American Society of Exercise Physiologists
2nd Annual Meeting, 1999
Abstract # __16___ Submission Category and Topic: __Research - Professional__

Walking Intensity for Cardiorespiratory Fitness in Aged 40-59 yr. Males.

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Introduction: The purpose of this study was to investigate the walking intensity for cardiorespiratory fitness in aged 40-59 yr. males. **Methods:** Sixty-nine healthy subjects, each subject performed a maximal aerobic power test while level walking on treadmill and a 1600 m run/walk field test. **Statistics:** Data for VO_2, HR, and walking velocity were compared by Pearson's product-moment correlation. The interaction of age and weight bears tested by two-way ANOVA. Stepwise multiple regression analyses were used to explain the VO_{2max} predicted formula from the factors of age, weight, height, and 1600m-run/walk performance. **Results:** The maximal oxygen uptake elicited during free level walking was 32.97±4.64 $ml \cdot kg^{-1} \cdot min^{-1}$, while the weight bearing, 33.87±4.61 $ml \cdot kg^{-1} \cdot min^{-1}$. Maximal heart rate was complied with the formula of 220–age. There was a 3-4% increase in cardiorepiratory response due to weight bearing. The interaction between Age and weight bearing were not significant in the different walking intensity of oxygen uptake. Age differences carried a main effect below 100 m/min, and the effect of weight bearing in cardiorespiratory response demonstrated itself especially over 60 m/min. Within walking speed of 60-100m/min, the subjects of 40-49yr males must increase walking speed as 10m/min more than 50-59 males, so that they can reach the same oxygen uptake. In the same speed, weight bearing with 3.5kg could increase 3-4% oxygen uptake.

Descriptive characteristics of study group by variables

Age	*Samples*	*Treatment*	*HR_{max}*	*$V_{E\ max}$*	*$VO_{2\ max}$*
40-49	47	Free walking	175.26±10.57	74.95±15.04	33.37±4.87
		Weight bearing	176.02±09.91	77.71±17.36	34.25±4.83
50-59	22	Free walking	166.77±11.93	70.19±12.12	32.13±4.10
		Weight bearing	169.09±10.22	70.34±11.53	33.06±4.07
Total	69	Free walking	172.55±11.64	73.43±14.26	32.97±4.64
		Weight bearing	173.81±10.46	75.36±16.03	33.87±4.61

Multiple regression analysis for $VO_{2\ max}$

$VO_{2\ max}$ Predictors	*Multiple regression Formula*	*r*	*r^2*	*F-value*
Free Walking	$y = 72.13 - 0.106 \times Age - 0.047 \times H. - 0.122 \times W. - 0.033 \times 0.66^{*} Time^{\bigstar}$	0.44		7.27*
Weight Bearing	$y = 83.59 - 0.048 \times Age - 0.153 \times H. - 0.021 \times W. - 0.037 \times 0.73^{*} Time^{\bigstar}$	0.53		10.32*

★ ***Time: 1600 m run/walk performance*** * ***P < .05***

Discussion: It was concluded that cardiorespiratory fitness for those aged 40-59 yr would be influenced by age, weight bearing and walking speed. The recommended training intensity for health benefit is 60-100 m/min. For improving cardiorespiratory fitness, the intensity at least 100-120 m/min is required. The predicted validity of $VO_{2\ max}$ through the 1600m run/walk was low. More appropriate prediction remains to be studied. We recommended training intensity for health benefit is 60-100 m/min. For improving cardiorespiratory fitness, the intensity at least 100-120 m/min is required. The predicted validity of VO_{2max} through the 1600m-run/walk was low. More appropriate prediction remains to be studied. **Reference: 1.** Butts, N. K. et al. *Med Sci Sports Exerc. 27(1)*, 121-125, 1995. **2.** Duncan, J. J. et al. *J Am Med Assoc. 266(23)*, 3295-3299, 1991. **3.** Ebbeling, C. et al. *J Cardiopul Rehabilitation. 8*, 400-406, 1988. **4.** Rodgers, C. D. et al. *Med Sci Sports Exerc. 27(4)*, 607-611, 1995.