# Abstract

**Background:** In recent years, the number of bedridden people is rapidly increasing due to aging or lack of exercise in Japan. This problem is becoming more serious, since there is no countermeasure against it. In the present study, we designed to investigate whether dietary proteins, especially soy, had beneficial effects on skeletal muscle in 59 volunteers with various physical activities. **Methods:** We subjected 59 volunteers with various physical activities to meal intervention examination. Persons with low and high physical activities were divided into two dietary groups, the casein diet group and the soy diet group. They ate daily meals supplemented with 7.8 g of powdered casein or soy protein isolate every day for 30 days. Bedridden patients in hospitals were further divided into three dietary groups: the no supplementation diet group, the casein diet group and the soy diet group. They were also subjected to a blood test, a urinalysis, magnetic resonance imaging analysis and muscle strength test of the knee before and after the meal intervention study. **Results:** Thirty-day soy protein supplementation significantly increased skeletal muscle volume in participants with low physical activity, compared with 30-day casein protein supplementation. Both casein and soy protein supplementation increased the volume of quadriceps femoris muscle in bedridden patients. Consistently, soy protein significantly increased their extension power of the knee, compared with casein protein. Although casein protein increased skeletal muscle volume more than soy protein in bedridden patients, their muscle strength changes by soy protein supplementation were bigger than those by casein protein supplementation. **Conclusions:** The supplementation of soy protein would be one of the effective foods which prevent the skeletal muscle atrophy caused by immobilization or unloading.