

EC₂I

EQUINE COMFORT AND CALMNESS INDEX

A hybrid assessment tool for evaluating pain, stress, and overall quality of life in horses undergoing VIBE-based therapy protocols.



COMFORT

Pain & Physical
Function



CALMNESS

Stress & Behavior



OVERALL

Quality of Life

Study Overview and Rationale

Purpose

The purpose of this study is to evaluate whether VIBE-based therapy protocols improve pain, stress, and overall quality of life in horses.

This study uses a paired pre/post design, meaning each horse is compared against its own baseline. This allows for precise measurement of change over time and supports statistical analysis such as p-values and effect size.

What EC2I Means

EC2I stands for **Equine Comfort and Calmness Index**. It measures two core domains:

♥ Comfort

Physical pain, stiffness, and functional movement

☾ Calmness

Stress, reactivity, and behavioral regulation

These represent the primary drivers of a horse's day-to-day well-being, movement quality, and nervous system balance.

Why the EC2I Was Created

Existing equine tools are limited in scope and usability:

No single existing tool:

- Measures both pain and stress together
- Is simple enough for repeated owner use
- Produces clean, continuous data for statistical analysis
- Aligns with longitudinal treatment tracking

Many existing approaches focus only on lameness or clinical pain scoring and fail to capture behavioral stress, which is often how discomfort presents in horses.

The EC2I Solution

The EC2I was developed to solve this gap.

It is a hybrid assessment that:

- ✓ Uses pain and functional structure similar to established veterinary models
- ✓ Incorporates key behavioral and stress-related domains
- ✓ Uses a consistent 1–10 scale across all questions
- ✓ Is short, repeatable, and easy for horse owners to complete
- ✓ Produces continuous data suitable for statistical analysis

This allows:

- ✓ Each horse to serve as its own control
- ✓ Reliable measurement of change over time
- ✓ Aggregation across populations
- ✓ Alignment with physiological outcomes when used alongside PRANA

SECTION 2

Owner Observations (Narrative)

Instructions

Please describe your horse's current condition in your own words.

Write 2–3 paragraphs describing what you have observed over the past 7 days.

Prompt

Describe your horse's current condition.

In your response, please include:

- Pain or physical discomfort
- Stress, anxiety, or behavioral changes
- Movement, performance, and willingness to engage
- Where and how your horse seems to experience discomfort
- Any changes in gait, stiffness, or responsiveness
- Signs of stress, reactivity, or unusual behavior
- Ability to relax, settle, or recover after activity

Be as specific as possible and include real examples when possible.

EC2I Survey Instrument

Pre and post surveys are identical. No wording changes between administrations.

Instructions

Please rate your horse based on the past 7 days.

For all questions, use the following scale:

- | | |
|--|---|
| 1 No problem at all (normal, no signs) | 2 Very slight problem (barely noticeable) |
| 3 Mild problem (occasionally noticeable) | 4 Mild to moderate problem (noticeable at times) |
| 5 Moderate problem (clearly noticeable, regular) | 6 Moderate to significant (frequent, impactful) |
| 7 Significant problem (often, affects movement/behavior) | 8 Very significant (persistent, clearly limiting) |
| 9 Severe problem (constant or near constant) | 10 Extreme (constant, severely impacting quality of life) |

COMFORT DOMAIN

A. Pain & Discomfort (Observed)

1. At its worst, how much discomfort or pain did your horse seem to be in?



2. At its best, how little discomfort or pain did your horse seem to have?



3. On average, how much discomfort or pain did your horse seem to have?



4. How much did discomfort limit your horse's normal activity or movement?



5. How much did discomfort affect your horse's ability to walk or move forward?



B. Mobility & Physical Function

6. How much did discomfort affect your horse's ability to trot, canter, or perform (if applicable)?

1

2

3

4

5

6

7

8

9

10

No problem at all

Extreme / constant

7. How much difficulty did your horse have with transitions (starting, stopping, turning)?

1

2

3

4

5

6

7

8

9

10

No problem at all

Extreme / constant

8. How much did discomfort reduce your horse's willingness to move or work?

1

2

3

4

5

6

7

8

9

10

No problem at all

Extreme / constant

9. How stiff or uncomfortable did your horse seem after activity?

1

2

3

4

5

6

7

8

9

10

No problem at all

Extreme / constant

10. How stiff or uncomfortable did your horse seem after rest?

1

2

3

4

5

6

7

8

9

10

No problem at all

Extreme / constant

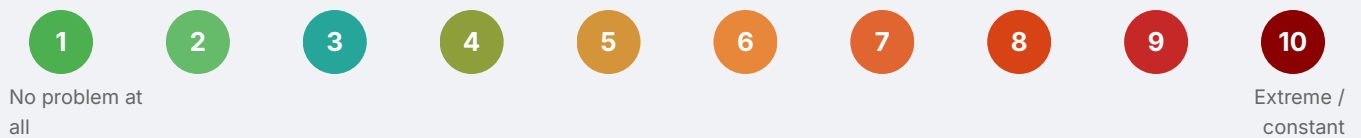
CALMNESS DOMAIN

C. Stress & Behavioral Regulation

11. How often did your horse seem tense, nervous, or unable to relax?



12. How easily did your horse startle or overreact?



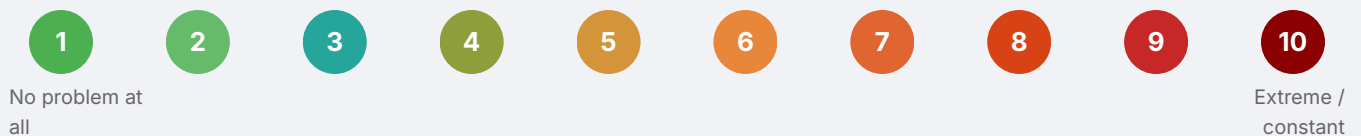
13. How stressed did your horse seem when separated, confined, or alone?



14. How often did your horse show restless behaviors (pacing, pawing, weaving, etc.)?



15. How often did your horse seem "on edge" or overly alert?



D. Emotional Regulation & Engagement

16. How much trouble did your horse have settling down or calming down?



17. How anxious did your horse seem in new environments (arena, trail, trailer, events)?



18. How much did stress affect your horse's ability to rest or relax?



19. How much did stress affect your horse's normal behavior or responsiveness?



20. Overall, how anxious or stressed did your horse seem?



E. Overall State

21. Overall, how poor was your horse's quality of life?



22. Overall, how physically uncomfortable did your horse seem?



23. Overall, how emotionally stressed or not calm did your horse seem?



SECTION 4

Scoring and Interpretation

Step 1 — Subscores

SUBSCORE	QUESTIONS	CALCULATION
Comfort Score	Questions 1–10	Average of questions 1–10
Calmness Score	Questions 11–20	Average of questions 11–20
Overall Score	Questions 21–23	Average of questions 21–23

Step 2 – Composite EC2I Score

$$\text{EC2I} = (\text{Comfort} \times 0.50) + (\text{Calmness} \times 0.35) + (\text{Overall} \times 0.15)$$

This produces a single score from 1–10 representing overall condition.

Step 3 – Pre vs Post Analysis

For each horse:

- Calculate Pre scores (Comfort, Calmness, Overall, EC2I)
- Calculate Post scores
- Change = Post – Pre

↓
Negative Change → Improvement

↑
Positive Change → Worsening

Across the study population:

- Mean change
- Statistical significance (paired t-test or Wilcoxon signed-rank test)
- Effect size (Cohen's d)

Step 4 – Interpretation Bands

SCORE RANGE	INTERPRETATION	SEVERITY
1–3	Minimal or no impairment	Low
4–6	Moderate impairment	Moderate
7–8	Significant impairment	High
9–10	Severe impairment	Severe

Step 5 – Clinical Meaning of Change

CHANGE SCORE	INTERPRETATION	MAGNITUDE
–1.0 to –1.5	Noticeable improvement	Mild
–2.0 to –3.0	Strong improvement	Strong
–3.0 or greater	Major transformation	Major

Why the EC2I Works

- ✓ Combines comfort (pain) and calmness (stress) into one instrument
- ✓ Uses a single, consistent scoring direction
- ✓ Designed for repeated use with identical questions
- ✓ Produces clean, statistically valid data
- ✓ Simple for owners, structured for clinical evaluation
- ✓ Aligns with nervous system regulation, recovery, and performance

Bottom Line

The EC2I provides a simple, repeatable, and statistically valid way to measure whether a horse is becoming more comfortable, calmer, and improving over time — while also capturing real-world observations through owner-reported narratives.