

Self-Selected Intensity of Four Different Modes of Aerobic Exercise in Sedentary Adults

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The prescription of self-selected intensity (SSI) exercise has shown promise as a method to increase physical activity and cardiorespiratory fitness. SSI allows control over the exercise stimulus, promotes positive affect, and is often an intensity known to induce health-fitness benefits. **PURPOSE:** To compare SSI between Treadmill, Elliptical, Upright Cycle, and Recumbent Cycle exercise in sedentary adults (<90 min of aerobic activity per week).

METHODS: Eight subjects (6 w, 2 m; 33 ± 10 yr, VO_{2max} : 36 ± 7 ml·kg⁻¹·min⁻¹) completed five submaximal exercise trials on separate days. The first four, one trial per mode completed in random order, were 30-min each: 5 min warm-up, 20 min SSI, 5-min cool-down. Oxygen consumption (VO_2 ; ParvoMedics) and heart rate (HR; Polar) were monitored continuously. Ratings of perceived exertion (RPE; OMNI Scale) and affective responses (AR; Feeling Scale) were collected every 5 min. The fifth trial was a submaximal graded treadmill test to predict VO_{2max} . The mean values from the 20-min SSI were compared between modes using repeated-measures ANOVA. Pairwise comparisons were performed using Bonferroni corrections for significant ANOVAs. **RESULTS:** ANOVAs were significant for VO_2 ($F_{3,21}=12.81$, $p<.05$), % VO_2 Reserve ($F_{3,21}=6.41$, $p<.05$) and Kcal ($F_{3,21}=7.43$, $p<.05$). For each, Treadmill was significantly greater than Recumbent Cycle.

| | Treadmill | Elliptical | Upright Cycle | Recumbent Cycle |
|--|------------|------------|---------------|-----------------|
| VO_2 (ml·kg ⁻¹ ·min ⁻¹) | 21.9 ± 6.0 | 21.1 ± 5.7 | 17.6 ± 5.4 | 16.5 ± 3.2* |
| % VO_2 Reserve | 58 ± 18 | 55 ± 13 | 43 ± 11 | 41 ± 10* |
| HR (b·min ⁻¹) | 149 ± 19 | 158 ± 17 | 148 ± 16 | 137 ± 16 |
| HR (%APMHR) | 80 ± 9 | 85 ± 7 | 80 ± 9 | 74 ± 9 |
| RPE (Omni Scale) | 5.7 ± 1.8 | 6.2 ± 1.7 | 6.1 ± 1.4 | 5.9 ± 1.2 |
| AR (Feeling Scale) | 2.2 ± 1.8 | 1.1 ± 2.4 | 1.9 ± 2.6 | 2.3 ± 1.9 |
| Kcal (Total Accumulated) | 206 ± 50 | 209 ± 49 | 171 ± 61 | 162 ± 43* |

Data exhibit mean ± SD. *indicates significant difference from Treadmill ($p<.05$).

CONCLUSION: The mean SSI during all four modes of exercise is in line with the ACSM position stand for developing and maintaining cardiorespiratory fitness, which states that subjects with a mean VO_{2max} <40 ml·kg⁻¹·min⁻¹ can improve cardiorespiratory fitness with intensity prescriptions as low as 30% VO_2 Reserve.