

Comparative Analysis of Heart Rate During Circuit Training with Different Cardiovascular Training Apparatus

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The American College of Sports Medicine (ACSM) recommends that adults achieve 30 minutes of moderate intensity aerobic exercise on most days of the week. This exercise can take a number of forms, such as elliptical training and treadmill running. However, another method of aerobic exercise is repetitive jumping. A proprietary machine (the Digi-Jump) has been developed enabling one to jump at a defined cadence and height. While it is known that repetitive jumping is an effective form of aerobic exercise, it is difficult for most people to maintain this type of activity for more than 5 – 10 consecutive minutes. Thus, interspersing short bouts of repetitive jumping into a circuit-training program may be an effective means of achieving the recommended volume of daily aerobic exercise. **PURPOSE:** The purpose of this investigation was to compare individuals' heart rate during treadmill and elliptical training with that observed from circuit training interspersed with repetitive jumping exercise. It was hypothesized that combining short, intermittent bouts of repetitive jumping would be a viable alternative to these other forms of cardiovascular exercise. **METHODS:** Five recreationally trained subjects (three males and two females) performed three thirty-five minute exercise protocols. Two of these consisted only of cardiovascular exercise (one on a treadmill and one on an elliptical machine), while the third protocol was a resistance and cardiovascular circuit, consisting of three upper-body and two lower-body exercises, preceded by and interspersed with four minute bouts of repetitive jumping exercise. Each resistance exercise was performed for three sets, and each set was performed for thirty seconds followed by a thirty second rest period (a 1:1 work:rest ratio). The repetitive jumping was designed so that each subject jumped at a defined cadence (120 jumps per minute) and at a defined minimum height per jump (1/2"). Heart rate was monitored throughout the treadmill and elliptical exercise sessions, as well as throughout the entire circuit training session that included the jumping exercise. **RESULTS:** Data indicated that there was no difference in heart rate for all subjects across all three conditions ($p=.41$), nor was there a difference across conditions for each gender (males: $p=.38$; females: $p=.23$). **CONCLUSIONS:** These results demonstrated that there was no difference in heart rate when completing intermittent repetitive jumping exercise interspersed with a circuit training program, when compared to those heart rates observed from continuous treadmill or elliptical exercise. This illustrates that when combining this type of exercise with resistance training, one may derive the required daily aerobic benefit from a circuit-training program that includes short bouts of repetitive jumping exercise.