PLASMA EXPANSION BY HOME-BASED WALKING TRAINING AND THE ENHANCED EFFECTS OF CARBOHYDRATE AND WHEY-PROTEIN SUPPLEMENTATION IN OLDER PEOPLE

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An increase in plasma volume (PV) with increased plasma albumin content (Alb cont) by cycling exercise training reportedly improves thermoregulatory responses during exercise in older people; however, it remains unknown whether home-based walking training have the same effects. We examined whether interval walking training (IWT) increased PV with increased Alb cont, and whether a mixture of carbohydrate + whey protein intake during IWT enhanced the effects.

Seventeen male and 10 female older subjects (~77 yr), who had IWT for ≥ 24 months before participating in this study, were used as subjects. They were divided into two groups; CHO, consuming carbohydrate (22.5g) alone and Pro-CHO, consuming a mixture of carbohydrate (15 g) and whey protein (10 g), within 30 min after exercise respectively, during IWT for 5 months, repeating a set of fast walking at > 70% V̇O₂peak and slow walking at ~40% V̇O₂peak for 3 min each, > 5 sets/day, and > 4 days/week. Before and after the training, we measured PV and Alb cont.

We found that PV and Alb cont before starting the training were significantly correlated with training days for 12 months before starting IWT in this study (r=0.716, P<0.001 and r =0.671, P<0.001, respectively) and that after the training, PV and Alb cont tended to decrease in CHO (P=0.081 and P=0.130, respectively) while remained unchanged in Pro-CHO (both, P>0.74) with significant differences in the changes from the baselines between groups (P=0.020 and P=0.041, respectively).

Thus, IWT increased PV and Alb cont with training days and a mixture of CHO + whey protein intake during IWT enhanced the effects.

Key words: plasma expansion, interval walking training, carbohydrate and whey protein supplement, long-term effect,