

Human Posture and Movement and Energy Consumption for Daily Living

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Abstract: An estimation method for energy consumption for daily living has been studied by attaching a light-weight one-chipped IC triple-axis accelerometer with ECG to the sternum. To estimate energy consumption, posture and movement have to be discriminated by value of acceleration. The data is obtained via a receiver with wireless connection. Most of our daily living consists of sleeping in a supine position, sitting down and standing with slight movement such as when shopping, working in the office, walking and running. In this study, body movement and posture are discriminated by acceleration value obtained by direction of gravity. The energy consumption is discriminated depending on the strength of movement and posture. The energy consumption is measured by O₂ intake and increases in the amount of CO₂ in the exhaust breathing and is related to strength of movement. Energy consumption depends on BMI values. The ECG wave form, movement and energy consumption can be measured and saved to the memory simultaneously with one device, and will contribute to diagnose heart diseases.

Keywords: Accelerometers, Energy consumption, Transmitters, ECG.
