EXERCISE INTENSITY AND ENERGY EXPENDITURE ASSESSMENT OF PERFORMING THE CURVES WITH ZUMBA WORKOUT

C Baetge, B Lockard, J Oliver, M Mardock, M Byrd, S Simbo, Y Jung, D Khanna, M Koozehchian, R Dalton, H Kim, J Kresta, C Rasmussen, M Greenwood,
R.B. Kreider Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX 77843

Exercise • Nutrition • Health • Performance
ESNL
Exercise & Sport Nutrition Lab

Abstract

The Curves™ circuit-training program has become a popular form of exercise among middle-aged sedentary women. The traditional program involves performing 30-sec of bi-directional hydraulic-based resistance-exercise on 8 to 13 machines interspersed with 30-sec of low-impact calisthenics to promote recovery for 30-min. We previously reported that this type of exercise program elicited an average exercise intensity of 126±15 b/min which was equivalent to 80% max heart rate, 64 % of heart rate reserve (HRR), and 65±10% of VO_2 max in post-menopausal women (*FASEB J. LB93-94, 2006*); that resistance exercise force production ranged between 45% - 79% of 1RM (*FASEB J. LB93, 2006*); and, women who completed two rotations through the circuit at 70-80% of 1RM using the computerized version of this equipment expended an average of 314±102 kcals (*JSCR. 22(6):A69-70, 2008*). A new version of this program has recently been introduced to add variety to the program which involves performing one-rotation of 1-min resistance exercise bouts at 50% of 1RM followed by 1-min of Zumba® dance exercise. PURPOSE: To compare the exercise intensities of performing the standard (S) and newer version (N) of this program in sedentary women initiating and exercise and weight loss program. METHODS: 19 women (39.5±11 yrs; 86±14 kgs; 45.4±4 % fat; 22.3±4 ml/kg/min peak VO_2; 6.4±1.2 max METS) were familiarized with the S and N versions of the exercise program and participated in a minimum of six training sessions. HR was obtained using a Polar HR monitor while energy expenditure was measured using the CurvesSmart™ exercise equipment. Average HR was obtained during the resistance-exercise and calisthenics portions of the exercise bouts on all subjects. A subset of 8 to 10 subjects were also compared using dependent t-tests on each mode and phase of exercise. RESULTS: Overall, the average HR for the N version workout was 141±10 bpm (77±5% PMHR) and the participants expended 307±47 kcals. The average HR for the S version was 146±15 bpm (81±7% PMHR) and they expended 326±98 kcals. Statistical analysis of the subset of subjects performing both types of training found an average HR of 149±14 bpm in the S group and 143±11 bpm in the N group (p=0.03) which represented 81.6±7% of PMHR in the S group and 78.1±4 % of PMHR in the N group (p=0.08). No differences were seen in energy expenditure between groups (S 333±63; N 307±47 kcals, p=0.38). When exercise intensities were evaluated on each phase of the training program, participants elicited an average heart rate of 149±15 bpm in the S group and 143±13 bpm in the N group (p=0.10) on the resistance exercises (S 81.8±7; N 78.1±5 % PMHR, p=0.22) and 149±13 bpm in the S group and 143±10 bpm in the N group (p=0.02) on the calisthenic/dance phases of the workout (S 81.2±6; N 78.1±4 % PMHR, p=0.053). CONCLUSIONS: Results indicate that both of these types of training methods can increase heart rate to within recommended intensities. The N program elicits slightly lower exercise intensity than the S program. PRACTICAL APPLICATIONS: This type of training elicits exercise intensities that meet recommended guidelines. The newer version of the program resulted in a significantly lower exercise HR with no differences in energy expenditure and therefore can be used to add variety to the traditional version of this exercise program.
ACKNOWLEDGMENTS: This study was funded by Curves International, Waco, TX.

Rationale

The Curves™ circuit-training program has become a popular form of exercise among sedentary women. The traditional program involves performing 30-sec of bi-directional hydraulic-based resistance-exercise on 8 to 13 machines interspersed with 30-sec of low-impact calisthenics to promote recovery for 30-min. We previously reported that this type of exercise program elicited an average exercise intensity of 126±15 b/min, which was equivalent to 80% max heart rate, 64% of heart rate reserve (HRR), and 65±10% of VO_2 max in post-menopausal women (*FASEB J. LB93-94, 2006*); that resistance exercise force production ranged between 45% - 79% of 1RM (*FASEB J. LB93, 2006*); and women who completed two rotations through the circuit at 70-80% of 1RM using the computerized version of this equipment expended an average of 314±102 kcals (*JSCR. 22(6):A69-70, 2008*). A new version of this program has been introduced which involves performing one-rotation of 1-min resistance exercise bouts at 50% of 1RM followed by 1-min of Zumba® dance exercise. The purpose of this study was to compare the exercise intensities of performing the standard (S) and newer version (N) of this program in sedentary women initiating and exercise and weight loss program.

Experimental Design

Subjects

- 19 women (39.5±11 yrs; 86±14 kgs; 45.4±4 % fat; 22.3±4 ml/kg/min peak VO_2; 6.4±1.2 max METS) were familiarized with the S and N versions of the exercise program and participated in a minimum of six training sessions.
- Subjects were informed as to the experimental procedures and signed a consent statement in adherence with the human subject guidelines of Texas A&M University.

Training Protocol

- Participants followed the Curves 30-min hydraulic resistance training circuit program interspersed with callisthenic/dance exercises 3-d/wk.
- They were also encouraged to walk briskly for 30-min a day on non-resistance training days.

Methods & Procedures

- 19 women (39.5±11 yrs; 86±14 kgs; 45.4±4 % fat; 22.3±4 ml/kg/min peak VO_2; 6.4±1.2 max METS) were familiarized with the S and N versions of the exercise program and participated in a minimum of six training sessions.
- HR was obtained using a Polar HR monitor while energy expenditure was measured using the CurvesSmart™ exercise equipment.
- Average HR was obtained during the resistance-exercise and calisthenics portions of the exercise bouts on all subjects.
- A subset of 8 to 10 subjects were also compared using dependent t-tests on each mode and phase of exercise.

Statistical Analysis

- Data were analyzed by dependent t-tests.

Results

- Overall, the average HR for the N version workout was 141±10 bpm (77±5% PMHR) and the participants expended 307±47 kcals.
- The average HR for the S version was 146±15 bpm (81±7% PMHR) and they expended 326±98 kcals.
- Statistical analysis of the subset of subjects performing both types of training found an average HR of 149±14 bpm in the S group and 143±11 bpm in the N group (p=0.03) which represented 81.6±7% of PMHR in the S group and 78.1±4 % of PMHR in the N group (p=0.08).
- No differences were seen in energy expenditure between groups (S 333±63; N 307±47 kcals, p=0.38).
- When exercise intensities were evaluated on each phase of the training program, participants elicited an average heart rate of 149±15 bpm in the S group and 143±13 bpm in the N group (p=0.10) on the resistance exercises (S 81.8±7; N 78.1±5 % PMHR, p=0.22) and 149±13 bpm in the S group and 143±10 bpm in the N group (p=0.02) on the calisthenic/dance phases of the workout (S 81.2±6; N 78.1±4 % PMHR, p=0.053).

Conclusions

- Results indicate that both of these types of training methods can increase heart rate to within recommended intensities. The N program elicits slightly lower exercise intensity than the S program.