

#43 Heart Rate Training Zones — Seven Zones, Seven Different Purposes

From Rest Day to Lactate Tolerance — Know Exactly Which Zone You Are Working In

Not all exercise is equal. A 20-minute canter in Zone 2 and a 20-minute canter in Zone 4 are completely different training sessions, even if they look identical from the fence. **Each heart rate zone drives a different biological adaptation** — and using the wrong zone for the phase of preparation you are in is one of the most common training mistakes made in racing.

The Equilytics system uses **seven zones**. **Zone 0** — Rest: full tissue repair. **Zone 1** — Active Recovery: waste clearance without load. **Zone 2** — Aerobic Base: fat-burning, mitochondria. **Zone 3** — Threshold: working at MLSS. **Zone 4** — VO₂max: maximum aerobic adaptations. **Zone 5** — Lactate Production: high-speed lactate capacity. **Zone 6** — Lactate Tolerance: sustaining performance despite high lactate accumulation.

KEY POINTS

- **Zone 0** — Rest Day: complete rest, full tissue repair and hormonal recovery
- **Zone 1** — Active Recovery: light movement that clears waste without adding stress
- **Zone 2** — Aerobic Base: fat-burning, mitochondrial growth — **majority of total training volume**
- **Zone 3** — Threshold: working at the lactate threshold (MLSS) — line between building and breaking
- **Zone 4** — VO₂max: drives maximum oxygen uptake — raises the aerobic ceiling
- **Zone 5** — Lactate Production: builds capacity to generate lactate at race speed
- **Zone 6** — Lactate Tolerance: sustaining high speed despite lactate — the sharpening tool

ELITE TRAINING DISTRIBUTION

Top racehorse programmes spend roughly **80% of total volume in zones 0–3** (rest, recovery, aerobic base, threshold) and only **20% in zones 4–6**. **More low-intensity enables more high-intensity.**

CALCULATING YOUR ZONES

Establish each horse's max HR from a genuine gallop effort. For a horse with 240 bpm max: Zone 2 ≈ 144–168 bpm · Zone 3 ≈ 168–192 bpm · Zone 4+ above 192 bpm. **Now you know which gear you are training in.**

STABLE QUESTION

"In a typical week in your stable — can you name which zone each session is targeting? If most sessions land somewhere between Zone 3 and Zone 5 every day, you may be missing the Zone 2 base and the Zone 6 sharpening work."

TRAINER TAKEAWAY

Zones are gears — and a complete preparation uses all seven deliberately. **Base phase: mostly Zones 1–3** (recovery, aerobic, threshold). **Build phase: introduce Zone 4** (VO₂max stimulus). **Race-prep phase: add Zones 5–6** in controlled doses. Zone 6 is the sharpening tool used last, closest to race day.

↗ ZONE → VARIABLE MAP: WHAT EVERY ZONE IS BUILDING

Zones 1–3

① VO₂max ② Threshold ③ Economy
Equilytics Sport Science Platform

Zone 4

④ vVO₂max ⑤ T-Lim

Zones 5–6

⑥ Fatigue Resist. ⑦ Max Velocity
equilytics.com.au

Because horses reach VO_2max in 40–45 seconds, Zone 4 training is more important and accessible than in human sport science. A 45-second quality gallop at Zone 4 speed is already a full vVO_2max interval. The horse that wins in the straight is the horse with the highest T-Lim vVO_2max — built over months of Zone 4 progressive intervals on top of a solid Zone 2–3 base.

#45 HR-Speed Relationship — Watch the Shift, Not Just the Number

Fitness Is the Gap Between Speed and Heart Rate

One of the cleanest signals of aerobic fitness improvement is this: at any given speed, a fitter horse shows a **lower heart rate than the same horse did when less fit**. The heart rate curve 'shifts left' — the horse is doing more work for the same cardiovascular cost. This is the **HR-speed shift**, and watching it move across a preparation is a direct measure of aerobic adaptation happening in real time.

A separate important phenomenon is **cardiac drift**: during prolonged steady-state exercise (especially in heat), heart rate progressively rises even though speed stays constant. This is caused by dehydration reducing plasma volume. **Drift is not fatigue — it is dehydration or heat stress**. Misreading it as genuine fatigue leads to incorrect training decisions.

KEY POINTS

- **HR-speed shift left** = aerobic fitness improving — more speed for less heart rate cost
- Track this by noting HR at a **standard fixed speed** every 2 weeks — watch it drop
- **Cardiac drift** = HR rising during prolonged constant-pace exercise — not fitness loss
- Drift is caused by dehydration reducing blood volume — address with hydration, not less training
- Misreading drift as fatigue will lead to **pulling back training that should continue**

MEASURING THE SHIFT

Choose a fixed pace — say 8 m/s — and record HR at that speed every 2 weeks. If HR at 8 m/s drops from **172 bpm to 158 bpm** over 6 weeks, aerobic adaptation is confirmed. That 14-beat improvement means the horse is now doing that work significantly more efficiently.

SPOTTING DRIFT

If HR rises steadily from 155 to 175 bpm over 30 minutes at constant speed without any pace increase — especially on a warm day — that is cardiac drift, not fatigue. **Stop the session, offer water, and cool the horse.**

STABLE QUESTION

"Have you ever had a horse whose heart rate seemed high during a session but the horse looked fine — not breathing hard, not struggling? That may have been cardiac drift, not a fitness problem."

TRAINER TAKEAWAY

The HR-speed relationship is a **living record of your training programme working**. Watch the shift — not just the single number. And when HR rises unexpectedly during a steady session, check the conditions before assuming the horse is unfit. **Data tells you what is happening. Understanding the physiology tells you why.**

CONNECTS TO →

Mon #41: Resting HR. | **Mon #44:** HRR measures recovery after work. | **Wed #46:** V200 is your weekly fitness scorecard. | **Wed #51:** HR reveals internal load. | **Fri #43:** Zones ensure you train the right system. | **Fri #45:** The shift left shows fitness growing; drift shows dehydration — know the difference.