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INTERVAL WALKING TRAINING PROGRAM FOR SEDENTARY FEMALE COLLEGE STUDENTS: SEASONAL INFLUENCE ON THE ADHERENCE

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Recently, it has been suggested that physical fitness in young people has decreased with reduced physical activity so that their morbidity of lifestyle-related diseases has increased. We examined the possible application of interval walking training (IWT) to sedentary female college students to prevent this phenomenon. Additionally, we compared the adherence rate between winter and summer.

For the winter study, Nov. to April, 2011 (peak atmospheric temperature ($T_{a, peak} = 7 \pm 5$ °C, mean \pm SD), 47 female subjects (20-22 yr) were recruited and randomly divided into the control group (CNT, n = 24) to keep sedentary life style as before, and the IWT group (IWT, n = 23) to perform IWT at the target of 3-min $\geq 70\%$ of peak aerobic capacity for cycling (VO_{2peak}), followed by 3-minute low-intensity walking, $\leq 40\% VO_{2peak}$, $\geq 30\text{min}\cdot\text{day}^{-1}$, ≥ 4 days $\cdot\text{wk}^{-1}$, during which period energy expenditure was monitored with a tri-axial accelerometer. Before and after training, VO_{2peak} and thigh muscle strength were measured. For the summer study, May to Nov., 2011 ($T_{a, peak} = 26 \pm 6$ °C), another group of 48 subjects was recruited, randomly divided into CNT (n=24) and IWT (n=24), and instructed to perform the same protocol as in the winter study.

In winter, walking days/ wk were ~ 2 days for a school-day period, less than ~ 4 days in a vacation-day period ($P < 0.0001$) while fast walking time/walking days was ~ 13 min, similar between the periods ($P > 0.23$). In summer, walking days/wk were ~ 2 days in both periods while fast walking time/ walking days was ~ 11 min. We found that in winter, IWT increased VO_{2peak} by 6%, and isokinetic knee extension force (180 and 240 %/sec) by 9% while kept isometric knee extension force unchanged. On the other hand, these variables in CNT in winter and in both groups in summer remained unchanged or rather decreased.

When we compared the time of day at which subjects started training between IWT groups in winter and summer vacations, most subjects in both groups performed training in the morning or in the evening; however, we found that in winter, the subjects preferred the time 1hr before the sunset, whereas in summer, 2hrs after the sunset at which T_a was ~ 1 °C cooler than 1hr before the sunset but with no significant difference in the time after the sunrise between the groups.

Thus, IWT for 5 months is likely effective to increase physical fitness in sedentary female college students if it is done by more than the above achievement; however, it may be scheduled in winter rather than in summer because the time for training are limited in summer due to hot T_a in Japan.

Key words: interval walking training, sedentary female college students, adherence, seasonal influence