

Effects of Walking Style on in-vivo Biomechanical Parameters during Stair Walking

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The purpose of this study was to obtain fundamental knowledge about walking stairs safely by clarifying the effects of walking style on in-vivo biomechanical parameters. Kinematic, kinetic and electromyographic data during stair walking were measured under three conditions limbs during normal stair walking (NW), and leading limb (LL) and trailing limb (TL) when walking stairs one step at a time. Moments of force on joints, muscle tensions and joint forces were calculated by using two mathematical models (link segment model and musculoskeletal model, Yamazaki (1992)). When ascending one step at a time, the quadriceps of LL and the triceps surae of TL played important roles. They were the main functional muscles for lifting the body. Knee joint force of LL was greater than during NW, whereas that of TL was smaller. Muscle tensions of LL when descending was decreased by the action of the quadriceps and triceps surae of TL. When descending, Knee joint force of TL was bigger than during NW, whereas that of LL was much smaller. The results showed that: 1) In ascending, if a patient has any injuries of quadriceps or knee joint, the unaffected side should be made LL and the affected side TL. Also, if there is an injury of the triceps surae, the unaffected side should be TL and the affected side LL. 2) In descending, if there is an injury to one limb, the unaffected leg should be TL and the affected leg LL.

A Preliminary Study of High School Health Education

— **An Overview of Freshmen's Awareness** —

Mika SHIMANE

The actual instruction and the awareness of students about high school health education, especially in relation to other subjects in the school curriculum, were surveyed.

The subjects were 883 freshmen at two universities in OKAYAMA prefecture. They were asked about their high school health education during April and May, 1997.

Health education teachers consist of 97.3% health science and physical education teachers. 86.4% of teachers taught a regular two-unit curriculum. In advanced classes, 88.9% used only textbooks, whereas 83.8% used copies and other material. 78.9% of the subjects received health education and 39.3% felt that health education was as important as other subjects while 40.7% felt that it was more important. 59.9% regarded health education to be a useful subject for everyday life.

The subject of health education has become progressively more important. However, due to a teacher-oriented way of instruction, students have no chance to participate in and discuss problems in class more actively. In the future, this problem should be corrected. The subject of health education and other subjects should be more closely coordinated.

Quantitative Analysis of Creatinine and the Metabolites of Toluene and Styrene by High-Performance Capillary Electrophoresis

Toshiko FUJII and Satoko KAWABE

The aim of this study was to assess the possibility of using high-performance capillary electrophoresis (HPCE) to determine the urinary metabolites of toluene and styrene in the field of occupational hygiene,