

The Effects of Training Involving Simultaneous Walking with Isometric Exercise on Resting Blood Pressure in Young Healthy Adults

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Introduction

In separate studies, walking and isometric training have been shown to reduce resting blood pressure. Combined aerobic and resistance training, where participants undertake one element of the training programme followed by the second has been seen to produce larger reductions in resting blood pressure (BP) compared to a single exercise protocol such as, walking (Calders et al. 2010). To date, no studies have investigated the effects of simultaneous, combined training on resting BP. Therefore, this study aims to determine the effect of 6-weeks simultaneous, combined isometric (handgrip) and walking training (HGW) on resting systolic (SBP) and diastolic blood pressure (DBP), compared to a walking training programme (WLK).

Methods

A total of 26 healthy sedentary participants (male, n = 16; female, n = 10; age 21.3±2yrs; mass 69.2±12.5kg; height 170.4±9cm) were randomly allocated, into three groups walking training (WLK; n=12), simultaneous walking and handgrip training (HGW; n=12) or controls. Resting SBP, DBP and mean arterial blood pressure (MAP) were measured at baseline and post-training. Analysis of covariance was used to determine if post-training measures were significantly different to baseline, using the baseline values as the covariate.

Results

The preliminary data show that, in the three groups, resting SBP was reduced after the 6-weeks, by -12.3, -6.7 and -0.4 mmHg, for HGW, WLK and CON groups respectively. DBP was reduced by -6.4, -3.3 and -0.2 mmHg and MAP by -3.3, -2.2 and -0.2 mmHg. Whilst all changes in the HGW and WLK groups were significant (P<0.05), there were no significant changes in any of the resting blood pressure measured in the control group.

Discussion

The results indicate that combining walking with simultaneous handgrip isometric exercise, caused greater reductions in resting SBP, DBP and MAP, than walking only. The magnitude of the changes in the HGW group are substantially greater than those observed in previous walking only studies (7.4-1.9 mmHg; Murphy et al. 2007) despite a considerably shorter training intervention. The reductions are also greater than many of the previous studies involving handgrip only training in normotensive participants (McGowan et al. 2007). These sizeable reductions in resting BP emphasise the antihypertensive potential of simultaneous combined exercise training especially since they are evident even in individuals whose BP is considered to be in the normal range.

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