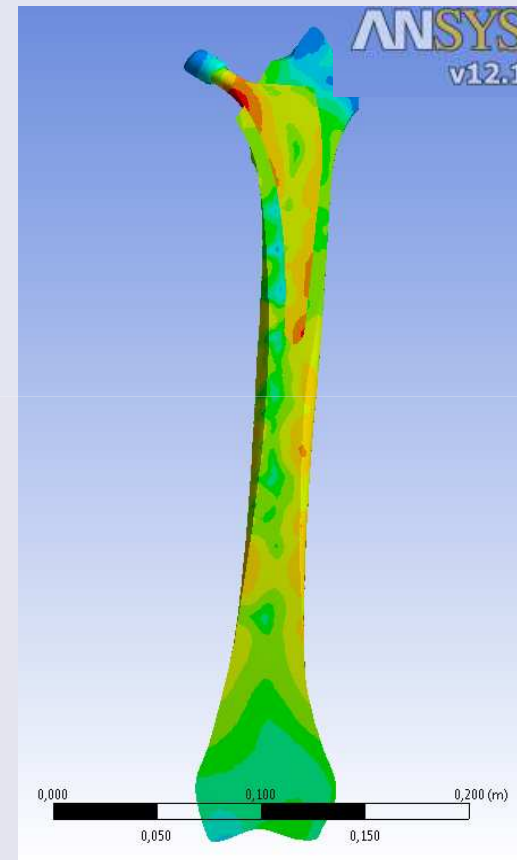# Patient specific model

Standard 50% model

Patient specific model

Simplified load case not valid for in-vivo situation

Simplified loading

In-vivo loading

Summarize

- Realistic evaluation of orthopedic device requires realistic load cases

- Linking Mimics, AnyBody and ANSYS the entire workflow for patient specific biomechanics can be established.

- This enables virtual prototyping and surgical planning taking into account individual biomechanics.

AnyBody Modeling System Ver. 4.2

- Modelview: new functionality for selecting
- C3D viewing facility
- Editable model parameters without reload
- Auxiliary constraints
  - Bounds on the activity of certain muscles, for instance to model partially paralyzed muscles.
  - Modeling of converging or diverging tendons
  - Co-activation of specific muscles
  - Friction modeling
- Exclude objects from models
- Soft kinematic constraints can have weights applied

AnyBody Managed Model Repository Ver. 1.2

- The two generic gait models, GaitLowerExtremity and
- GaitFullBody, have been revised
- New force plate types 2 and 3 have been added
- An automatic shoulder rhythm has been implemented
- The initial stage of a hand model has been added to the repository
- Passive stiffness has been added to the spine model
- Multiple bug fixes and new bone geometries on the Tweente Lower Extremity model
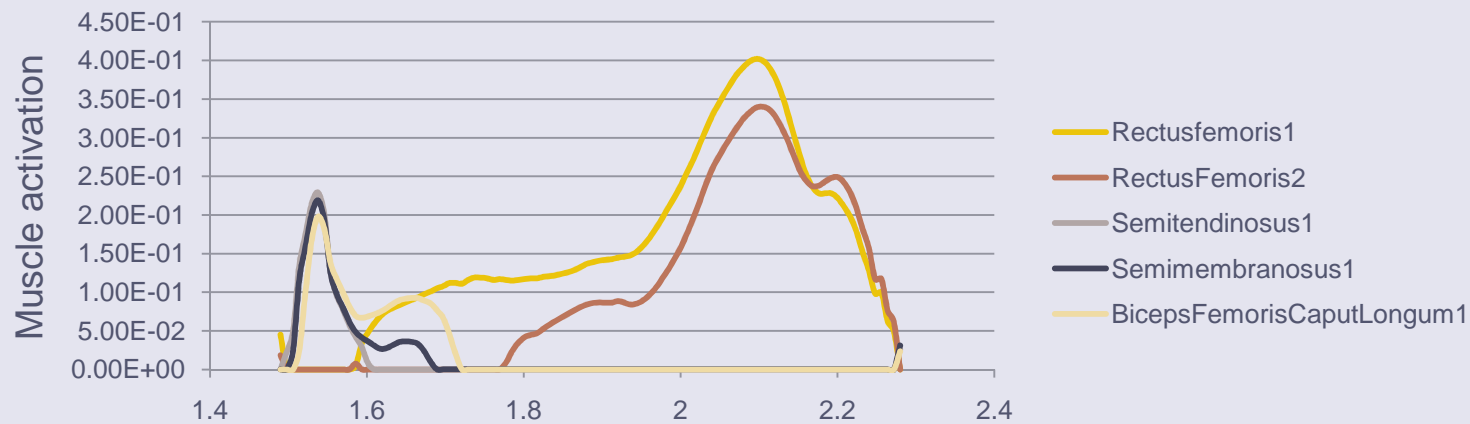
Live demo of AMS Ver. 4.2
From C3D file to musculoskeletal model

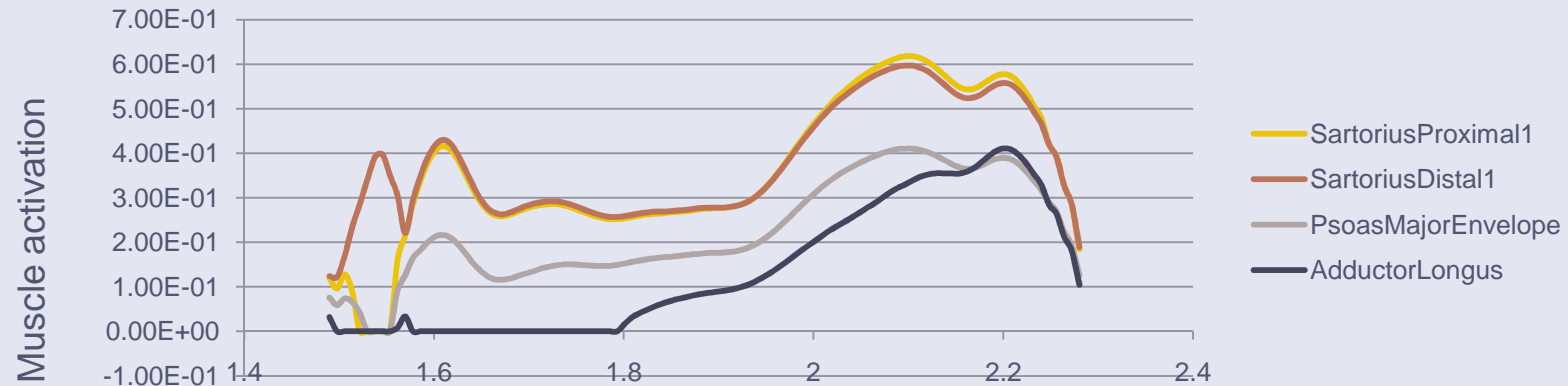# Patient specific muscle recruitment
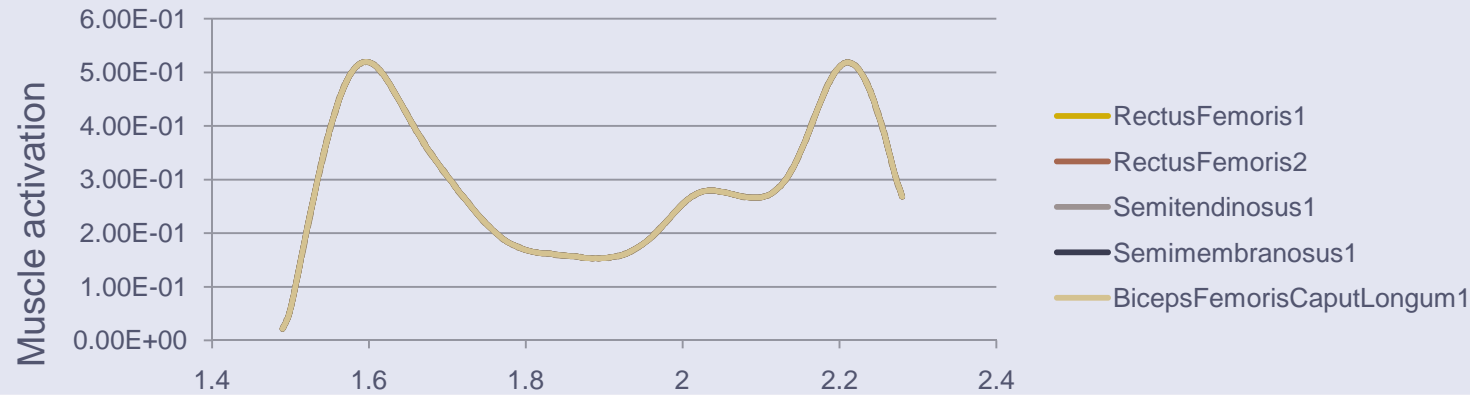
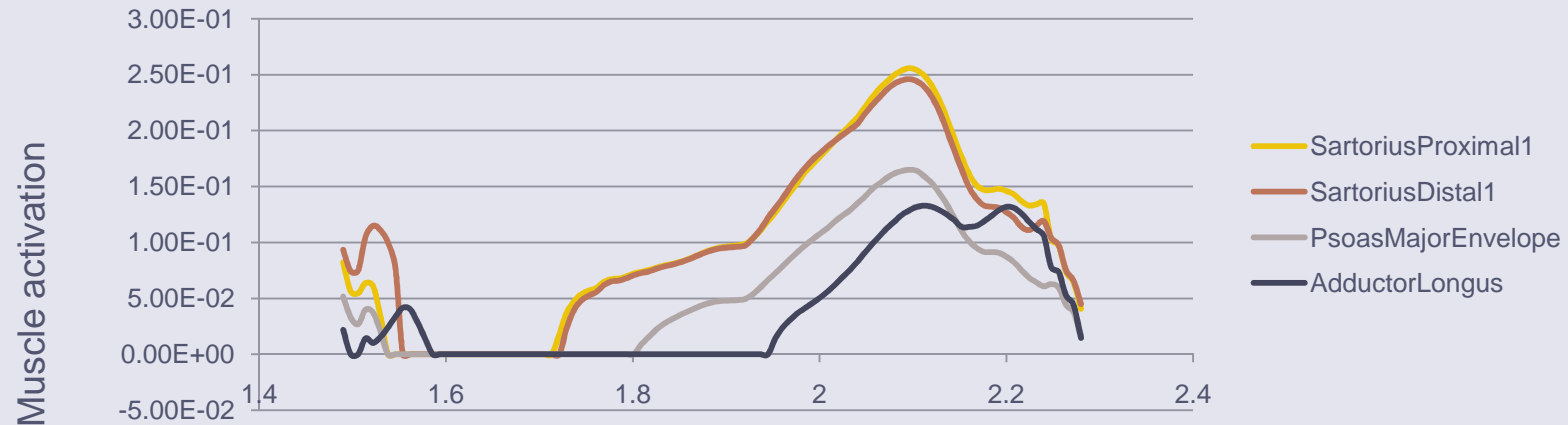The muscles are linked to have same lower activity bound

Normal analysis

Results

Modified recruitment

Normal analysis

Resources

- Forum, Repository, Wiki, Papers, and references:
  www.anyscript.org

- Software downloads, documentation, newsletters, tutorials and webcasts
  www.anybodytech.com

Q&A Session

ANYBODY™
POWERFUL BODY SIMULATIONS

Today's webcast presentation: New Features in AnyBody version 4.2

Presenter

Søren Tørholm, Ph.D
AnyBody Technology

Host

Arne Kiis
AnyBody Technology

Panelist

Sebastian Dendorfer, Ph.D
AnyBody Technology

The AnyBody Modeling System™

· Full-body musculoskeletal simulations for activities of daily living
· Muscle and joint force computation + many other features
· Unprecedented model detail and validity