

Force measuring system for the training of chiropractors

In the context of this bachelor thesis a device was developed and manufactured to help chiropractic students to learn their exercises and to quantify the amount of force used.

A force sensor is used to measure the force exerted during the manipulations. A microcontroller sends the data via Bluetooth to an Android smartphone where it is displayed in a newly programmed and designed application as a graph.

A similar, but now outdated, system is already being used for this application. The aim of the device development is to replace the previous instrument. The new device is supposed to be provided to the students as a personal utility tool.

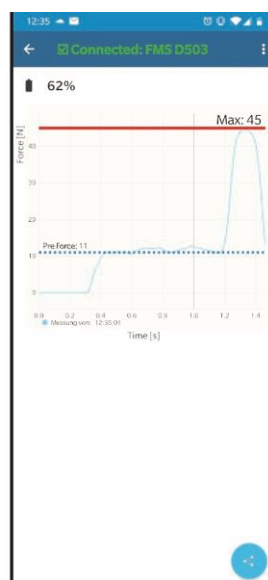
To produce the device, a housing was designed and manufactured using 3D printers. The measuring electronics were also developed from scratch and soldered onto a compact, self-layouted circuit board. A custom program, that converts the analog sensor signal into the force applied by the students and transmits it packagewise via Bluetooth, runs on the microcontroller. In addition to the graphically visualized measurement data, the maximum value and the leading force can be displayed on the smartphone screen.

The device was tested in an application trial with chiropractic students. It worked perfectly and the students liked it very much.



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