

### Effect of cadence to determine critical power using non- exhaustive protocol in cycle ergometer #44

Wellington de Sousa Assis<sup>1,2</sup>, Gustavo Gomes de Araujo<sup>1</sup>, Ivan Gustavo Masselli dos Reis<sup>1</sup>, Álvaro Luis Pessoa de Farias<sup>1,2</sup>, Claudio Luiz de Souza Meireles<sup>1,2</sup>, Claudio Alexandre Gobatto<sup>1</sup>.

<sup>1</sup>Laboratory of Sport Applied Physiology, Sao Paulo State University, UNESP-IB, Rio Claro SP, Brazil; <sup>2</sup>State University of Paraiba, UEPB, Campina Grande PB, Brazil.

E-mail: [fwrban@gmail.com.br](mailto:fwrban@gmail.com.br)

In cycling the exercise power (w) is a product of cadence (rpm) and kilopounds (kp). The purpose of this study was to check the pedaling frequency influence on critical power (CP) determined using non-exhaustive aerobic capacity test (Chassain, 1986). Adult men (n=2) were submitted to four powers (100, 120, 130 and 150 w) in two different cadences (40 and 70 rpm) in cycloergometer (Monark 894 E). Two exercise bouts lasting 180 seconds by 90 seconds of interval were performed at an equal intensity. For each intensity, delta heart rate ( $\Delta$ HR) was determined by subtraction of the maximum heart rate (MHR) at the end of the first effort from the MHR at the end of the second effort ( $\Delta$ HR= MHR 2 - MHR 1). Individual linear interpolation of  $\Delta$ HR enabled determination of a "null"  $\Delta$  equivalent to the CP. The mean value of CP at 70 rpm was  $83.8 \pm 22.5$  W while the CP at 40 rpm was  $100.2 \pm 8.4$  Watts. The mean value of CP at 40 rpm was 17% higher than at 70 rpm. The cadence can be decisive to determine the CP using non-exhaustive protocol.

**Key words:** cadence, heart rate, critical power, non-exhaustive.