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FitnessSHIRT – MEASURING VITAL SIGNS IN REAL TIME

FITNESSSHIRT – SPORTING PROGRESS YOU CAN MEASURE

The smart FitnessSHIRT is an item of clothing designed for the mobile, continuous recording of body signals. It can be used both for medical care of patients and for the management of training in sport and leisure activities.
The information it provides forms the basis for the evaluation of vital functions and the body's state with regard to health, physical performance, stress or relaxation.

Textile-integrated sensors
For the comfortable recording of physiological signals, special materials are integrated into the FitnessSHIRT. Conductive areas of fabric (textile or polymer electrodes) gather the electrical activity of the heart muscle. A stretchable, condictive strap around the chest measures how the ribcage moves during breathing.
The electrocardiogram (ECG) and the breathing pattern signals obtained are processed and evaluated by algorithms in real time. Additionally the activity of the user can by tracked by an acceleration sensor. Based on the processed measurement data, the system calculates the following characteristic values:

- Heart Rate (HR or pulse)
- Heart rate variability (HRV)
- Respiratory rate (RR)
- Inhalation and exhalation time
- Activity

Miniaturized electronics

The sensor electronics and power supply of the FitnessSHIRT are housed in a compact casing, which is attached with snap fasteners and can be easily removed when washing the T-shirt. The electronic unit enables onboard analysis of the captured raw data, local storage and wireless transmission of calculated values via Bluetooth or Bluetooth Low Energy.

Your benefits at a glance

- Textile for personalized training management, performance diagnostics and continuous health monitoring
- Practical fitness assistant (no adhesive electrodes, washable)
- Wireless transmission of measurement data
- Easy to use

Fields of application for FitnessSHIRT

- Care of high-risk patients (e.g. cardiovascular diseases)
- Supporting performance diagnostics
- Biofeedback therapy and stress management
- Sport and leisure activities
- Enhanced safety and early detection of stress and overwork in the context of occupational health and safety

For specific application scenarios, the sensor unit and its technical specifications (e.g. sampling rate, battery capacity, wireless technology, etc.) can be customized.

www.iis.fraunhofer.de/fitnessshirt

The FitnessSHIRT is not yet certified as a medical device.
Fraunhofer IIS is presenting the FitnessSHIRT with the goal of attracting partners for the further development, production and marketing of the technology

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