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Are Cycling and Running Comparable Metabolic Physical Activities?

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Many athletes and those participating in exercise experience injuries or pain that requires them to switch to another mode of exercise. This is especially true for runners who experience the most amount of joint degradation. The goal of this project was to test whether or not the substitution of cycling could be comparable to running when examining the metabolic aspect of exercise. The measurements taken were heart rate and metabolic rate (oxygen consumption; VO_2) every three minutes of a ten-minute test for light and moderate intensities of each mode of exercise. I hypothesized that that moderate intensity cycling would be comparable to moderate intensity jogging, due to the participant self selection of resistance on the bike and speed on the treadmill to match a rate of perceived exertion of light or moderate intensity. The scale for the rate of perceived exertion, RPE, ranges from 6 to 20, with 6 or 7 being sitting and relaxing watching television and 18 or higher running from a bear. For light intensity I chose an RPE of 11 and for moderate intensity I chose an RPE of 13.

After testing six subjects ages eighteen to twenty-three, the average heart rate and VO_2 for each mode and intensity were taken. Heart rate and VO2 for light cycling were both lower than for light jogging, suggesting that self selected exercise intensity for the two modes are not equivalent. For moderate cycling and moderate jogging the heart rate is very similar and within five beats per minute on average. Moderate cycling is most comparable to light jogging in terms of VO_2, but it is also relatively close to that of moderate jogging. This means that if switching from light jogging to cycling, the athlete should switch to moderate intensity to maintain similar cardiovascular and metabolic benefits. The simplest way to go about this at home is to know your heart rate when running and try to match that if a moderate intensity runner, or if a light intensity runner to increase your heart rate by approximately 5 to 10 beats per minute.