Overview of this database on morphological data (shoulder)

The data base consists of three sections: the VU-study, the Mayo-study and the Leiden study.

Disclaimer: The data base was originally constructed as a website and has now been moved to the repository. It might therefore be that some of the links do not work properly!

Each section comprises an introduction - link and links to the individual data files. In the past we used K2_R as the basis for our modeling, which was expanded with the right arm of specimen 4 from the Mayo study. We also used a data set solely based on one specimen (the Leiden data).

The shoulder data base consists of data from 5 male and 2 female specimen. No comparisons have been ever made between the male and female sets.

Not all data are available yet. Unfortunately the Leiden data only consist of two internal publications with listed data and an anatomical data file for the Delft Shoulder Model. We intend to expand these with raw data.

Please feel free to send us your reactions or questions about available or unlisted data.

DirkJan Veeger

VU-study (1988 - 1996)

Introduction	
Inertial data	• Anthropometry • Mass, Volume and CM positions • Moments of Inertia • Muscle Mass • PCSA
Anatomical landmarks	(both left and right shoulders)
Ligaments	Origins and insertions for the conoid and trapezoid ligaments expressed in the global coordinate system. Note: the length of each ligament is not actually known and it is likely that some were buckled when measured.

collum humeri modeled as a cylinder	Parameters for the implementation of the humerus as a cylinder, needed for muscle wrapping for for instance the Pectoralis Major
Proportional elements	• NL-K1_R • NL_K2_R • NL_K3_R • NL_K4_R • NL_K5_R • NL_K6_R • NL_K7_R
Origins & Insertions expressed as tvalues	For the use and meaning of t-values see the publication by Van der Helm et al (1992) • NL-K1_R • NL_K2_R • NL_K3_R • NL_K4_R • NL_K5_R • NL_K6_R • NL_K7_R
Mapping of Origins to Insertions	• NL-K1_R • NL_K2_R • NL_K3_R • NL_K4_R • NL_K5_R • NL_K6_R • NL_K7_R
Related publications	inertia and muscle contraction parameters for musculoskeletal modelling of the shoulder mechanism (J.Biomechanics 24(7)) Geometry parameters for musculoskeletal modelling of the shoulder system (J. Biomechanics 25(2))
Data file for shoulder and elbow model	specimen_r2 : this data file is a combination of the data from specimen r2 of the VU study and k4 of the Mayo study. In general, al shoulder data stem from r2, whereas all elbow data are from k4.

Mayo-study (1993-1998)

Introduction	
Inertial data	Anthropometry Mass, Volume and CM positions Moments of Inertia Muscle Mass PCSA

Origins & Insertions expressed as tvalues	specimen 1 r specimen 2 r specimen 3_r specimen 4_r specimen 2 l
Mapping of Origins to Insertions (XYZdata)	specimen 1 r specimen 2 r specimen 3_r specimen 4_r specimen 2 l
Centers and axes of rotation	Glenohumeral rotation center specimens 1 - 4 Flexion-extension axes specimens 1 - 4 Pronation-supination axes specimens 1 - 4
Geometrical shapes	humeral head and glenoid, estimated as spheres radius and ulna at muscle insertion sites, estimated as cilinders elbow, estimated as cilinder
Related publications	Orientation of axes in the elbow and forearm for biomechanical modelling (abstract presented at the XV Biomedical Engineering Conference, 1996) Orientation of the elbow F-E axis (abstract presented at the first conference of the International Shoulder Group,1996) Parameters for modeling the upper extremity (J. Biomechanics 30, 1997)

Leiden-study (1994-2002)

Relevant publications	1. An internal report by Mary Klein Breteler on the dissection results related to the **shoulder**. Part of these data have also been published in Journal of Biomechanics (1999). 2. An internal report by Joanne Minnekus on the dissection results related to the **forearm**. 3. A DSEM anatomical definition file (l1091)