

第241回スポーツサイエンス研究会

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場所 早稲田大学所沢キャンパス 100号館 第一会議室

- 演題**
1. Introduction to the Faculty of Allied Health Sciences, Thammasat University (Education and Research)
 2. Research activities (Longevity Society Research Unit, Thammasat University)
"Muscle Characteristics, Postural Stability and Strategies to Reduce Fall Risk"

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抄録

The global population is aging at an accelerating pace, with individuals aged 60 and over representing the fastest-growing demographic. Projections suggest that by 2050, nearly a quarter of the population in all major regions will be aged 60 or older. Falls are increasingly recognized as a critical public health concern among older adults, contributing to significant morbidity and mortality. In Asia, the incidence of falls ranges from 15% to 26%, with advanced age and female gender being consistently associated with an elevated risk—paralleling global trends. Additional fall risk factors, including specific pain (back, knee region) and sleep quality, have also been identified as contributing to falling risk factors. Of growing concern, middle-aged adults are reporting falls with greater frequency due to the onset of various risk factors, including chronic conditions, medication use, physical activity level, and age-related physiological changes. Cognitive decline, physical performance deficits, and fear of falling have been established as intrinsic risk factors for falls in older adults, while balance instability and deficits in functional mobility are emerging as risk factors for middle-aged adults.

Among individuals with chronic conditions, particularly those with knee osteoarthritis, reductions in knee extensor muscle size and strength, as well as alterations in gait kinematics, are observed. However, these factors do not always correlate with walking speed or the incidence of falls. In response to the growing prevalence of falls, fall prevention programs for community-dwelling older adults have increasingly emphasized balance training and fall risk management. To address this, a postural sway meter was developed using an accelerometer-based device to evaluate postural stability under static and dynamic conditions. Using this device, a 30-minute balance training program for community-dwelling older adults was implemented, yielding significant improvements in physical performance including balance. These findings underscore the complex interplay between muscle characteristics, postural stability, and fall prevention strategies, with implications for healthcare systems. The integration of comprehensive fall screening and assessment tools into prevention programs may enhance their effectiveness, highlighting the need for more rigorous and targeted training regimens to reduce fall risk across populations.

