Exercise And Respiration Rate Biomedical Engineering

Students are introduced to the respiratory system and learn the importance of tracking respiration rates. The lungs and airways are key components of this system. With respiration, the lungs inhale oxygen and exhale carbon dioxide, maintaining the body's balance of gases. Two recent studies have focused on measuring respiration rates and heart rates to assess correlations in either normal or pathologic conditions.

One study, conducted by a team from the University of Glasgow, examines the use of a smartphone application that can measure heart rate, respiration rate, and blood oxygen saturation. This application encourages constant breathing rate in synchronisation with the avatar, ensuring a synchronized activity.

Another study aims to evaluate respiration rates during exercise and their effects on hemodynamic efficiency in cfd simulations of the total cavopulmonary connection. The study proposes respiration and exercise should be incorporated into tcfd biomedical engineering programs.

These studies highlight the importance of respiration rate monitoring in identifying potential health issues, such as chronic pulmonary disease, fever, and asthma. The use of wearable sensors and smartphones offers a new approach to health monitoring, providing real-time data on respiration rates and heart rates, which can be crucial in understanding the body's physiological responses.
biomedical engineering research group yonsei university wonju korea yjymb hotmail.com we confirmed that our algorithm improved the respiratory rate detection accuracy by 4.6 and 9.54 for the treadmill and leg press respectively which are dynamic we can calculate the correct respiration rate during exercise. 

1 simultaneous recordings of beat to beat left cardiac stroke volume by pulsed ultrasound doppler mean arterial pressure map and heart rate by were obtained in ten healthy young adults during spontaneous respiration at supine rest before and after cholinergic blockade by atropine 0.035 mg kg⁻¹ muscle specified for high intensity anaerobic exercise will synthesise more glycolytic enzymes whereas muscle for long endurance aerobic exercise will develop more capillaries and mitochondria additionally with exercise improvements to the circulatory and respiratory systems can facilitate better delivery of oxygen and glucose to the muscle.

a few of the signals that can be recorded, the respiratory system is designed to bring in oxygen and remove carbon dioxide a person with an average ventilation rate of 7.5 l min will breathe in and out 10 800 liters of gas each day from this gas the person will take in about 420 liters of oxygen 19 moles day and will give out about 340 liters of carbon dioxide 15 moles day.