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MUSCLE ACTIVITY DURING DAILY LIFE IN THE OLDER PEOPLE

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Objectives

The purpose of this study was to assess thigh muscle activity patterns during normal daily life and simulated daily tasks and to compare muscle activation and energy consumption during active and passive commuting tasks in older people.

Methods

Nine volunteers (70±6 yrs) were measured during normal daily life, treadmill walking, and during passive and active transport tasks (commuting and stair negotiations). Maximal muscle activity was measured from quadriceps and hamstring muscles during maximal voluntary contraction (MVC). Muscle activity (EMG) and oxygen uptake (VO₂) was measured during treadmill and commuting tasks.

Results

During daily life the mean muscle activity amplitude was 5.9±2.4 % of EMG_{MVC} and the longest continuous inactivity periods were 20.9±10.0 min. During stair ascend the peak EMG activity was 120 % of EMG_{MVC} and the peak VO₂ values were about 70 % of VO_{2MAX}. One kilometer walk consumed 3.5 times more energy than passive commute by bus, and using stair consumed 11.7 times more energy than using an elevator.

Conclusion

In daily life, older people use only a small fraction of muscle's maximal capacity and have long continuous inactivity periods. Active ways of commuting are effective way to improve cardiovascular and neuromuscular performance and can be incorporated into normal daily life.