The Holy Grail-

"Physiological testing is extensively used to assess current physical status, target strength/deficiencies and to determine predisposition to injury in athletes"

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-That specific parameter or number that will identify the great horses from the merely good, the super fit from the fit, and become the "ultimate training tool"

Mean Corpuscular Volume

MCV

Measure of the size of the RBC

Larger, less mature RBC released from bone marrow- blood loss, decreased production

Vit B6, B12, niacin and folic acid deficiencies, poor intestinal absorption

Healthy horse in training-higher MCV

Increased training- starts to decrease

“Stale” or overtrained-very low MCV

Somewhere in between is the optimum point for each horse

Aspartate Transaminase (SGOT)- liver and muscle. Long half-life (24-36hrs), Training program usefulness-

Early-increased AST, levels out 12-14 weeks– which horses have successfully handled the workload and can advance, which are struggling

High AST (and no other problems- GGT, CPK)- over training and need to back off

Low AST under-work or under-effort

CPK- short half-life, monitors today's work-out, less with better fitness, can measure training level and recovery ability

Bilirubin- RBC pigment, increased if horse worked above capacity, ^ bilirubin seen with RBC and muscle damage or liver and bile duct problems (GGT)

When should I compete again?

The amount of time that Bilirubin levels take to return to normal can be an indicator of the level of fitness

AST, ALK Phos

CPK, LDH

GGT, Bilirubin

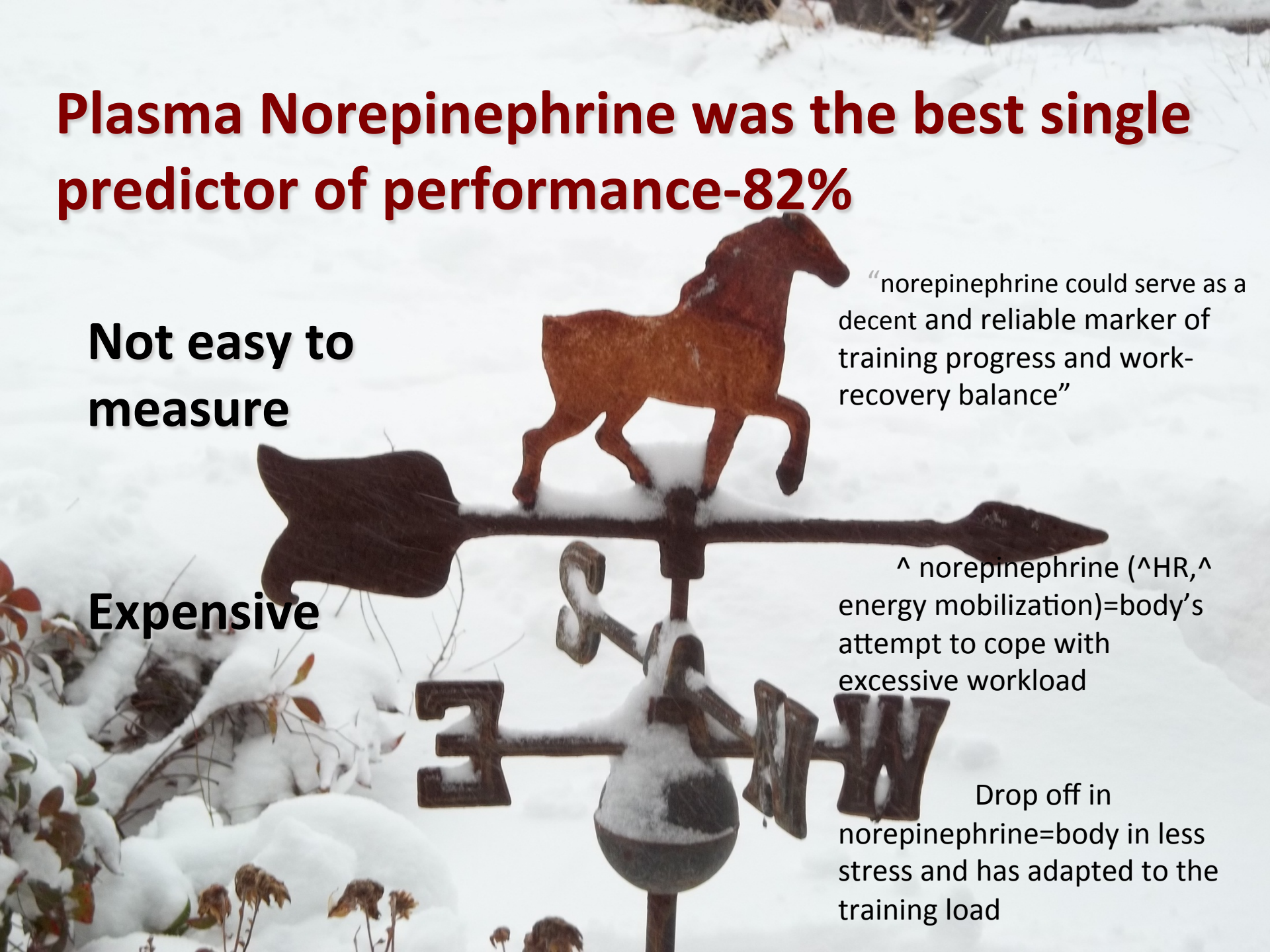
BUN, Creatinine,

Lactate HgB

PCV, HCT, MCV

Conditioning and training cannot simply be done "by the numbers" A horse cannot be worked until blood parameters all reach some mythic levels and then that horse can go out and win

Plasma Norepinephrine was the best single predictor of performance-82%



Not easy to measure

Expensive

"norepinephrine could serve as a decent and reliable marker of training progress and work-recovery balance"

^ norepinephrine (^HR,^ energy mobilization)=body's attempt to cope with excessive workload

Drop off in norepinephrine=body in less stress and has adapted to the training load

Profile of Mood States (POMS)

Total of 194 POMS articles dealing with 32 different sports

- Fatigue
- Quality of Sleep
- Stress
- Muscle soreness
- Appetite

POMS- 72% predictive value

Signs of good performance-

Australian researchers looking at 10 elite swimmers training and tapering for national Championships (5 ranked among fastest 20 in the world)

- Improved muscular strength
- Fewer sleep disturbances
- Reduced stress and fatigue
- Lower rates of perceived exertion at ex.
- Lower heart rates
- Better appetites
- Brighter overall mood


I slept really well last night.
I am looking forward to today's workout
I am optimistic about my future performance (s)
I feel vigorous and energetic
My appetite is great
I have very little muscle soreness