

Ubiquitous Healthcare Services for the Patients with Lower Back Pain using a Posture Monitoring System

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Low back pain (LBP) is a chronic symptom which many people in modern society complain of. It is well known that the posture and action in daily life are closely associated with LBP. In this paper, a wearable posture monitoring system is proposed to record subject's posture in real time and to analyze the data in relation to LBP.

The system is comprised of three 3-axis accelerometer sensors (MMA7260Qt, Freescale, USA), in-house built data acquisition device and a PC for data processing. Sensors attached on the back at specific spine locations (T5, L3, and S2) produce acceleration signals for each axis which are converted to digital data and then transmitted to a PC. For the performance evaluation, total eight subjects wearing the developed device conducted a specially designed Tripod Stability Exercise Test. Subject's spinal musculoskeletal posture and action under the load-bearing conditions were collected and analyzed. As results, the proposed system was confirmed to be used to monitor the wearer's posture and action in various daily life situations and parameters such as rotation in axial plane, rotation in sagittal plane, and muscular vibration energy can be used to categorize the characteristics of subject's spinomuscular system.

The developed system is expected to help LBP patients as well as normal persons maintain in good spinomuscular health in both daily life and clinic.

References

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