

APPLICATIONS, ADVANTAGES AND DISADVANTAGES OF SMART WEARABLE DEVICES:

Applications for monitoring of glucose, alcohol, and lactate or blood oxygen, breath monitoring, heartbeat, heart rate and its variability, electromyography (EMG), electrocardiogram (ECG) and electroencephalogram (EEG), body temperature, pressure (e.g. in shoes), sweat rate or sweat loss, levels of uric acid and ions – e.g. for preventing fatigue or injuries or for optimizing training patterns, including via "human-integrated electronics"

- Forecasting changes in mood, stress, and health
- Measuring blood alcohol content
- Measuring athletic performance
- Monitoring how sick the user is
- Detecting early signs of infection
- Long-term monitoring of patients with heart and circulatory problems that records an electrocardiogram and is self-moistening
- Health Risk Assessment applications, including measures of frailty and risks of age-dependent diseases
- Automatic documentation of care activities
- Days-long continuous imaging of diverse organs via a wearable bioadhesive stretchable high-resolution ultrasound imaging patch or e.g. a wearable continuous heart ultrasound imager (potential novel diagnostic and monitoring tools)
- Sleep tracking
- Cortisol monitoring for measuring stress
- Measuring relaxation or alertness e.g. to adjust their modulation or to measure efficacy of modulation techniques

Advantages of Wearable Technology:

- **Rapid data results can help drive improvements.** Having immediate data to make decisions and drive improvements may be helpful, rather than waiting for more formal or detailed assessments.
- **Detailed data can supplement loss analysis and loss trends.** Additional data can help identify specific trends in your claims history.
- **Can help build a business case for senior management.** It can be challenging to help senior management make decisions or determine if some of your funding should be spent on improvements. The data from wearable technology devices can help support your business case for that spend.
- **Data from wearable sensors offers promising job risk analysis and evaluation opportunities for safety and ergonomics practitioners.** Most ergonomic assessments or evaluations require additional time to observe and manually collect data. Having instant data can save time and expedite ergonomic assessments or evaluations.
- **Enhance employee wellness programs.** More organizations are starting to promote wellness programs for employees. Some wearable technology devices can assist with easily tracking wellness program data that could supplement or support your efforts.

Disadvantages of Wearable Technology

- **Requires a time commitment to review and analyze data.** A team or committee may need to review the large amount of data that is generated from the devices.
- **Requires financial commitments and planning.** You may need senior management or finance team approval prior to the full implementation stage. The cost of wearable technology depends on how many employees and locations are involved.

- **Devices could lead to distraction.** For many employees, wearing this device for an entire shift can be distracting, especially if the device has haptic feedback or vibration reminders.
- **Data security and privacy could be compromised with legal, financial, and personal consequences.** An information technology (IT) department will need to ensure the data generated from the devices is secured for authorized individuals and ensure proper consent is obtained from each individual whose data is being collected.
- **Devices could lead to over-trust or under-trust.** This could be challenging when reviewing all the data to determine realistic trends. Sometimes this results in trusting or not trusting all the reviewed data before making any decisions or improvements