PEAK AEROBIC CAPACITY AND SLEEP QUALITY IN MIDDLE-AGED AND OLDER PEOPLE

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It has been suggested that sleep quality deteriorates with advanced aging; however, it remained unknown how it links with age-associated decline of peak aerobic capacity (VO2peak). This study was conducted to assess this issue.

We recruited 33 middle-aged older people (62±8 (SD) yr) and randomly divided them into two groups; the interval walking training (IWT) group (5 males and 11 females) to perform IWT repeating >5 sets of fast (>70% VO2peak) and slow (<40% VO2peak) walking 3 min each, >4 days/week, for 5 months from June to November, during which period energy expenditure was measured with a tri-axial accelerometer (JD-Mate, Kissei Comtec), and the control (CNT) group (5 males and 12 females) to keep sedentary life as before. Before and after training, we measured VO2peak by graded walking test and sleep quality with the contactless sleep sensor (HSL-101, Omron Healthcare).

We found that the frequency and the duration of sleep interruption were inversely correlated with VO2peak before (R²=0.149, P=0.026 and R²=0.162, P=0.020, respectively) and after (R²=0.228, P=0.005 and R²=0.263, P=0.002, respectively) training when the values were pooled across all subjects in both groups. Similarly, the sleep quality, calculated from sleeping time/lying time on bed, was positively correlated with VO2peak before and after training, respectively (R²=0.176, P=0.015 and R²=0.257, P=0.003, respectively). Moreover, we found that the sleep quality increased after training in IWT (P=0.001) with a marginal increase in VO2peak (P<0.091), whereas it remained unchanged in CNT with no increase in VO2peak (both, P>0.505).

Thus, VO2peak was associated with sleep quality which was improved by IWT for 5 months with increasing VO2peak in middle-aged and older people.

Key words: aging, peak aerobic capacity, sleep quality, contactless sleep sensor, interval walking training