Exercise Promotion, Measurement, and Monitoring System
Tech ID: 28697 / UC Case 2011-523-0

SUMMARY

UCLA researchers in the Department of Electrical Engineering have developed a novel wireless sensor and exercise system for real-time exercise promotion and monitoring.

BACKGROUND

Physical rehabilitation is important for stroke victims, patients with respiratory disorders, and geriatrics with multiple diagnoses as it has been shown to reduce the length of hospital stay and lessen the chance of future strokes. However, conventional low cost exercise cycles are limited since they do not report energy expenditure that is critical to establishing whether a patient is meeting a prescribed exercise regimen or has improved or declined. Without these capabilities, it is not possible for a caregiver to monitor their patients and ensure adherence to an exercise protocol. Cost-effective and rapidly deployable systems that can measure and log the exercise activities continuously via a wireless interface will revolutionize this technology.

INNOVATION

Researchers led by Professor William Kaiser have invented a novel sensor-equipped portable exercise cycle that continuously measures arm and leg cycling activities through a mobile device in real time. Wireless communication is implemented in the exercise cycle with a MicroLEAP compact sensing platform, enabling real-time energy accounting and management. This invention can support lithium-polymer batteries or an AC wall adapter and exploits low power local area networking choices and is Bluetooth compatible. With continuous wireless data transfer, it can operate for over 24 hours with a fully charged battery. This low-cost sensor technology can be conveniently deployed in clinic beds or be operated as a floor mounted device.

APPLICATIONS

▶ Wireless cycle sensor
▶ Exercise and monitoring in clinic beds or floor mounted devices
▶ Portable exercise sensor
▶ Arm and leg cycle sensor

ADVANTAGES

▶ Real-time monitoring
▶ Bluetooth compatible and local area networking
▶ Continuous wireless data transfer
▶ Can operate for 24 hours with fully charged battery
▶ Low cost
▶ Lithium-polymer batteries or AC wall adapter
▶ Easily deployable

STATE OF DEVELOPMENT

Prototype sensor-equipped exercise cycles have been developed and clinically have shown the benefits of exercise for treatment of many diverse conditions, showing a reduction in length of hospital stay. Guidelines have also been developed for rehabilitative exercise.

RELATED MATERIALS


PATENT STATUS

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