Authors' Response

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We would like to thank Pettitt and colleagues (10) for their comments regarding our review on the different methods for calculating critical power (CP) and *W'*. The main criticism from Pettitt et al. (10) reflects on our conclusion that the 3-min all-out test (3MT) should be interpreted with 'a degree of caution' (7).

We agree that *W'* exhibits a large variability irrespective of the method used to determine this parameter, although this may be reduced in certain testing conditions (12). We also appreciate that several studies have reported a good agreement between 3MT and the 'Gold Standard' approach for both CP and *W'*. Crucially, however, others have reported that the 3MT may overestimate CP (4). This seems to occur primarily as fitness levels increase (1), in turn affecting the predictions of time-trial performance (9).

The 3MT may be able to differentiate the upper boundary of steady-state exercise (see for example (5)). However, other studies have shown that during exercise at 3MT-determined CP, physiological responses may not reach a steady state (3). Furthermore, exercise at CP can typically be sustained in excess of 20 min, but when CP is determined from the 3MT, task failure has been shown to occur after ~12.5 min (2).

Pettitt et al. (10) questioned whether the attainment of maximum oxygen uptake ($\dot{V}O_{2max}$) should be implemented as a test criterion for the 3MT as the test benefits from being a time-efficient test (as opposed to the more time-consuming conventional approach). We acknowledge that veryfing $\dot{V}O_{2max}$ may compromise the strength of this aspect of the 3MT. However, if the option is available, we encourage a $\dot{V}O_{2max}$ attainment verification. Pettitt et al. (10) highlighted that a verification bout following the ramp test may be required to determine a 'true' $\dot{V}O_{2max}$ (11), so the attainment of $\dot{V}O_{2max}$ during the 3MT can be confirmed. However, as $\dot{V}O_2$ should theoretically reach $\dot{V}O_{2max}$ during the 3MT (5,14; cf. 13), it is plausible to use the 3MT as the verification bout.

In summary, we do not advocate that the 3MT should not be used. Indeed, the test offers a time-saving alternative to estimate CP and *W'* where other protocols may be cumbersome (e.g. 6,8). However, reflecting on the strengths but also on the limitations of the 3MT, we would like to uphold our conclusion that the 3MT should be interpreted with a degree of caution, particularly in elite athletes.

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