

# Sensor intergrated exosuit for measurement of EMG-signals Günther, C., Geisel, T., Jiang, Z., Köllermeyer, M.

# Interdisciplinary Product Development (M.Sc.)

### **Problem statement**

In the rehabilitation of stroke patients with hemiplegia, EMG data can show improvement in muscle activity and thus optimize physiotherapy. However, current recording methods using stationary electrodes are time-consuming and make regular data collection difficult (Fig. 1).

# Approach

To simplify this process, an exosuit garment with integrated EMG sensors is being developed (Fig. 6). This garment allows for easy and accurate placement of electrodes and significantly reduces the time required for data collection (Fig. 5). As a result, rehabilitation progress can be better monitored and predicted.



Fig. 1: measurement of EMG-Signlas using conventional electrodes (focus-arztsuche.de)

### **Practical implementation**

One aspect of the developed garment, was user friendly design for hemiplegic patients, who are restricted in ther movement (Fig. 3 + Fig. 4). The other aspect was the integration of electronic components for the measurement of the EMG signals (Fig. 2).



Fig. 3: large zippers for easy opening and closing (amazon.de)

Fig. 6: the functional model of the exosuit

Fig. 5: array with textile electrodes and screen printed circuit paths

#### Contact

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