VO2 Max Test Report

Name : [redacted]
Date : [redacted]
Test Location : [redacted]

TELOMYX
ADVANCED BODY ANALYTICS

Training Zones

Zone	HR (min)	HR (max)
1		90
2	90	131
3	131	160
4	160	176
5	176	190

190 bpm
Max Heart Rate Recorded

54.8 (ml/kg/min)
VO2 Max

Excellent
Fitness Level

131 bpm

Aerobic Threshold

This is the point at which your body starts to shift from Aerobic to Anaerobic energy systems.

172 bpm

Anaerobic Threshold

This is the intensity at which lactate accumulates rapidly, signaling a shift toward full anaerobic energy production and quicker muscular fatigue. Your fuel utilisation is typically 100% carbohydrate.

112-131 bpm

Fat-burning

The heart rate range where you burn the most calories per hour from fat.

1 min - 34 bpm
2 min - 77 bpm

Recovery

A drop of 20-30 bpm after the first minute and a drop of 30-50 after 2 minutes is considered good.

VO2 Max Classifications

Percentile	Classification	20-29	30-39	40-49	50-59	60-69
95	Superior	66.3	59.8	55.6	50.7	43
90	Excellent	61.8	56.5	52.1	45.6	40.3
85		59.3	54.2	49.3	43.2	38.2
80		57.1	51.6	46.7	41.2	36.1
75	Good	55.2	49.2	45	39.7	34.5
70		53.7	48	43.9	38.2	32.9
65		52.1	46.6	42.1	36.3	31.6
60		50.2	45.2	40.3	35.1	30.5
55	Fair	49	43.8	38.9	33.8	29.1
50		48	42.4	37.8	32.6	28.2
45		46.5	41.2	36.7	31.6	27.2
40		44.9	39.6	35.7	30.7	26.6
35	Poor	43.5	38.5	34.6	29.5	25.7
30		41.9	37.4	33.3	28.4	24.6
25		40.1	35.9	31.9	27.1	23.7
20		38.1	34.1	30.5	26.1	22.4
15	Very Poor	35.4	32.7	29	24.4	21.2
10		32.1	30.2	26.8	22.8	19.8
5		29	27.2	24.2	20.9	17.4

Cardiorespiratory fitness classifications for males, stratified by age (Adapted from ACSM, 2022). Values are for VO2 peak (ml·kg·min-1). Bolded headers denote age (years).

Your Training Prescription

Training Type	HR (bpm)	Running Speed	VO2 (ml/kg/min)
Recovery	<90	5.0kph @ 2% incline	15.1
Zone 2 - Low Intensity Endurance	90-131	9.0kph @ 2% incline	30.2
Zone 3 - Moderate Endurance Work (Tempo)	131-160	13.0kph @ 2% incline	40.1
Zone 4 - Ventilatory Threshold - Anaerobic Work	160-176	14.0kph @ 2% incline	46.6
Zone 5 - Intervals	176-190	16kph @ 2% incline	54.6
Max Capacity	190	17kph @ 2% incline	54.8

Training Zones

Your heart rate training zones are summarised above.

Zone 1 is your recovery zone which is where you sould warm up and cool down and for active recovery between interval esssions in zones 4 and 5.

Zone 2 (Low Intensity) is where you should focus your easy, steady state exercise. This should feel manageable and you should be able to train here for extended periods of time.

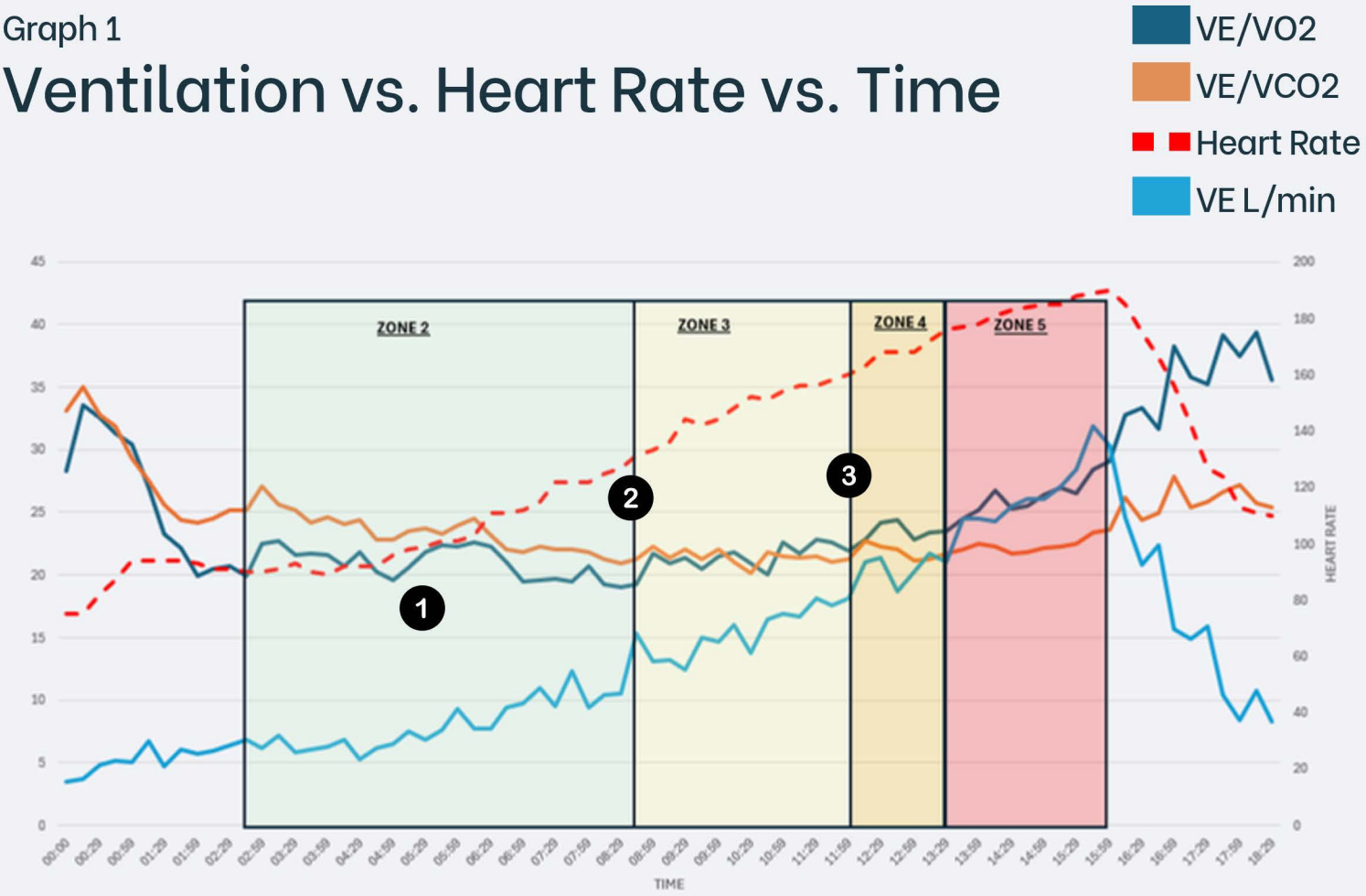
Zone 3 (Tempo Training) should feel slightly harder than zone 2 and helps build muscular endurance and conditions your body to become more efficient at utilising oxygen at faster speeds.

Zone 4 (Threshold Training) is designed to increase the maximum intensity you can sustain before your muscles become overwhelmed by acidity and fatigue. While Zone 3 is “steady,“ Zone 4 is the “red line“ where your body is fighting to maintain equilibrium.

The objective of Zone 5 (Interval training) is to spend as much time as possible at or near your maximal oxygen uptake (VO2 max). While Zone 4 focuses on shifting your threshold, Zone 5 is designed to “raise the ceiling“ of your entire aerobic engine.

Graph 1

Ventilation vs. Heart Rate vs. Time



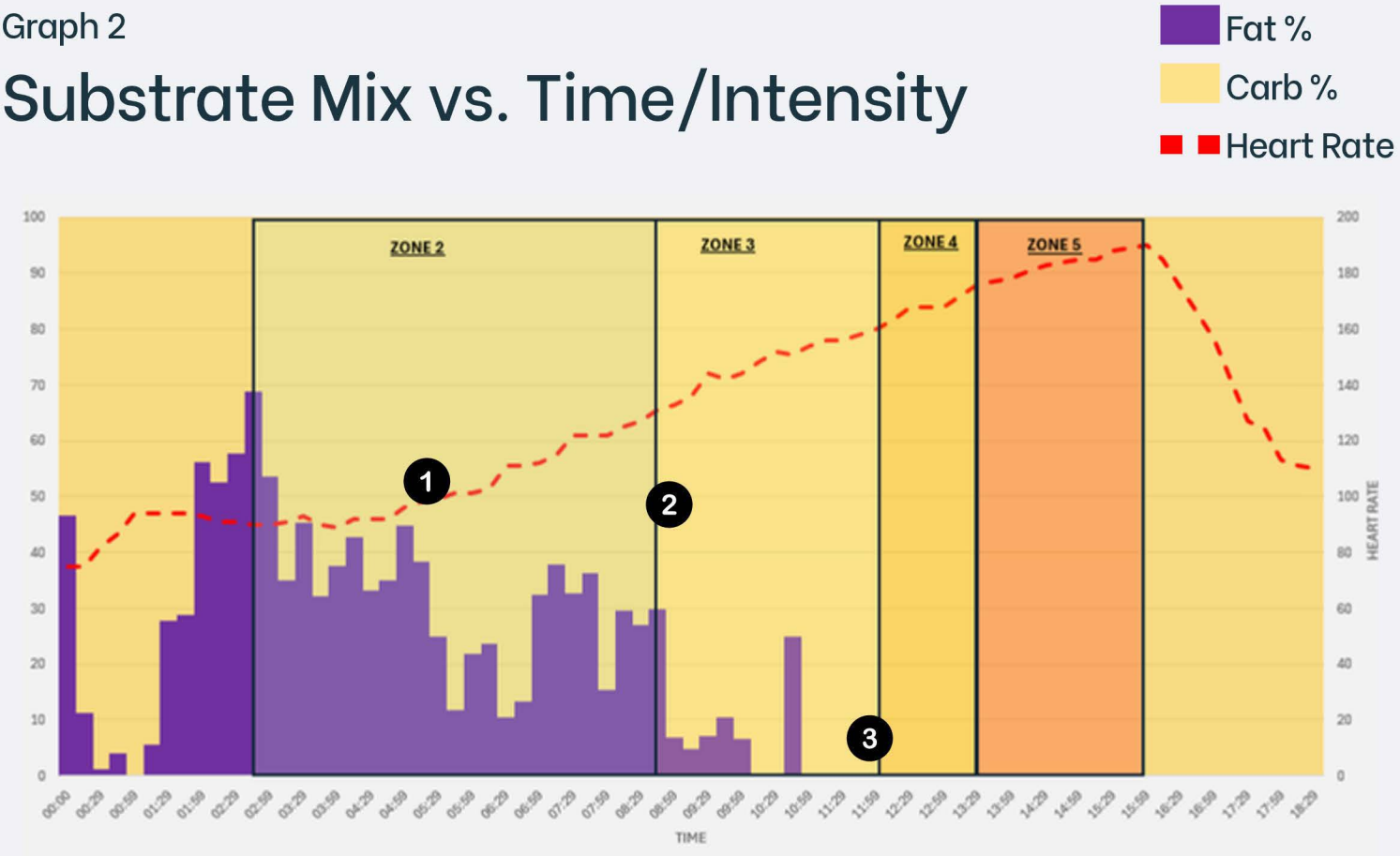
VE/VO2 is Ventilatory Equivalent for oxygen - it measures breathing efficiency during exercise, showing how much air is needed to consume a given amount of oxygen.
Lower VE/VO2 indicates greater cardiovascular fitness. Through the test it rises as exercise intensity increases.

VE/VCO2 is Ventilatory Equivalent for carbon dioxide - it measures how much air a person breathes to eliminate a given amount of carbon dioxide.
Lower VE/VO2 indicates greater cardiovascular fitness. It rises towards the end of the test as more ventilation is required to clear the carbon dioxide.

VE is Ventilatory Equivalent and is the volume of gas breathed in one minute.

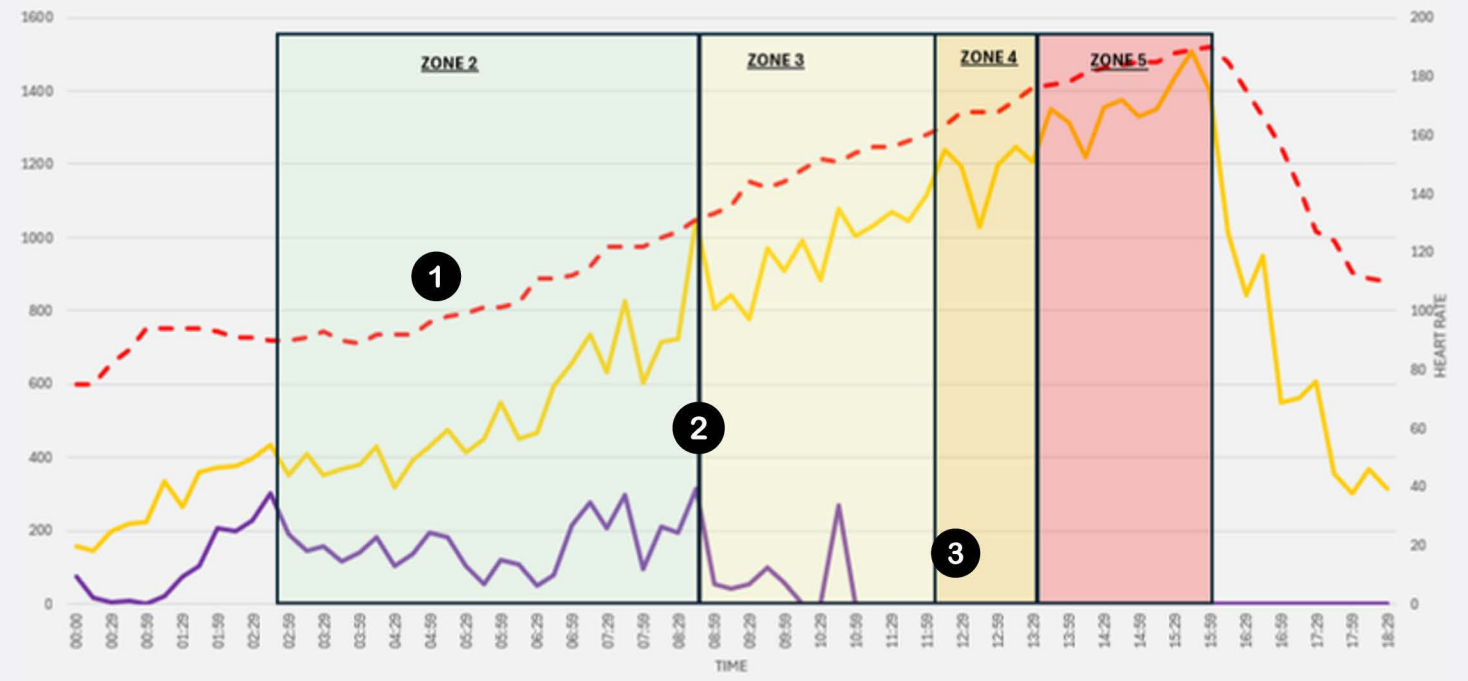
Graph 2

Substrate Mix vs. Time/Intensity



Graph 3

Substrate Utilisation vs. Time/Intensity

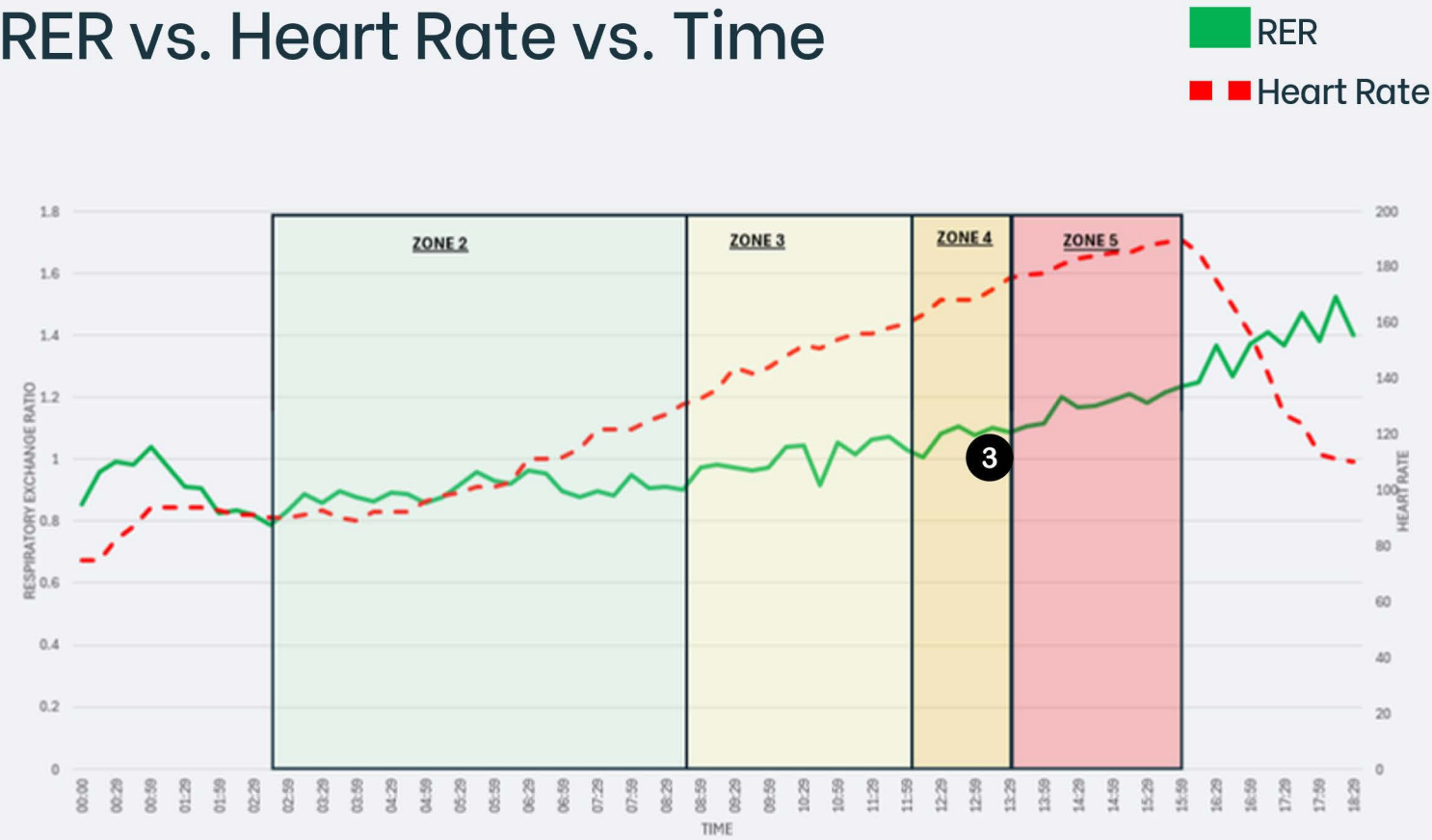


The Respiratory Exchange Ratio (RER) is the ratio between the amount of carbon dioxide produced and oxygen consumed (VCO2 / VO2) during metabolism.

It serves as a non-invasive marker to identify whether your body is primarily burning fats, carbohydrates, or a mixture of both to fuel your current intensity.

Graph 4

RER vs. Heart Rate vs. Time



Explanation of Your Test Results & Recommendations

1

Graph 1 shows your test data for ventiliation metrics vs. heart rate. In the early stages of the test your breathing is efficient as the VE/VO2 and VE/VCO2 lines are declining.

As you can see from Graph 2 your fuelling is largely fat as you are utilising your aerobic energy system. This is your steady state intensity.

2

The top of Zone 2 marks a key physiological change . To meet the increasing energy demands, your body starts to increase anaerobic respiration - the less efficient energy system in our body that uses carbohydrates instead of fats.

Breathing increases to start to clear the carbon dioxide produced from buffering the increasing lactate levels, a by-product of anaerobic respiration.

3

Throughout Zones 3 and 4, the anaerobic energy system contributes more and more energy. By the top of Zone 4/start of Zone 5, typically all of the energy being produced is from the anaerobic energy system - the body is being completely fuelled by carbohydrates. RER (graph 4) typically exceeds 1.0.

Breathing in Zone 5 increases and your body becomes less efficient at consuming oxygen, requiring more breaths for a given amount of oxygen.

The Science

Throughout the test, your heart rate increases as it seeks to deliver more oxygen to the cells in your body to support the aerobic energy system, and then to help clear carbon dioxide more quickly as it accumulates during higher intensity when more lactate is being buffered.

The more efficiently your body can use oxygen, the longer it can maintain aerobic respiration at higher intensities of exercise. This improves overall performance as well as health and longevity (by reducing cardiovascular risk).

To improve your VO2 Max, we need to drive specific physiological adaptations in your body through training in the right zones at the right intensities.

Training in Zone 2 drives adaptions such as capilliarisation (more surface area around the lungs for oxygen to be absorbed into the blood), as well as increased haemoglobin levels to carry more oxygen around the body.

Zone 2 training also increases mitochondrial density in our muscle cells which means we have more of these cellular factories to produce energy using oxygen. It also moves mitochondria closer to the edge of our cells to speed up the process of receiving oxygen.

Recommendations

Your VO2 Max score is the best indicator of your overall cardiorespiratory fitness, which is vital for long term health. Moving from low (bottom 25%) to above-average (top 50-75%) VO2 max is associated with a 60-70% reduction in all-cause mortality. We recommend you focus on this metric as a core measure of your overall general fitness and wellbeing.

To maintain or increase your VO2 Max, research suggests spending **80%** of your training engaging your aerobic system, i.e. in Zone 2. This drives the adapations explained above.

For the remaining **20%** of training, it is recommended to do HIIT training up at the Zone 5 near your VO2 Max. The Norwegian 4x4 is a proven method of increasing VO2 max, promoting increased heart stroke volume (more blood pumped per beat) as well as further capilliarisation and mitochondrial adaptions. This training method involves 4 intervals lasting 4 minutes, separated by 3 minute active recovery periods (light jog in Zone 1).

Consult your doctor before undertaking any form of high intensity training.