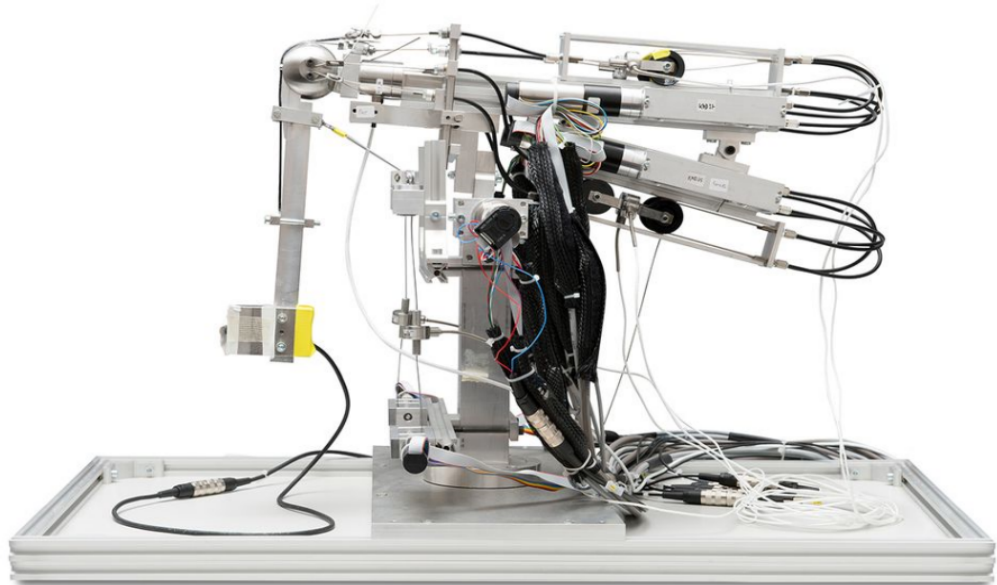


Biomechanical Engineering: Experimental Shoulder Simulator

The priority tasks of the technical group of Biomechanical Engineering comprises the development and testing as well as the evaluation of physiological joint and muscle forces by means of realistic simulation.



Joint- and muscle issues on the shoulder have a high social relevance. Based on limited examination methods applied on real bodies it might be necessary to develop realistic clinical and biomechanical simulation models by which scientific issues can be addressed.

Visualizing real joint forces

For this purpose a shoulder simulator was developed. The simulator allows by means of integrated sensors to model joint- and muscle forces resulting out of distinct movements of the humerus. It further allows to display resulting movement pattern on the basis of predefined muscle- and joint forces.

The simulator provides the opportunity to perform tests with artificial and also with human humeri.

Implant-Design and -Testing

The shoulder simulator provides the potential to perform functional tests on prothesis and implants in order to test e.g. the anchorage stability of implants in bones as well as to visualise the effects of a specific design of a prothesis on the muscle forces. This concept supports industry partners to improve and prolong the lifespan of shoulder implants.

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