#29 The Four Training Variables — Your Session Design Toolkit

Every Session Is Defined by Just Four Levers

Every single training session is completely defined by four variables. Change any one of them and you change **which part of the horse's body you are training** and which adaptation you will get. These four levers are: **(1) Volume / Distance** — how many metres total. **(2) Intensity** — how fast. **(3) Rest interval** — how long the horse recovers between efforts. **(4) Interval length** — the distance of each individual repeat effort.

The same set of 4 × 400 metres can build aerobic capacity *or* anaerobic power — depending entirely on how fast it is run and how long the rest is. **The horses are running the same track. The trainer is building different horses.**

KEY POINTS

- Every session must have an **intended target adaptation** — and the four variables must match it
- Long rest + high intensity → **anaerobic power and speed**
- Short rest + moderate intensity → **aerobic capacity and lactate tolerance**
- High volume + low intensity → **aerobic base and fat-burning efficiency**
- Changing one variable without adjusting the others **changes the entire session outcome**

REST IS THE BIGGEST LEVER

Shorter rest means the next effort begins with **more lactate and less phosphocreatine** — the horse must rely more on aerobic energy. Longer rest allows near-full recovery — the horse can sprint again. **Same speed, completely different biology.**

PRACTICAL EXAMPLE

4 × 400m at race pace with **4 minutes rest** = speed work, anaerobic power. The same 4 × 400m at race pace with **90 seconds rest** = aerobic capacity work, lactate tolerance. One session. Four variables. Two completely different horses built.

STABLE QUESTION

"In your last track session — did you consciously choose all four variables to match what you wanted to build, or did the session 'just happen' the way it always does?"

TRAINER TAKEAWAY

Before every session, ask yourself: **What am I building today?** Then set your four variables to match. Volume, intensity, rest, and interval length are the only tools you have on the track. Use them deliberately. Trainers who understand this design sessions. Trainers who don't just exercise horses.

CONNECTS TO →

Monday #19: Rest is the most powerful of the four variables — it determines whether you are building aerobic or anaerobic capacity.

#26 Paradoxical Training Effects — When More Work Makes You Slower

Overdoing Speed Work Can Actually Kill Speed

This is one of the most important — and most misunderstood — concepts in all of training science. **Overdosing speed and anaerobic work does not make a horse faster. It makes the horse slower.** This is a measurable biological response that shows up in racehorses every season.

When a trainer stacks too much high-intensity work without enough low-intensity recovery work, the body's anaerobic systems actually **suppress themselves to protect the horse from acidosis.** The result: speed drops, power drops, and the horse looks flat or stale. The instinct is to work them harder. That makes it worse. The fix is counterintuitive: **more slow, easy work.**

KEY POINTS

- Too much anaerobic work **reduces anaerobic capacity** — the opposite of the goal
- The fix for a horse that has gone 'flat' from speed work is **more low-intensity recovery work**
- Trainers who push hardest in early preparation often get early results then **stagnate or regress**
- Paradoxical effects are also possible with aerobic volume — too much suppresses anaerobic capacity
- The solution is always: **regulate intensity + ensure adequate recovery between hard sessions**

WHAT THE DATA SHOWS

A horse doing **daily hard gallops** over 2+ weeks often shows falling lactate values at high speed — not because it is fitter, but because its anaerobic system has **downregulated to avoid dangerous acidosis.** The body is protecting itself.

THE RECOVERY PRESCRIPTION

When paradoxical suppression is suspected: **pull back all high-intensity work for 5–7 days.** Replace with long, slow canters. Most horses bounce back within a week — power returns, speed returns, the horse looks fresh again.

STABLE QUESTION

"Have you ever had a horse who worked brilliantly in the first month of prep, then went flat and seemed to 'stop improving' no matter what you tried? That may have been paradoxical suppression — not a talent ceiling."

TRAINER TAKEAWAY

When a horse goes flat, the answer is almost never more work. It is almost always **better-structured work with proper recovery.** The trainer who understands paradoxical effects stops chasing fitness with volume and starts protecting it with rest.

CONNECTS TO →

Monday #19: Paradoxical effects are what happen when rest is skipped too often. | **Friday #31:** Periodisation is the structured prevention of paradoxical effects — it builds in recovery waves before the horse can suppress itself.