

# HBM sensor technology ...

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

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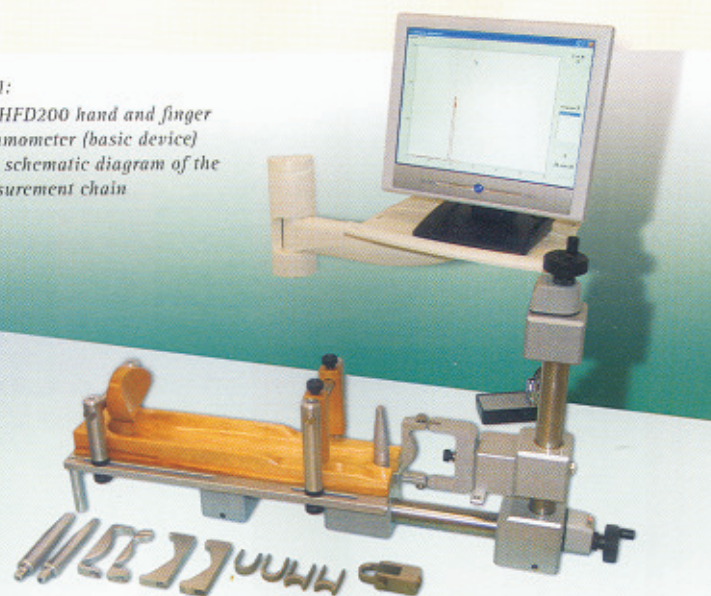
With the HFD200 hand and finger dynamometer, the doctor has available a diagnosis and rehabilitation system for the human hand, which measures the forces used to bend and stretch the hand and the individual fingers, under defined isometric conditions. The overall system is characterized by the integration 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. ■

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



Force transducer  
Measurement signal

AED transducer electronics  
A/D conversion

Software  
Visualization

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

[www.hbm.com/hotline/morbus-sudeck](http://www.hbm.com/hotline/morbus-sudeck)

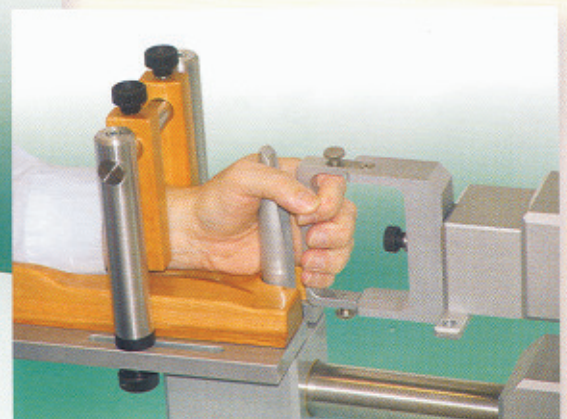


Fig. 2:  
HFD 200 - Hand and arm position for measuring the force needed to close the hand on the central joints of the left hand