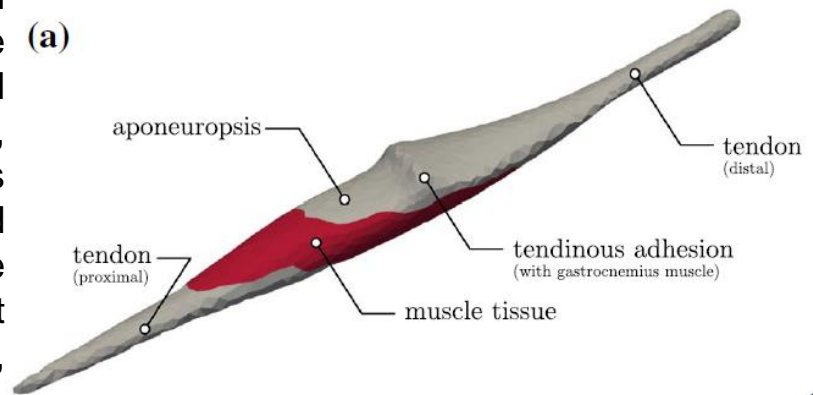


Three-dimensional deformation analysis and simulations on skeletal muscles

✓ Bachelor- / Studien- / Masterarbeit

The biomechanics of skeletal muscles focusses particularly novel insights on the force generation and the stress-strain distribution during contraction. Furthermore, the impact of the packing of muscles on their mechanical behavior compared to their isolated behavior remains still unknown. To this end, the three-dimensional deformation of skeletal muscles has been investigated, revealing a highly resolved strain field and further the spatial deformation characteristic of the muscle during contraction. A corresponding Finite Element Analysis (FEA), based on reconstructed muscle geometries, can be further utilized to gain novel insights on the stress-state and force generation of the packed and isolated skeletal muscles.



Seydewitz et. al, „On a three-dimensional constitutive model for history effects in skeletal muscles“, 2019

Possible Tasks:

- Reconstruction and deformation analysis of isolated and packed muscles, based on optical and structural data
- FEA of skeletal muscles, considering their muscle-tendon-aponeurosis junction

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