To The Editor:

We agree with Beck et al. (1) that aerobic energy expenditure has the potential to provide a superior prediction of performance thanV ˙ O2 alone, due to the consideration of energy yield per liter of O2. Therefore, given our interest in cycling efficiency and the fact that Beck et al. (1) use hypothetical data within their Viewpoint, we decided to test their proposition using data we collected in a previous study (2).

Our study investigated the relationship between cycling efficiency and 1 h cycling time trial performance in trained cyclists. Within our study we also measured lactate threshold using an incremental cycling test. Using this data and the E ˙ aero equation provided by Beck et al. (1), we sought to predict our cyclist's 1 h time trial performance from both the V ˙ O2 (ml O2·kg 1·min 1) at LT, and aerobic energy expenditure. E ˙ aero (J/ml O2) was significantly positively correlated with mean 1-h cycling time trial performance (239 39 W; r 0.71; P 0.007), explaining ~51% of the variation between cyclists. However, in our data,E ˙ aero was not able to predict performance to any greater extent than theV ˙ O2 at LT (r 0.73; P 0.005), explaining ~53% of the variance. Therefore, although we agree with the approach taken by Beck et al. (1) and support the view that aerobic energy expenditure might be a better measure of exercise intensity and endurance performance, our data do not support the proposition that it provides a better prediction of performance than V ˙ O2 at LT.

References

1. Beck ON, Kipp S, Byrnes WC, Kram R. Viewpoint: Use aerobic energy expenditure instead of oxygen uptake to quantify exercise intensity and predict endurance performance. J Appl Physiol (1985). doi:10.1152/japplphysiol.00940.2017.

2. Hopker JG, Coleman DA, Gregson HC, Jobson SA, Von der Haar T, Wiles J, Passfield L. The influence of training status, age, and muscle fiber type on cycling efficiency and endurance performance. J Appl Physiol (1985) 115:723729,2013.doi:10.1152/japplphysiol.00361. 2013.