Table G2.A9. Summary of Studies That Examined Effects of Accumulation (Daily Bouts) of Exercise on Cardiorespiratory Fitness and Other Cardiovascular Health Outcomes (11)

Study	Comparison	Conclusions	Population
DeBusk RF, Am J Cardiol 1990 (1)	Groups: – 1 x 30 minutes – 3 x 10 minutes 65-75% HR peak 8-week intervention	Peak VO_2 increased significantly in each group; 13.8% and 7.5%. 1 x 30 improved significantly more vs. 3 x 10.	18 Men each group; 51 and 52 years of age Randomized No control group
Macfarlane DJ Prev Med 2006 (2)	Groups: – 1 x 30 minutes, 3-4 days/ week at 5-6 MET level – 6 x 5 minutes, 4-5 days/ week at 3-4 MET level 8-week intervention	Peak VO_2 increased significantly in each group; 7.4% and 5.3% BUT not directly measured (estimated from Astrand formula)	50 Subjects 35-60 years of age Randomized No control group
Woolf-May K Health Educ Res 1999 (3)	3 walking groups: – 20-40 minute bouts – 10-15 minute bouts – 5-10 minute bouts – control group All groups walked 200 minutes/ week at 70-75% predicted VO_2 max 18-week intervention	All walking groups showed similar improvements in fitness by lactate and HR. VO_2 not measured.	56 Subjects (19 men, 37 women) Age 40-66 years
Murtagh EM Prev Med 2005 (4)	Groups: – 1 x 20-minute walk – 2 x 10-minute walk 3-5 days/week for 12 weeks at “brisk” pace	Do not report peak VO_2, but state that HR decreased at submax stages more in 1 x 20 minutes vs. 2 x 10 minute group	48 Subjects (31 women, 17 men) Age 45.7 ± 9.4 years Randomized Control group
Osei-Tutu KB Prev Med 2005 (5)	Groups: – 1 x 30 minutes – 3 x 10 minutes – Control 60-80% HRmax 8-week intervention	Peak VO_2 increased 7.2% in 3 x 10 and 6.7% in 1 x 30 group. Both significantly better than control and significantly better pre – post, but not different from each other.	40 Subjects (21 men, 19 women) Randomized 20-40 years of age
Murphy MH Med Sci Sports Exerc 1998 (6)	Groups: – 1 x 30 minutes walking – 3 x 10 minutes walking – Control 5 days/week at 70-80% HRmax 10-week intervention	Both walking groups increased peak VO_2 vs. controls (2.3% and 2.4%).	34 Women Randomized 31-57 years of age

Table G2.A9. Summary of Studies That Examined Effects of Accumulation (Daily Bouts) of Exercise on Cardiorespiratory Fitness and Other Cardiovascular Health Outcomes (11) (continued)

Study	Comparison	Conclusions	Population
Jakicic JM JAMA 1999 (7)	Groups: – 1 x 40 minutes – 4 x 10 minutes 5 days/week for 18 weeks	– Only submax CPX, then used to extrapolate peak – At 6 months both groups improved predicted VO_2 max by 18.9% and 9.5%, which was also different between the groups.	148 women Randomized 25-45 years of age
Murphy MH Med Sci Sports Exerc 2002	Groups: – 1 x 30 minutes – 3 x 10 minutes 5 days/week at 70-80% peak HR 6-week intervention	No direct VO_2 measure, predicted by field test Both groups increased predicted peak VO_2. But 3 x 10 improved more (14.2% vs. 3.8%).	21 Subjects (14 women, 7 men) No control Randomized, cross-over design 44.5 years of age
Schmidt WD J AM Coll Nutr 2001 (8)	Groups: – 1 x 30 minutes – 2 x 15 minutes – 3 x 10 minutes – Control 3-5 days/week at 75% HRR for 12 weeks	All groups increased peak VO_2, but no difference between groups (11%, 10%, 7%).	48 Overweight college females (BMI >28) Non-randomized design
Thomas DQ J Strength Cond Res 2001 (9)	Groups: – 1 x 30 minutes walking – 3 x 10 minutes walking – Control 3 days/week for 12 weeks at 50-60% predicted HR max	Neither exercise group improved peak VO_2.	18 College students Randomized design
Quinn TJ J Strength Cond Res 2006 (10)	Groups: – 1 x 30 minutes – 2 x 15 minutes 4 days/week for 12 weeks at 70-80% of HRR	VO_2 max increased 4.5% in 1 x 30 and 8.7% in 2 x 15 group.	37 Subjects (20 men, 17 women) age 48.8 ± 9 Randomized design No control

CPX, cardiopulmonary exercise testing; HR, heart rate; HRR, heart rate reserve; MET, metabolic equivalent

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