



INTRODUCTION

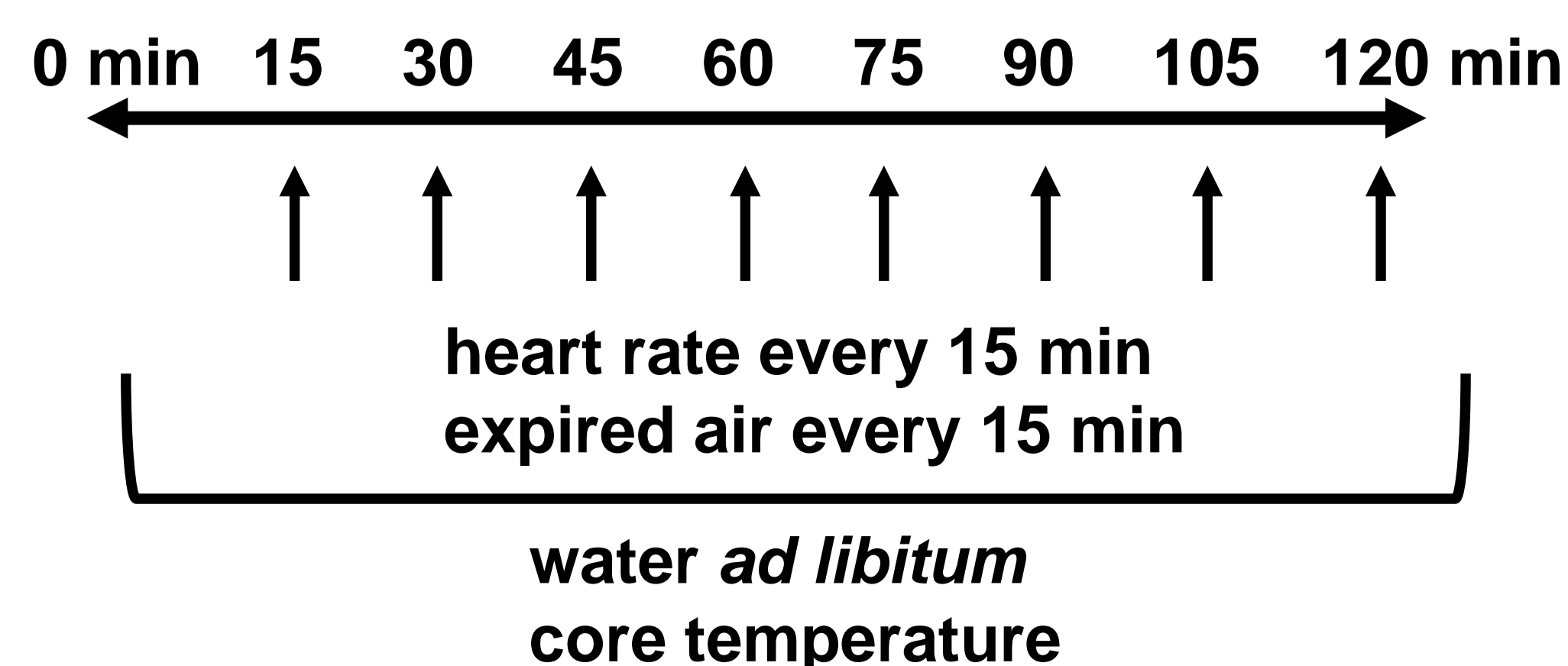
Physical training for ultra-endurance running provides physiological adaptations for exercise-induced substrate oxidation. Previous studies have shown enhanced exercise-induced fat oxidation with intake of New Zealand blackcurrant (NZBC) extract, i.e. in recreationally active males during 30-min walking at 5-MET [1] and endurance trained males during 120-min of cycling at 65% $\dot{V}O_{2max}$ [2].

AIM

We examined primarily the effects of 7-day intake of anthocyanin-rich NZBC extract on the running-induced metabolic responses in a male amateur ultra-endurance runner.

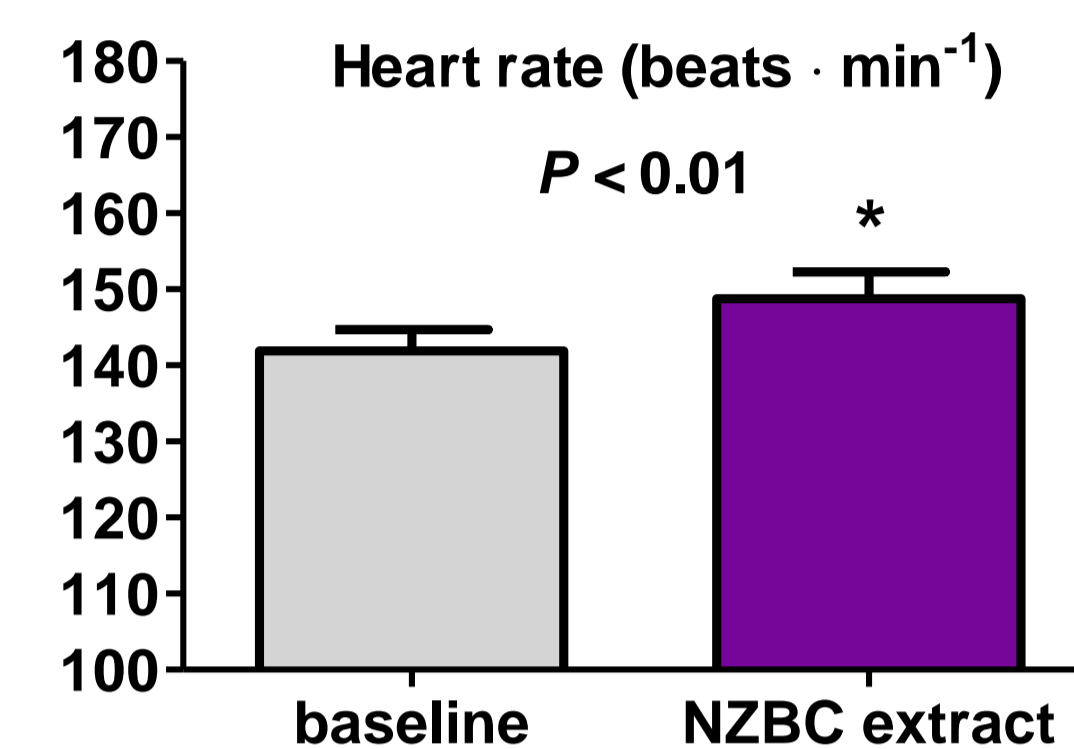
METHODS

One amateur male ultra-endurance runner volunteered (age: 40 yr, body mass: 65.9 kg, BMI: 23.1 kg·m⁻², body fat: 14.7%, $\dot{V}O_{2max}$: 55.3 mL·kg⁻¹·min⁻¹, resting heart rate: 45 beats·min⁻¹, running history: 6 years, marathons: 20, ultra-marathons: 28, weekly training distance: ~80 km, weekly running time: ~9 hours). Indirect calorimetry (Douglas bags) was used and heart rate recorded at 15-min intervals during 120-min of treadmill running (speed: 10.5 km·hr⁻¹, 58% $\dot{V}O_{2max}$) in an environmental chamber (temperature: 26°C, relative humidity: ~70%) at baseline and following 7-days intake of NZBC extract (210 mg of anthocyanins per day) [CurraNZ®, Health Currancy Ltd (Surrey, UK), CurraNZ Ltd (NZ)] with monitoring of core temperature. The male runner had unlimited access to water and consumed a 100-kcal energy gel at 40- and 80-min. Testing was in between participation in 100 mile running events. Substrate oxidation was calculated with corrections for inspiratory oxygen and carbon dioxide fractions.

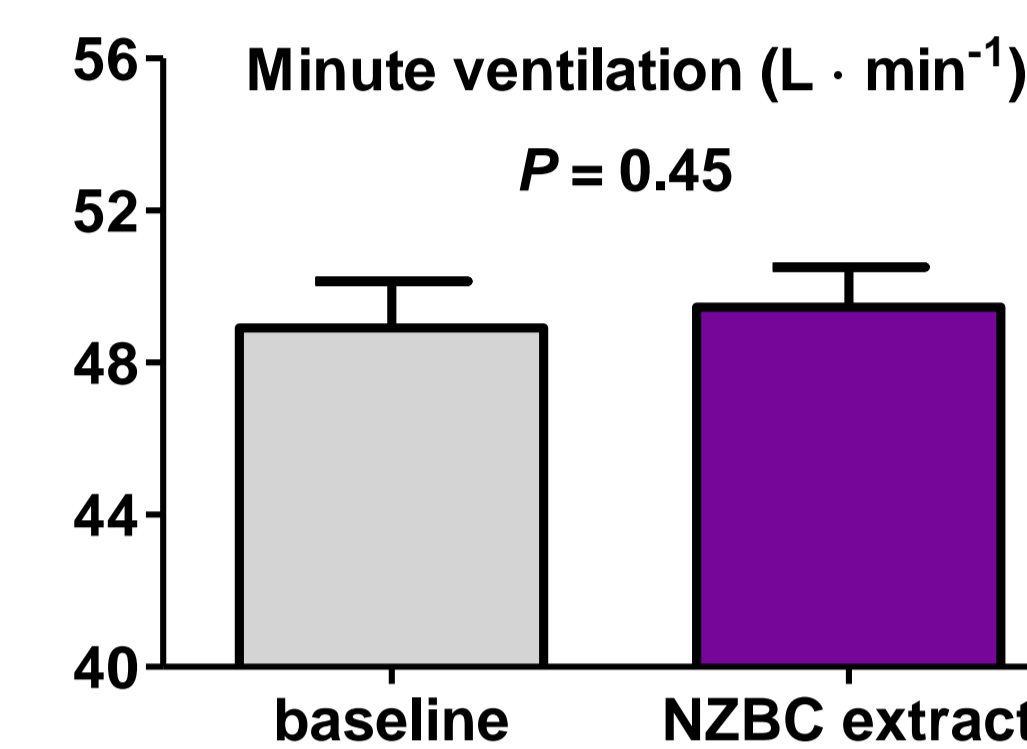


RESULTS

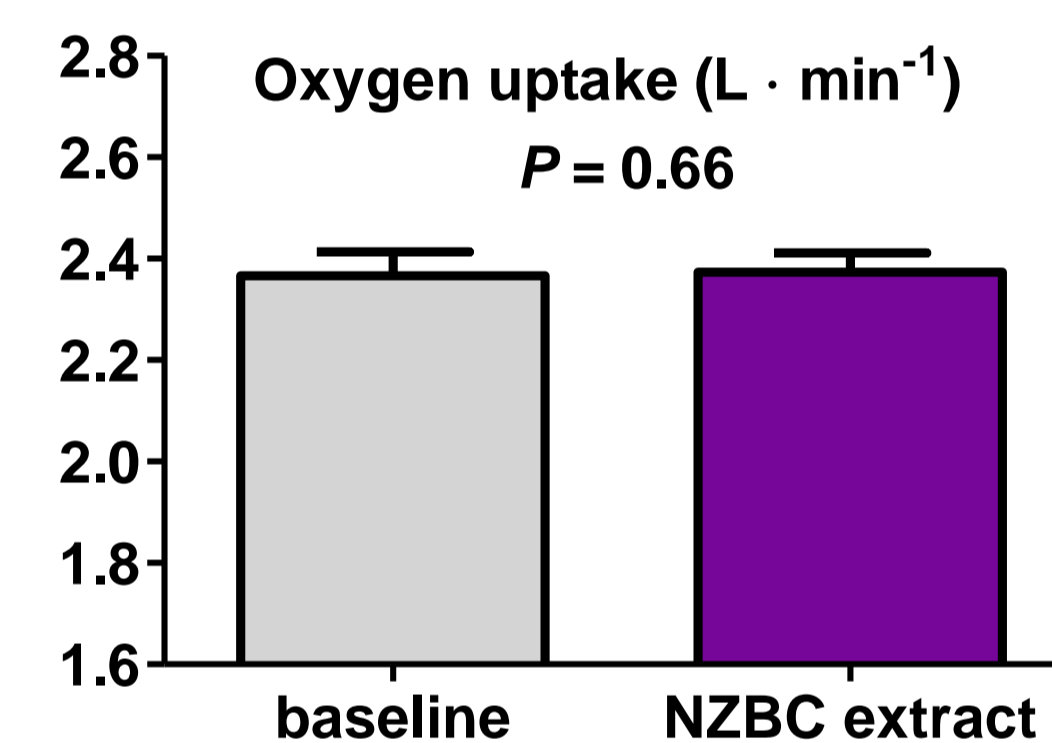
Water intake during 2 hr of running was 518 and 464 mL in both conditions



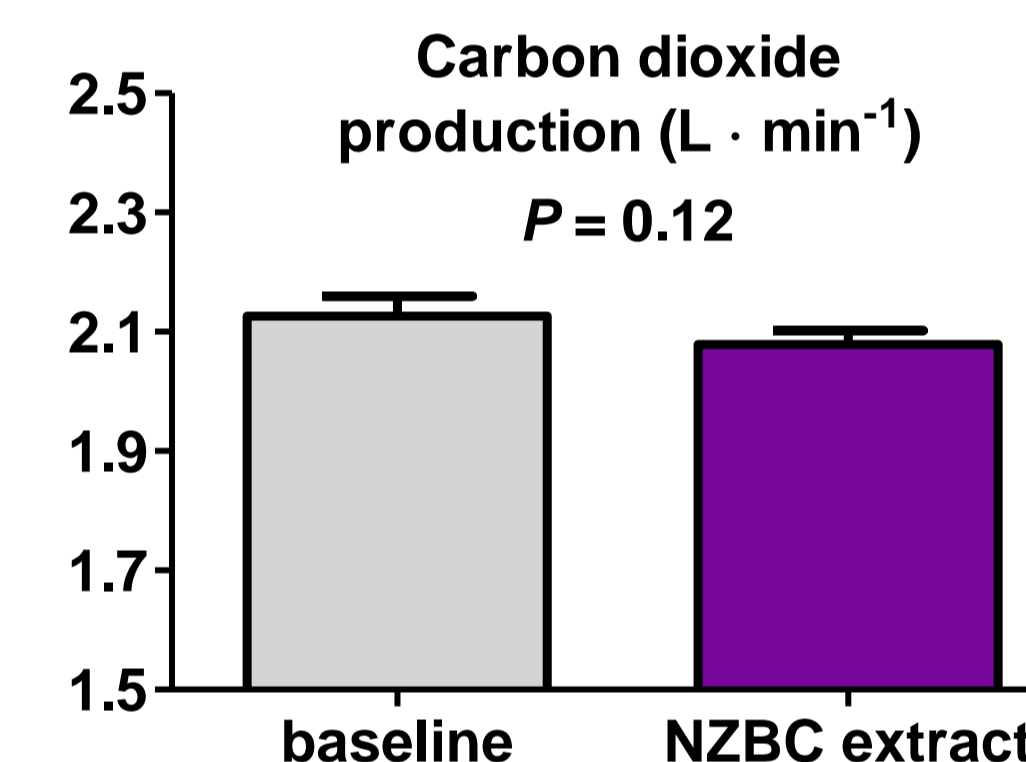
Heart rate was 7 beats·min⁻¹ higher in the NZBC extract condition



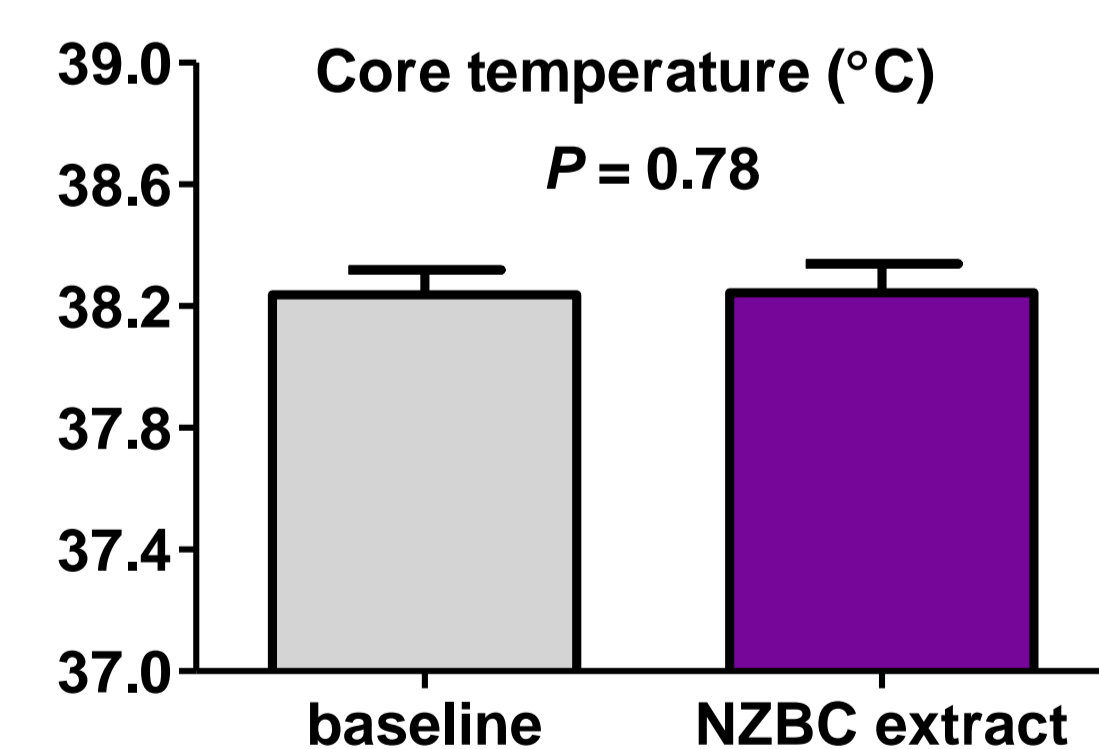
Minute ventilation was similar in both conditions



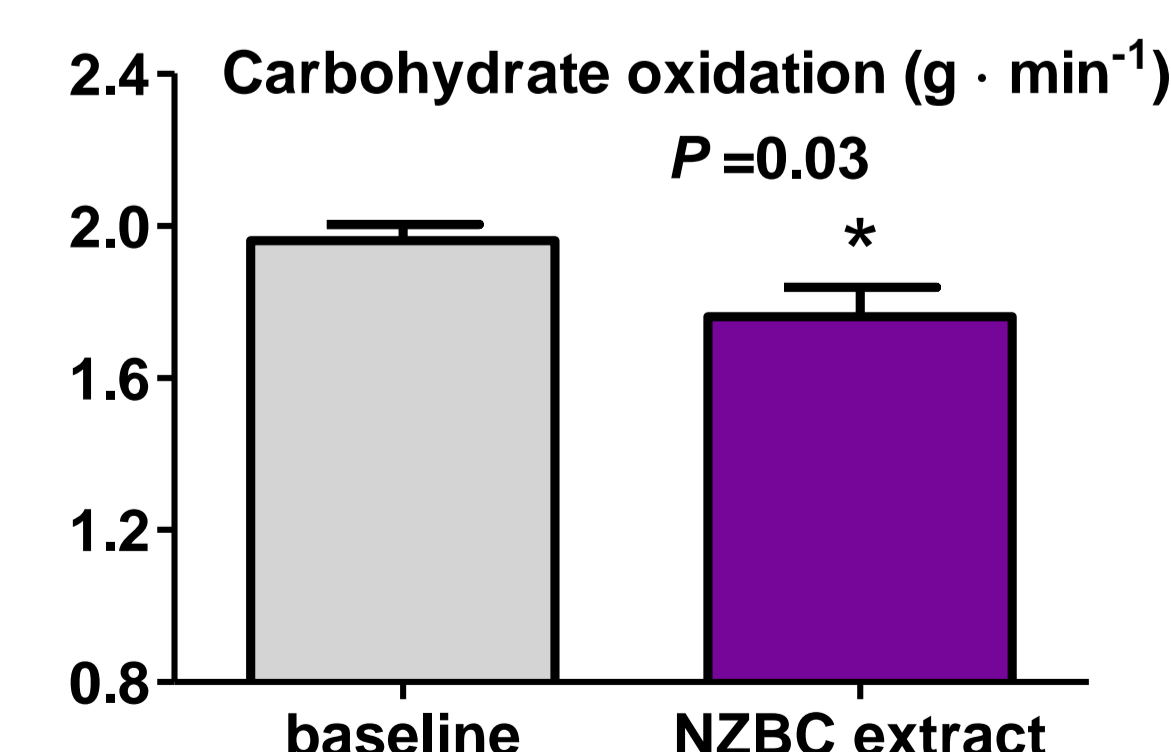
Oxygen uptake was similar in both conditions



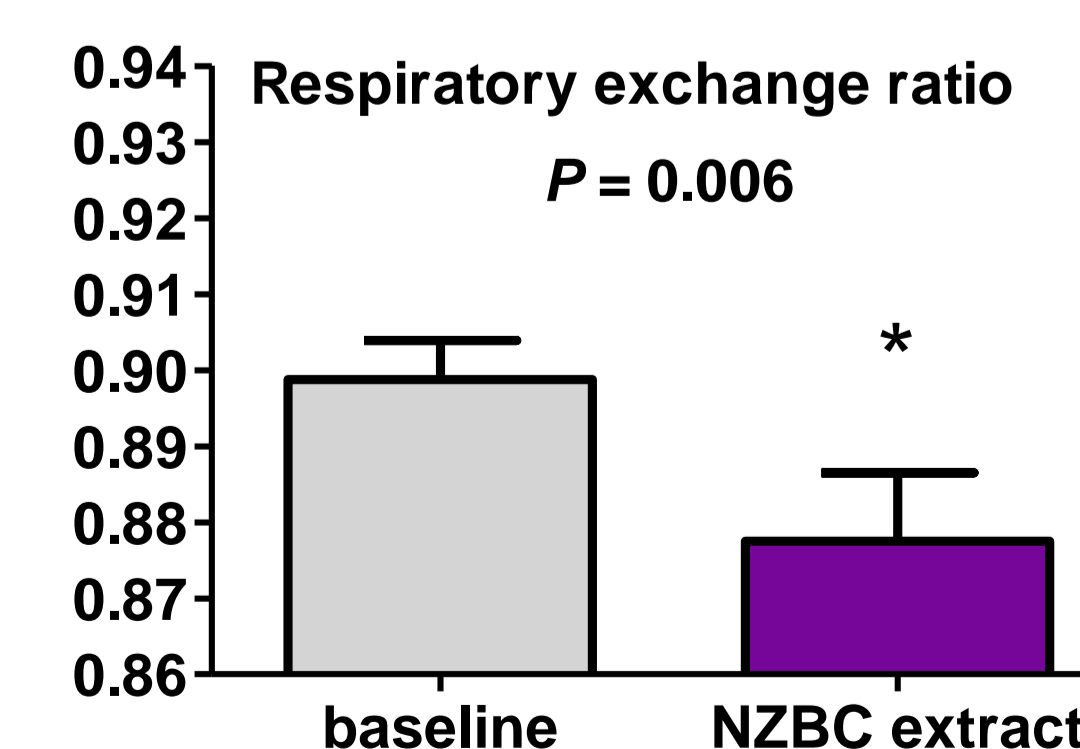
Carbon dioxide production was similar in both conditions



Core temperature was similar in both conditions

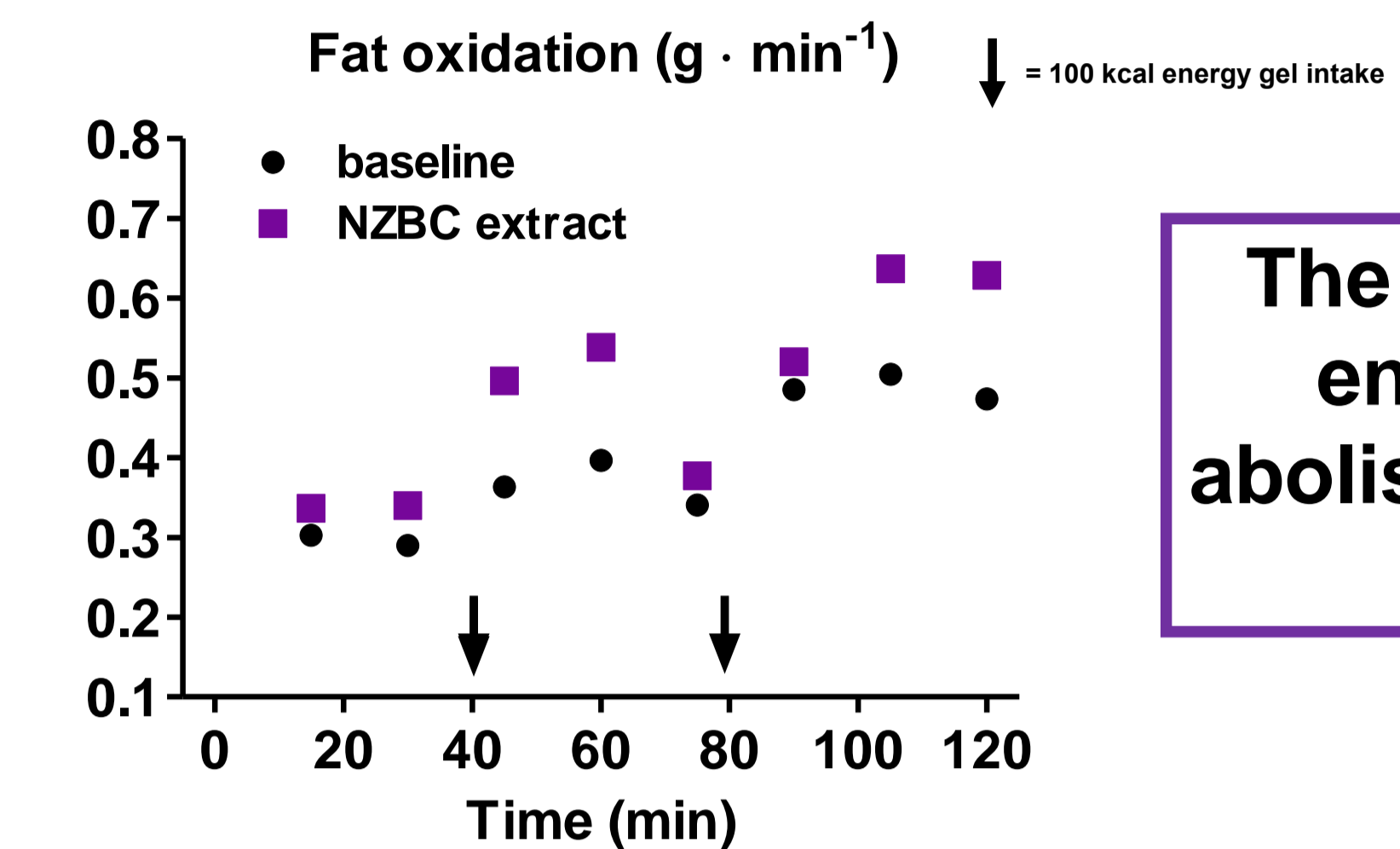


NZBC extract provided lower carbohydrate oxidation

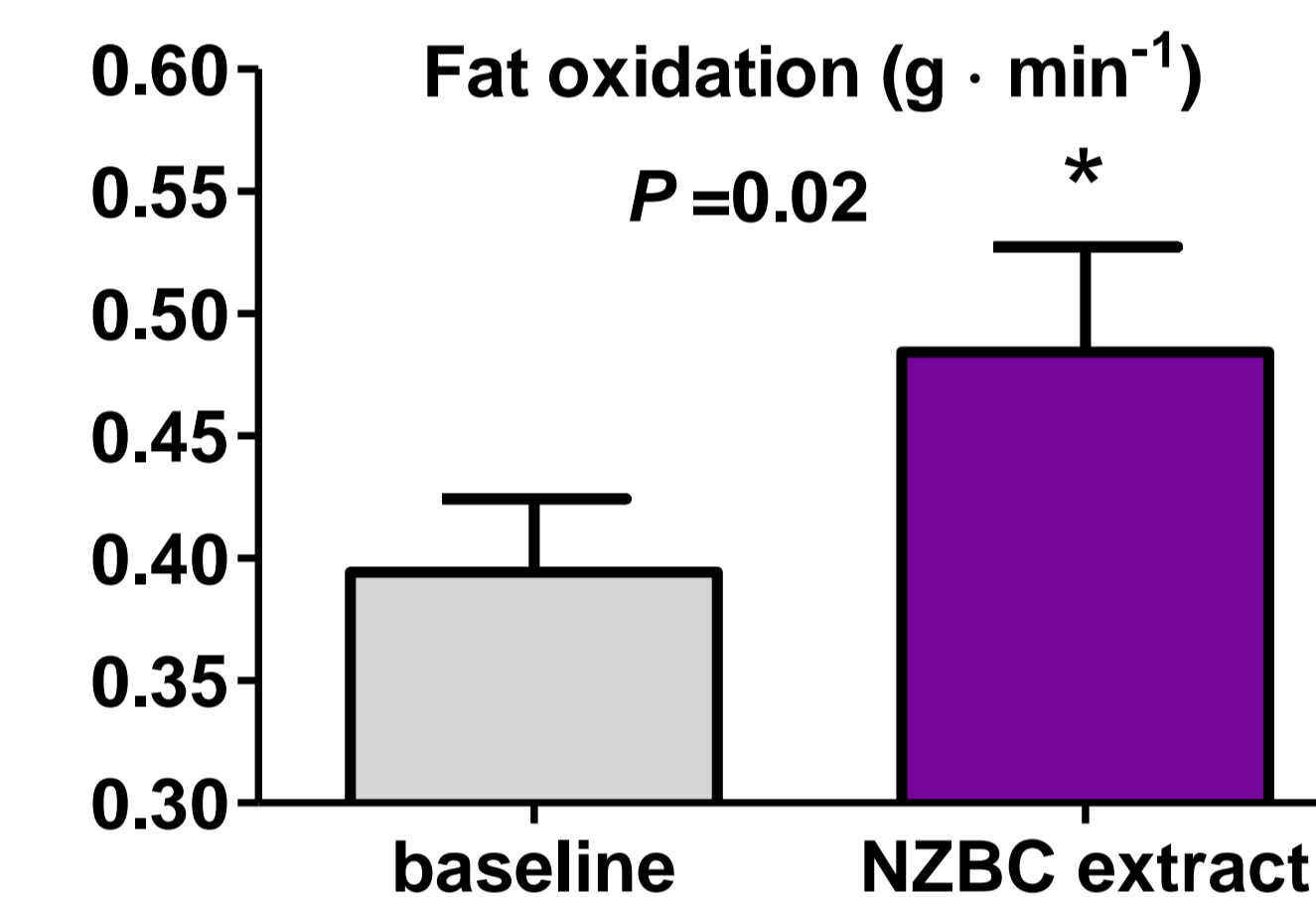


NZBC extract provided lower RER values

RESULTS CONT'D



The intake of 100 kcal energy gel did not abolish the enhanced fat oxidation



NZBC extract provided higher fat oxidation by 23% during a 2-hr run

CONCLUSION

7-day intake of New Zealand blackcurrant extract alters substrate oxidation during running in an ultra-endurance athlete.

APPLICATION

New Zealand blackcurrant extract may be useful for ultra-endurance activities to spare glycogen and enhance performance.

REFERENCES

- [1] Şahin MA, Bilgiç P, Montanari S, Willems MET. Intake duration of anthocyanin-rich New Zealand blackcurrant extract affects metabolic responses during moderate intensity walking exercise in adult males. *Journal of Dietary Supplements*, 18(4), 406-417, 2021.
- [2] Cook MD, Myers SD, Gault ML, Edwards VC, Willems MET. Dose effects of New Zealand blackcurrant on substrate oxidation and physiological responses during prolonged cycling. *European Journal of Applied Physiology*, 117(6), 1207-1216, 2017.

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