

LACTATE PROFILE REPORT · 2024

Lactate *Profile*

Your individual lactate response across a stepped incremental test, with training thresholds and intensity bands anchored on the physiology rather than rules of thumb.

ATHLETE	SPORT / DISCIPLINE	TEST DATE	TEST PROTOCOL
Billy Bob	Road Cycling	12 June 2024	Incremental $\dot{V}O_2$ Max + Lactate

SUMMARY

Headline thresholds

Anaerobic Threshold LT2 · SUSTAINABLE RACE INTENSITY	WORKLOAD 262.7 W	HEART RATE 180 bpm	LACTATE 3.7 mmol/L Piecewise breakpoint 2
AEROBIC THRESHOLD (LT1) 186.5 W 150 bpm · 1.7 mmol/L	OBLA (4 MMOL/L) 270.5 W 183 bpm · fixed-reference marker	MAX HEART RATE 192 bpm Highest HR recorded during the test.	

01 $\dot{V}O_2$ Max: 55.4 mL/kg/min (Excellent band).
Reference comparison drawn from ACSM 11th ed / FRIEND registry male norms, 20–29 age band.

02 LT2: 263 W (180 bpm).
LT2 occurred at 83% of $\dot{V}O_2$ Max. Within typical trained-population values.

03 Training zones — HR max 192 bpm, peak 325 W.
Z1 115–144 bpm · 195–244 W
Z2 144–167 bpm · 244–283 W
Z3 167–182 bpm · 283–309 W
Z4 182–192 bpm · 309–325 W
Watts bands mirror HR-max fractions onto peak power; aerobic base in Z1.

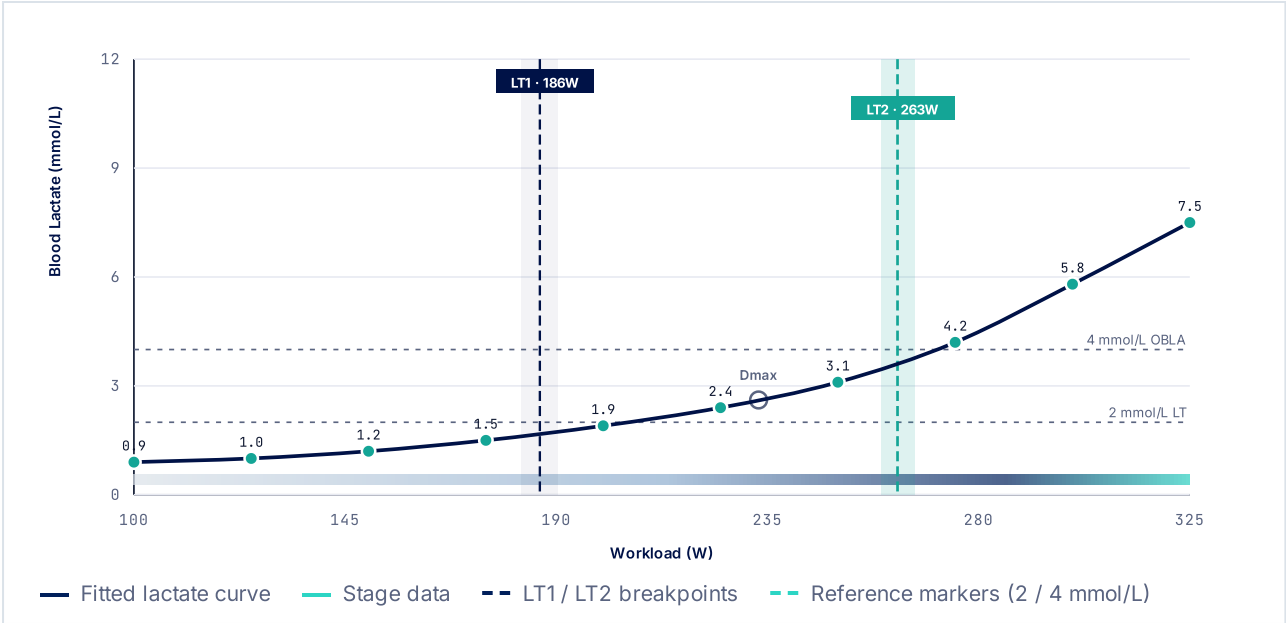
04 Recommended re-test interval: 10–12 weeks.
A follow-up incremental test in this window allows the change in LT1/LT2 power and $\dot{V}O_2$ Max to be quantified.

SECTION 01

Your Lactate Profile

Blood lactate was measured at the end of each stage of an incremental test. The curve below plots your data against workload. As intensity rises, lactate increases — slowly at first, then more steeply once the body relies more heavily on anaerobic energy.

LAB	ERGOMETER	PROTOCOL
TRB 2.32 – Cycle Ergometry Suite	Lode Excalibur Sport	Step ramp · 3 min · stages to volitional exhaustion



1.1 What the curve tells us

Your **aerobic threshold (LT1)** is the first sustained rise in blood lactate above resting levels. It's the highest intensity you can typically hold for 60–90 minutes. Your **anaerobic threshold (LT2)** is the highest intensity at which lactate can still be balanced — usually sustainable for 30–60 minutes. Together they bracket the territory where most endurance training happens.

SECTION 02

Threshold Detail

Several methods are used to identify lactate thresholds. The two we anchor your training on — LT1 and LT2 — come from a curve-fitting analysis of your individual data. Two additional fixed-reference markers (the conventional 2 mmol/L and 4 mmol/L points) plus a curve-shape marker (Dmax) are shown for cross-comparison.

THRESHOLD	WORKLOAD	HEART RATE	LACTATE	METHOD
LT1 (aerobic)	186.5 W	150 bpm	1.7 mmol/L	Piecewise breakpoint 1
LT2 (anaerobic)	262.7 W	180 bpm	3.7 mmol/L	Piecewise breakpoint 2
LT (2 mmol/L)	205.0 W	158 bpm	2.0 mmol/L	FIXED REFERENCE
OBLA (4 mmol/L)	270.5 W	183 bpm	4.0 mmol/L	FIXED REFERENCE
Dmax	233.1 W	170 bpm	2.61 mmol/L	POLYNOMIAL DMAX

Your **LT2** sits at **262.7 W (180 bpm)**. That's the highest intensity you can typically hold for a sustained, threshold-style effort.

2.1 Per-stage data

STAGE	WORKLOAD	HR	LACTATE	RPE
1	100 W	102	0.9	7
2	125 W	118	1.0	8
3	150 W	132	1.2	9
4	175 W	145	1.5	11
5	200 W	156	1.9	12
6	225 W	167	2.4	13
7	250 W	176	3.1	14
8	275 W	184	4.2	16
9	300 W	189	5.8	17
10	325 W	192	7.5	19

SECTION 03

Training Zones

Your training zones are derived from your maximum heart rate of **192 bpm**, with LT1 and LT2 marking the natural intensity boundaries on your curve. Use them to direct your weekly training – most time in Zone 1, harder sessions in Zones 3 and 4, sparingly.

 Z1 — Aerobic (Low)	60–75%	115–144 bpm	<i>30 min – 3 hours</i>
 Z2 — Aerobic (High)	75–87%	144–167 bpm	<i>8 – 60 minutes</i>
 Z3 — Aerobic Maximum	87–95%	167–182 bpm	<i>30 sec – 3 minutes</i>
 Z4 — Anaerobic	95–100%	182–192 bpm	<i>10 – 60 seconds</i>

3.1 Anchoring on the thresholds

- **Below LT1** (186.5 W, 150 bpm) — pure aerobic base. Most weekly volume sits here.
- **LT1 to LT2** (186.5–262.7 W) — tempo / steady-state work. Build sustainability.
- **Around LT2** (262.7 W, 180 bpm) — threshold sessions. Once or twice a week.
- **Above LT2** — $\dot{V}O_{2max}$ / anaerobic intervals. One day a week at most, with full recovery either side.

Re-test guidance. A follow-up lactate test in **21 August – 4 September 2024** will let us see how your thresholds have shifted with training.

CLOSING

Thank you for visiting our laboratory.

Please get in touch if you have any questions about your data, would like a more detailed walk-through of any section, or would like to book a follow-up test later in the year. We're glad to chat.

J. A. Donaldson

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Lead Sport Scientist · Performance Testing

Test confirmed clean and within QA bounds.

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DOCUMENT

Performance Testing Report —
generated 29 May 2026. Internal
reference: PTR-24-06-BILLY-.

CONFIDENTIALITY

This report contains personal
performance data. Please do
not share without the named
athlete's consent.

RE-TEST

Recommended re-test window: **21
August – 4 September 2024**. Book
at testing@ljmu.ac.uk.