Medicine & Science in Sports & Exercise:
May 2010 - Volume 42 - Issue 5 - p 746
doi: 10.1249/01.MSS.0000386163.13678.a9
F-28 Free Communication/Poster - Fitness Assessment and Training II: JUNE 4, 2010 1:00 PM - 6:00 PM: ROOM: Hall C

Bench Height And Step Cadence Effects In Aerobic Dance On Force Impact And Metabolic Cost: 2775: Board #126 June 4 3:30 PM - 5:00 PM

Wilson, Judy R. FACSM; Putman, Dianna H.; Beckham, Sue FACSM; Ricard, Mark D.

Author Information

[1]University of Texas @ Arlington, Arlington, TX. [2]Cooper Aerobics Institute, Dallas, TX.

Email: jrwilson@uta.edu

(No disclosure reported)

PURPOSE: Bench step aerobic (BSA) exercise has been shown to help individuals meet the ACSM recommendations for physical activity through the improvement of body composition, and aerobic capacity in a wide variety of populations. The purpose of this investigation was twofold: to (1) determine the acute metabolic and cardiorespiratory responses of simple bench step aerobics at two cadences (128 and 134 beats·min-1) and two bench heights (6 and 10 inches), and (2) calculate the average vertical ground reaction force (VGRF) and time to peak (TPEAK) at these cadences and bench heights.

METHODS: Twelve subjects reported to the exercise physiology lab three times: (1) prescreening and maximum treadmill testing, (2) two of the four conditions, and (3) the remaining two conditions. Forty-eight hours rest was allowed after the maximal treadmill test and at least twenty-four hours rest between each lab visit before subjecting individuals to the various experimental conditions. At least fifteen minutes was allotted between exercise conditions within each lab visit with the order of testing randomized. The effects of stepping cadences and bench heights on the averages of HR, VO_2, RER, caloric expenditure (kcal·min-1), VGRF, and TPEAK were determined using separate 2 × 2 analysis of variance (ANOVA) with repeated measures.

RESULTS: There were significant differences between bench height and cadence for all dependent variables (TPEAK, KCAL, and VGRF). No significant interactions were found for any dependent variables. Caloric expenditure increased from of 6.85 ± 1.36 kcal·min-1 to 8.15 ± 1.97 kcal·min-1 for the 6 and 10 inch bench heights, respectively. Impact force increased from 1.62 ±.18 BW to 1.96 ±.23 BW for the 6 and 10 inch bench heights, respectively.

CONCLUSIONS: Bench step aerobics is an effective, low-intensity aerobic activity. Intensity modifications may be made through both the cadence of the music and bench height. However, additional research is necessary to determine each individual's threshold for beneficial training adaptations and increased injury risk.