HBM sensor technology...

...for performance diagnosis and for drilling and training the human hand

Dr. med. habil. Hansjörg Weber, Meßgerättechnik

With the HFD200 hand and finger dynamometer, the doctor has available a diagnosis and rehabilitation system for the human hand, which measures the forces used to bend and stretch the hand and the individual fingers, under defined isometric conditions. The overall system is characterized by the integration of precise and adjusted HBM force transducers, analog/digital conversion (HBM AED) of the measured values and online display of the measurement results (biofeedback control) on the PC.

A mechanical system was created to implement biomechanical standards, so that reproducibility of the test conditions was extremely good when the test person was examined at different times. These comparable conditions are also absolutely essential for the evaluation and classification of different illnesses and for comparable cases of illness in different patients. There are infinitely adjustable force transducer elements in the vertical and horizontal directions, each with anthropometrically adapted finger grip and hand grip parts to measure the bending forces and finger and hand pressure plates to record the stretching forces at each of the different basic finger measurement points. The mechanical system thus makes it possible to examine anyone from a small child to a professional sportsman.

A miniature laser assists reproducible adjustment of the force transducer elements.

Computer-aided training programs created and run under medical direction are the basis for restoring a human hand that has diminished or no function to full working order.

A typical application for the HFD200 at Mbt. Sudeck can be found at:

www.hbm.com/hotline/morbus-sudeck

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Fig. 1:
The HFD200 hand and finger dynamometer (basic device) with schematic diagram of the measurement chain.

Fig. 2:
HFD 200 – Hand and arm position for measuring the forces needed to close the hand on the central joints of the left hand.