

# Redefining Weight Limits: Developing Safe and Sustainable Guidelines in an Expanding Equine Assisted Services Program

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The SheaCenter  
for Therapeutic Riding



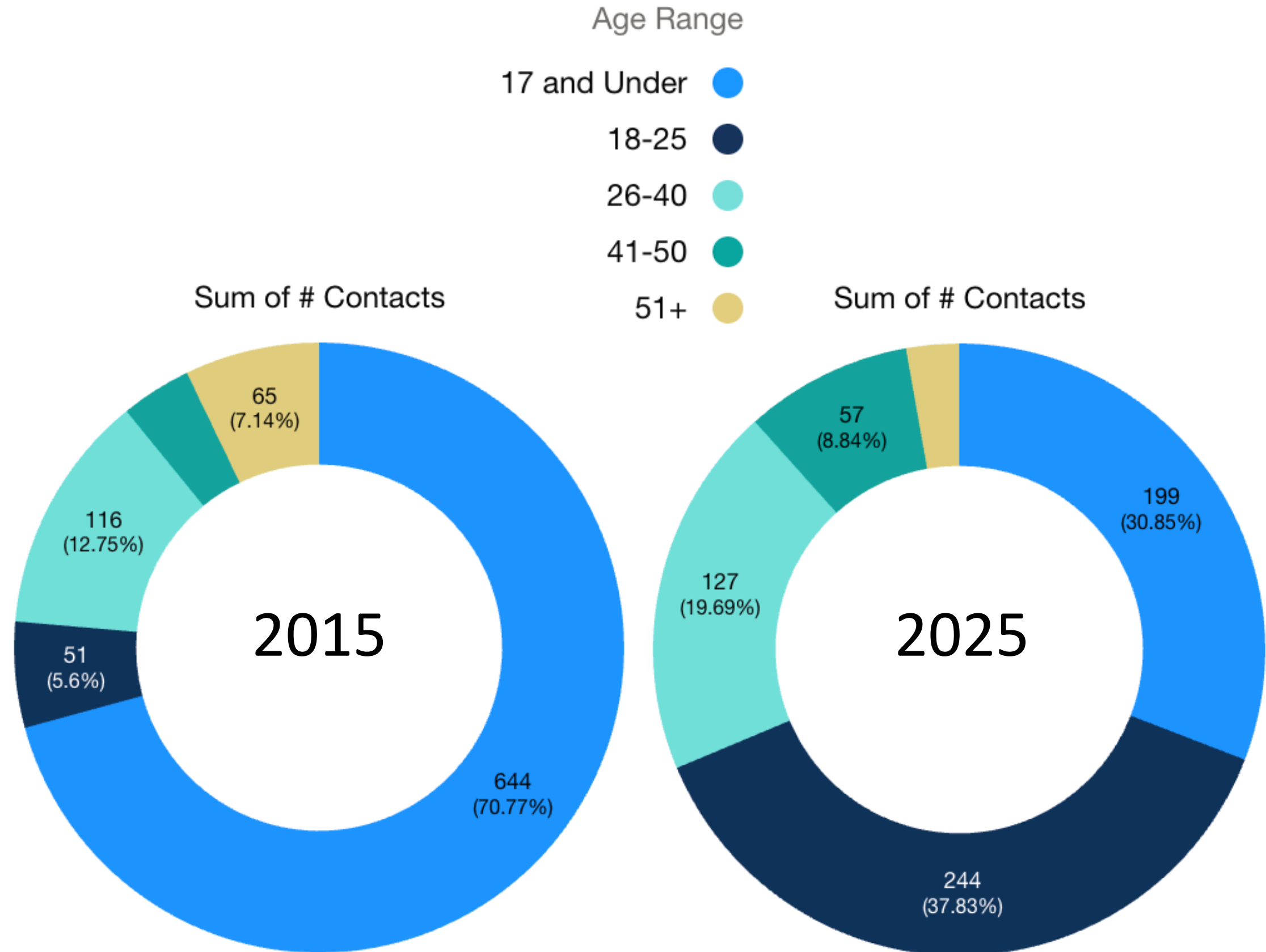
# Learning Objectives

- Understand current evidence on horse carrying capacities
- Define balanced vs unbalanced riders
- Optimize horse, client & tack selection
- Identify alternative programming when riding isn't appropriate



# Background

- Historically pediatric participants
- Increasing young adult/adult participation (military services)
- *Injury to largest horse exposed heavy rider reassignment challenges*
- Ethical responsibility → participant safety & horse welfare



# Consequences to poorly managed rider load

- Altered gait mechanics
- Fatigue and decreased performance
- Behavioral indicators of discomfort or burnout
- Musculoskeletal strain leading to lameness
- Compromised therapeutic outcomes
- Staff uncertainty

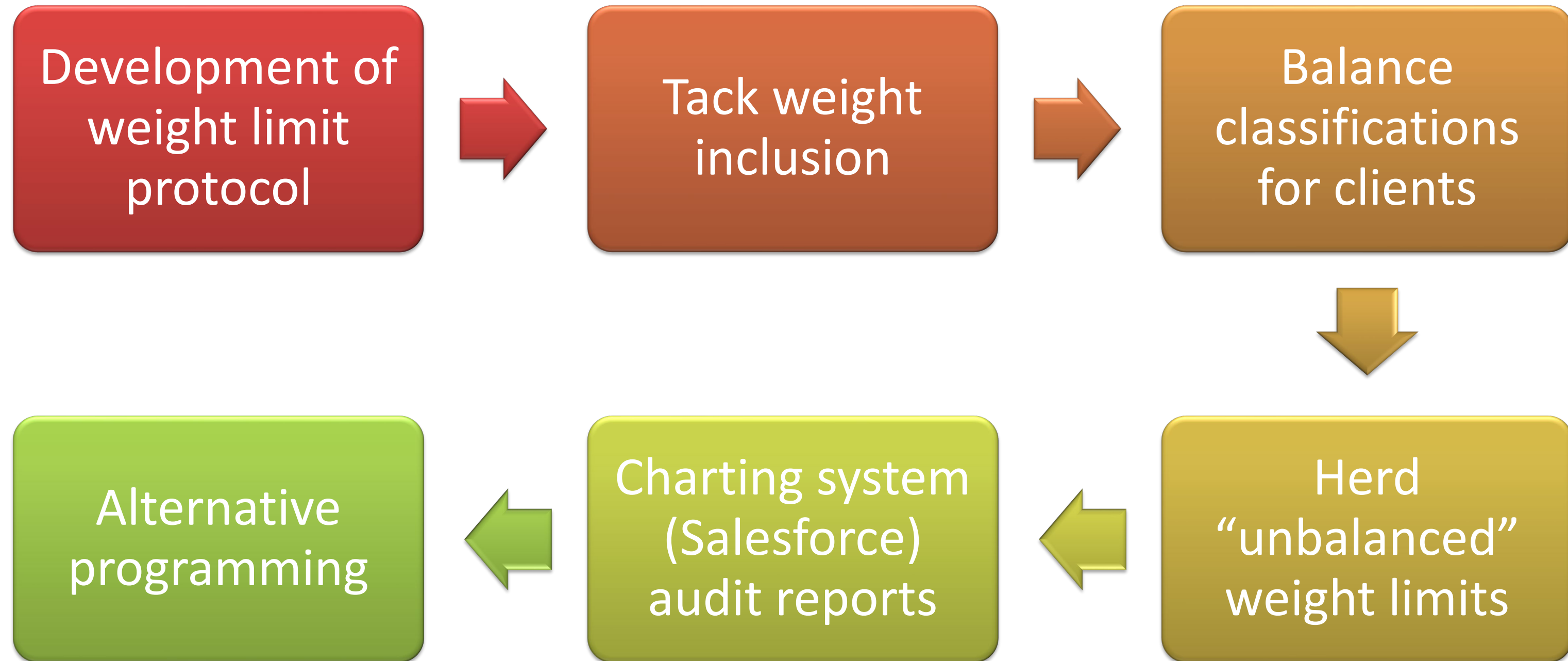


# Quality Improvement Initiative Goals

1. Protect horse welfare
2. Maintain participant access
3. Standardize decision making with defensible guidelines
4. Improve documentation
5. Provide alternatives to riding when necessary

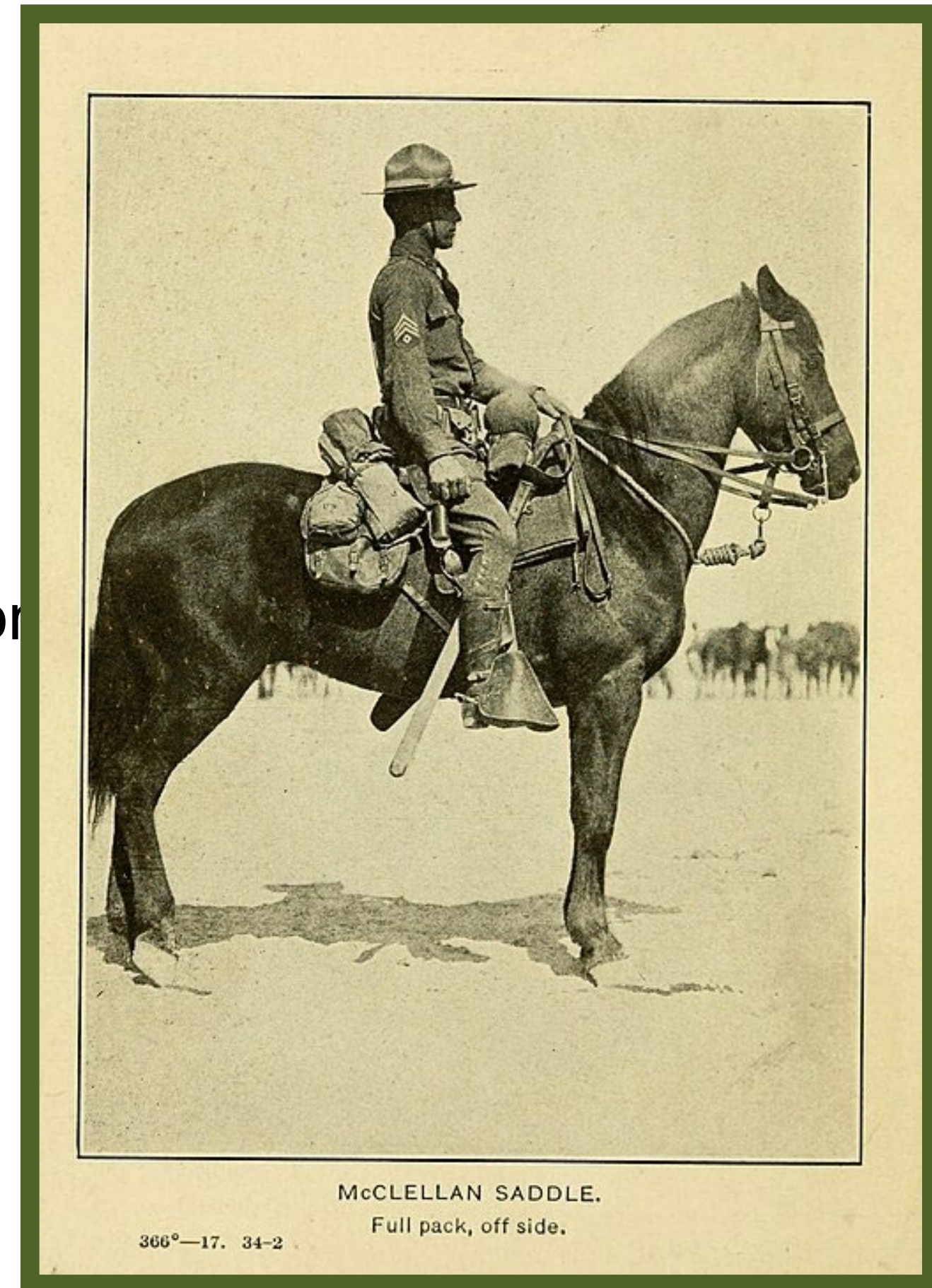


# Overview of the Solution



# Literature on Horse Carrying Capacity

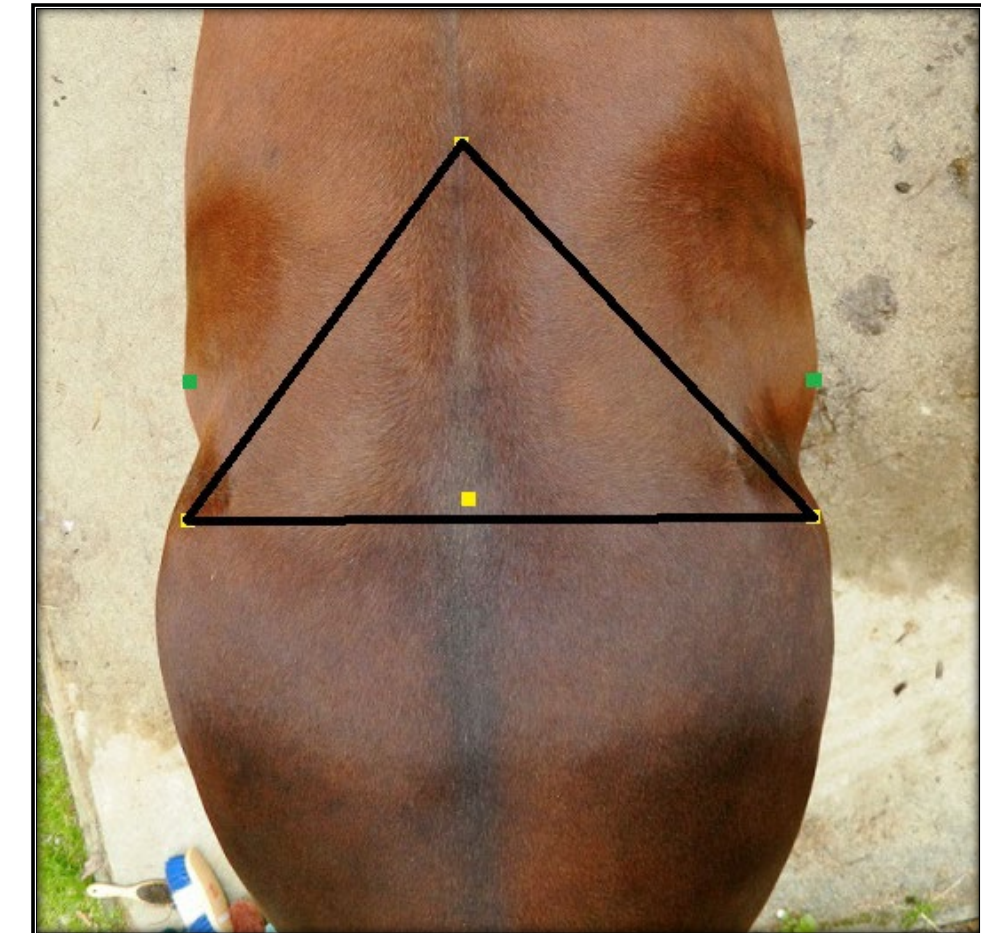
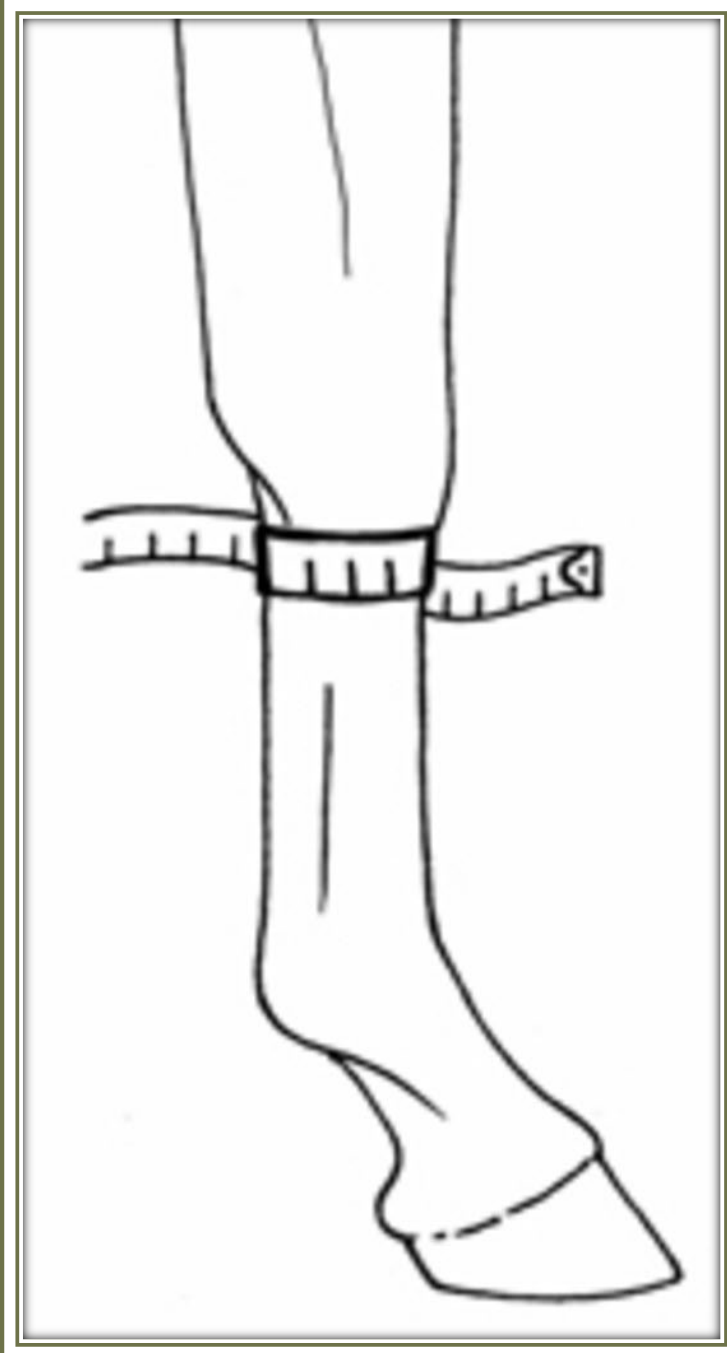
- 1898 early army research ~17% of horse's BW (rider + equipment)<sup>1</sup>
- 1914 US cavalry manual cites 20% BW recommendation<sup>2</sup>
- 2008 OSU Study confirms 20% not stress inducing<sup>3</sup>
- 2021 Systematic review with nuanced findings<sup>4</sup>
- 2025 Study found physiological strain at 23% BW<sup>7</sup>



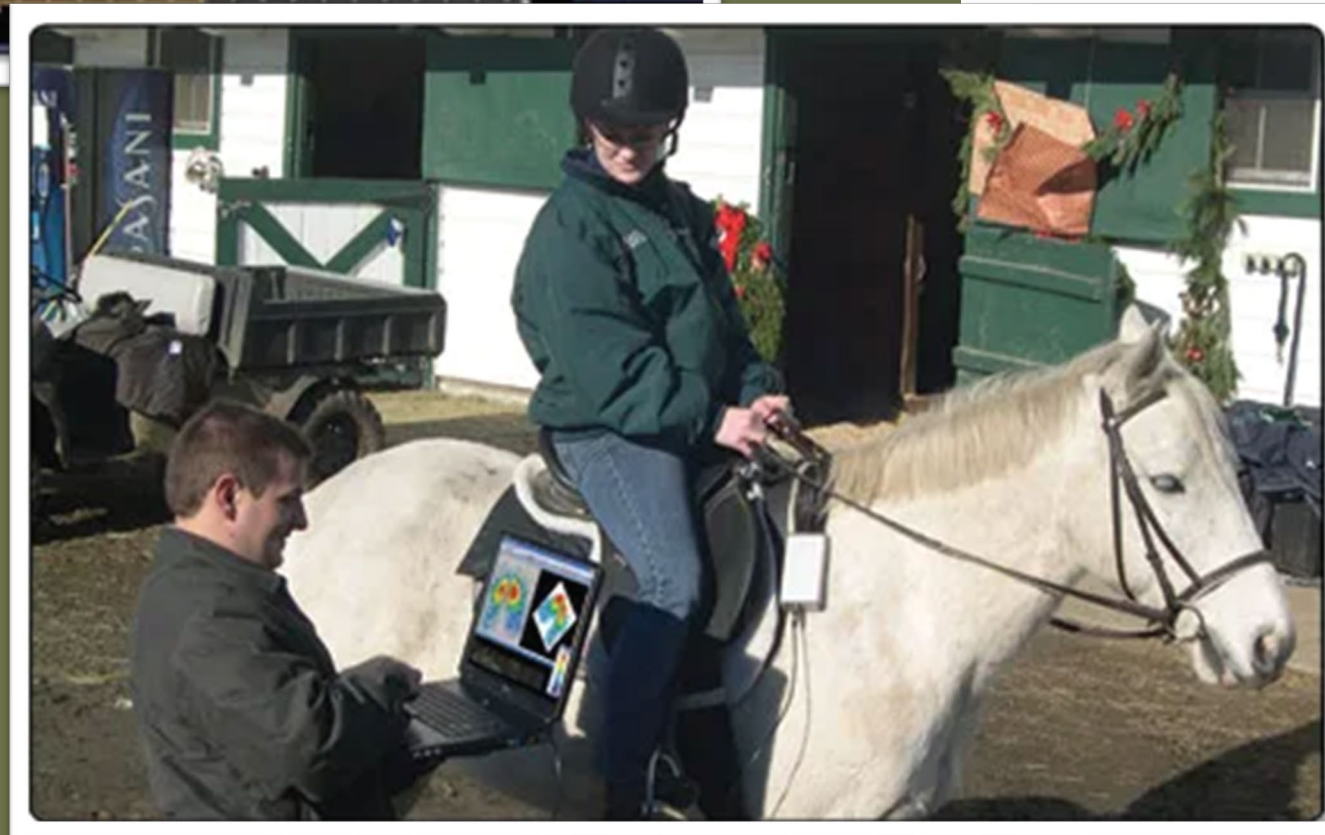
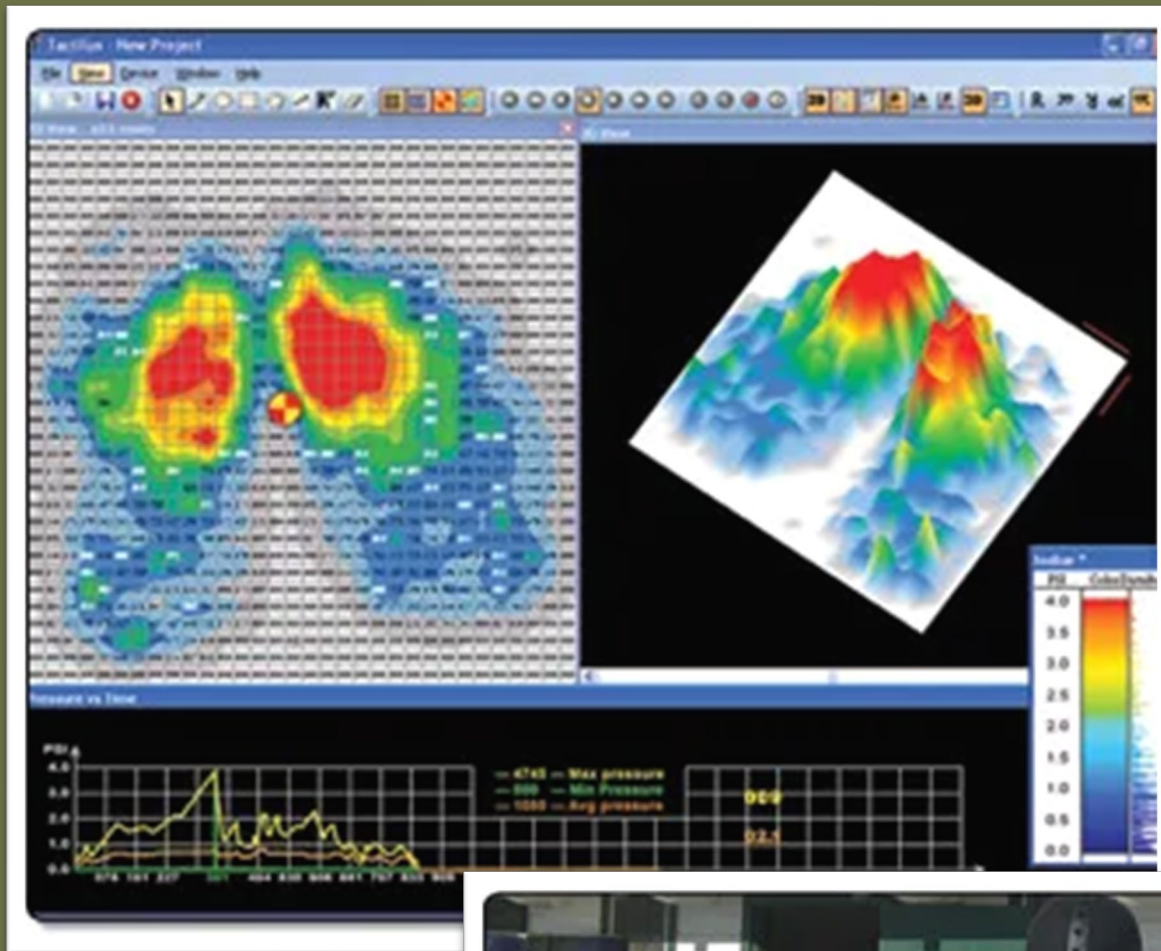
# Modern Research

4, 7

- Studies measured physiological strain under load thresholds of 15% - 35% BWR
  - Inc HR >25%
  - Inc plasma lactate >23%
  - Inc muscle enzyme markers & Dec gait symmetry >29%
  - No significant relation to cortisol changes
- Multifactorial
  - Height/weight alone = poor predictors
  - Lg cannon bone & Sm hock circumference
  - Loin thickness; Chest width
  - Conformation, age (6-20 y), prior injuries
  - Workload



# Load Distribution Matters



- Saddle fit
- Contact surface area
- Pressure distribution
  - Increased Area = Decreased localized pressure <sup>5</sup>



# Role of the Rider & Unique EAS Considerations

- Rider balance
- Muscle tone abnormalities
- Postural awareness, control, instability
- Sensory behaviors
- Sidewalkers affecting horse's movement
- Mount/dismount modifications
- Suboptimal cadence/ stride length/ skill of leader

***EAS Factors require more conservative load guidelines than recreational riding <sup>6</sup>***



# Current Practices in EAS Weight Limit Determinations

- Ongoing research at Colorado State University
- 2025 ISES conference proceedings shared preliminary data from 50 EAS programs surveyed <sup>8</sup>
  - 35 centers use multiple factors for individual limits (including 20% Rule)
  - 11 centers base limits on experience & observation
  - 4 centers use a program wide general policy

***\*Industry practices are highly variable and lack standardized protocols***

# Why Balance Matters

- Asymmetric vs symmetric loading
- Sudden movement shifts
- Greater stabilization demands for horse

# Defining Balance

## Balanced

- Maintains midline plumb alignment
- Minimal postural sway  $\leq 15^\circ$
- Independent seat & trunk

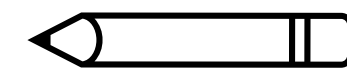
## Unbalanced

- Postural sway  $>15^\circ$
- Moderate+ external support needed (thigh/ankle holds x2)
- Excessive abnormal tone
- Frequent sensory seeking behaviors

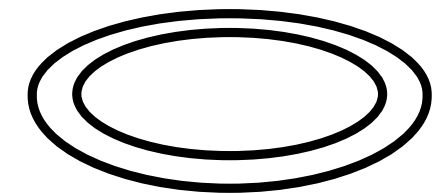
# Balanced vs Unbalanced

## What does 15° look like?

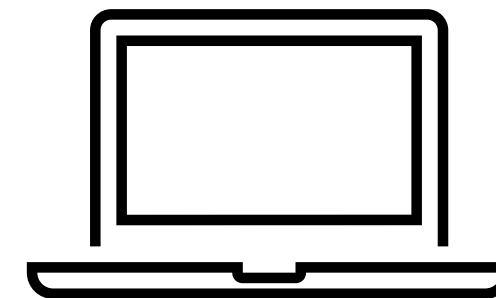
15° → ~6–8 in = unsharpened pencil



20° → ~8–10 in = diameter of dinner plate



30° → ~13–15 in = standard laptop



# Balanced vs Unbalanced





# Functional Balance Screening → Indicators of Rider Balance

Test	Threshold
Single Leg Stance <sup>9</sup>	≥ 5 sec
Tandem Stance <sup>10</sup>	≥ 10 sec
Seated Functional Reach <sup>11</sup>	Able w/o loss of balance

*\*Severe cognitive delays may limit participation*  
*\*Observation of trunk control still required while mounted*

# Matching Horse & Rider

- Base of support → Wider = more stability  
→ Narrow = less stability
- Amplitude of movement → Small = less balance challenge  
→ Large = more balance challenge
- Smooth/fluid rhythm → Relaxes tone & Dec behavioral arousal
- Concussive steps → Stimulate muscle activation & sensory input  
→ Inc spasticity & behavioral arousal

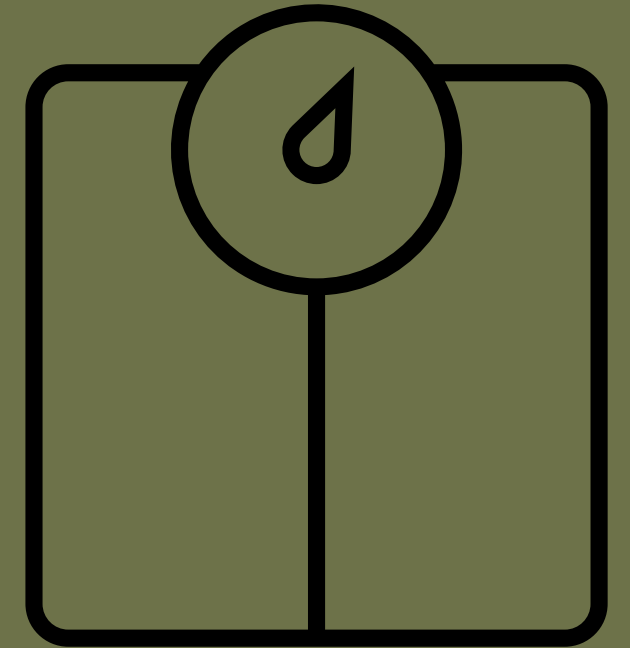
# Our Carrying Capacity Framework

- **Balanced riders:  $\leq 20\%$  of horse's BW (including tack)**
- **Unbalanced riders:  $\leq 15\%$  horse's BW**
- **Horses with weight limit exceptions**
  - Manually adjusted limit for balanced riders per vet recommendations
  - Age, history of prior injury, conformation concerns
  - *Unbalanced weight limit: 75% of balanced limit*



# Obtaining Accurate Client Weights

- Historically self reported; requested during annual update  
→ **not always received**
- Updated workflow for more transparent process
  - Revamped our Safety and Effectiveness Policy
  - Email requests with educational content
  - Flyers distributed
  - Follow-up outreach phone calls
  - On site weighing when necessary AND for confirmation
- *Weights updated annually OR semi-annually until skeletal maturity or near horse's limit*



# Tack Weight Inclusion

Used industrial hanging weight & recorded in database system

- Saddles
- Pads
- Girths
- Surcingles



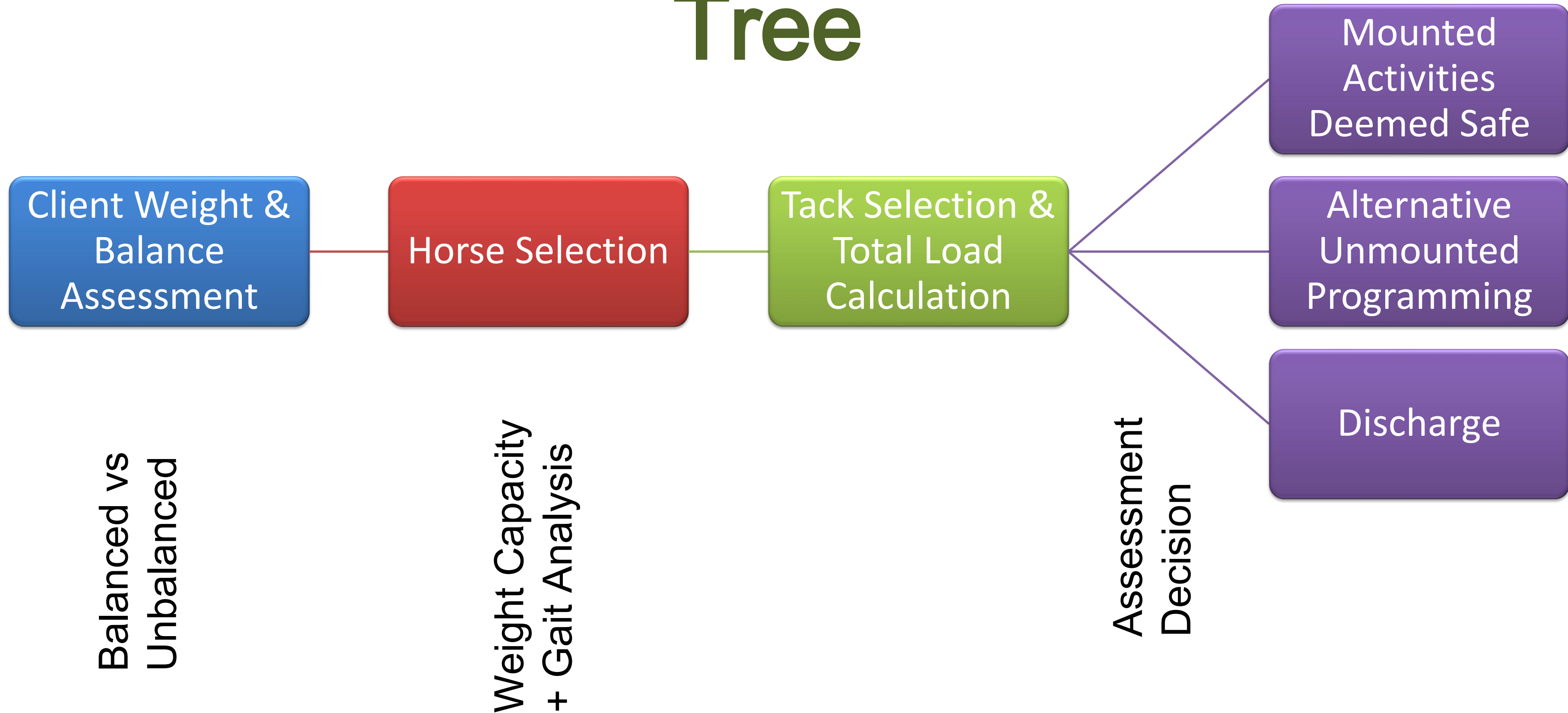
# Tack Selection Strategy

- Lighter saddle
- Larger surface area
- Dressage saddle (higher cantle)
  - Ant pelvic tilt (good for low tone)
- Western saddle (deeper seat)
  - Post pelvic tilt (good for high tone)

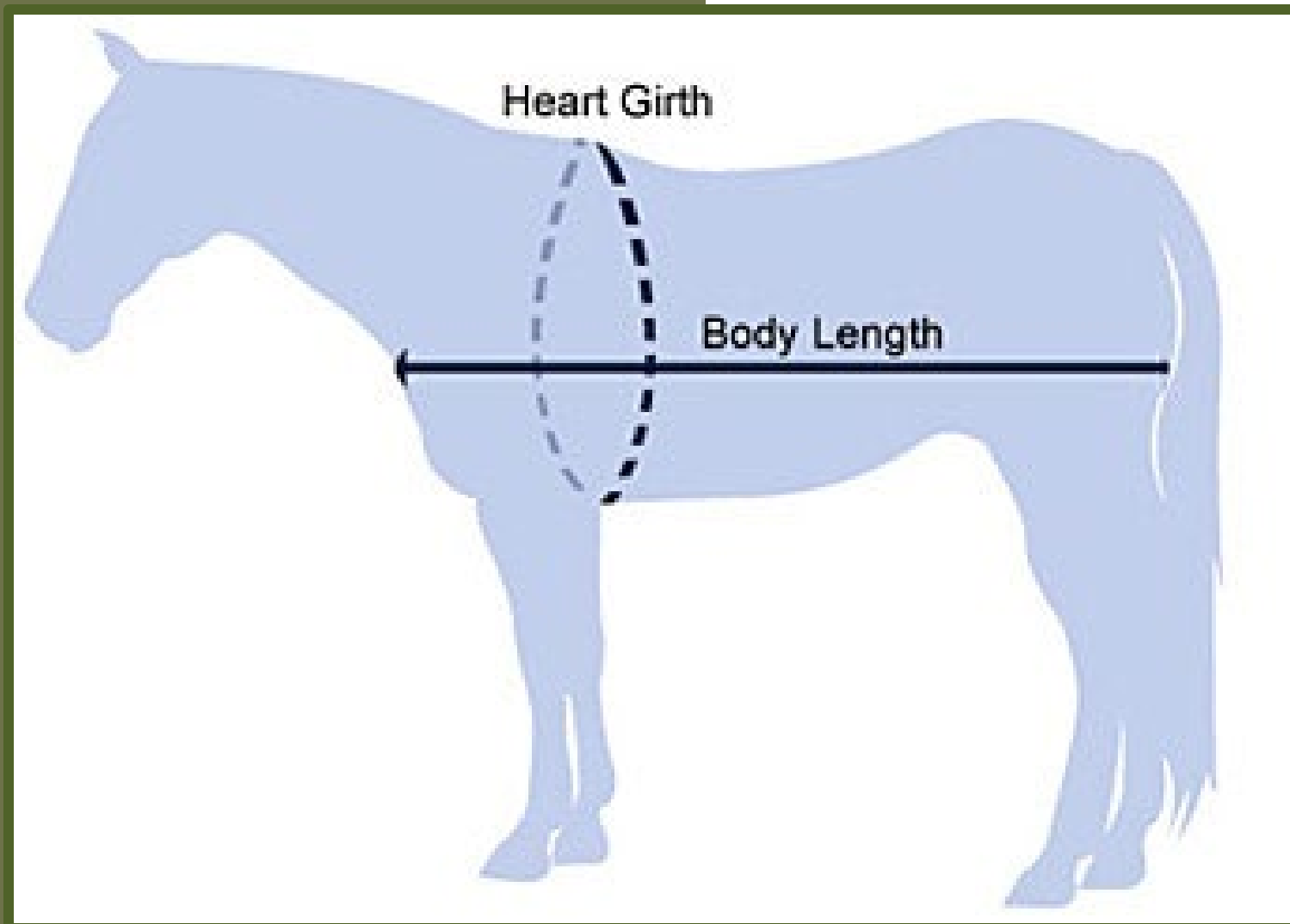
***Goal = Optimize Load Distribution***



# Systematic Decision Tree

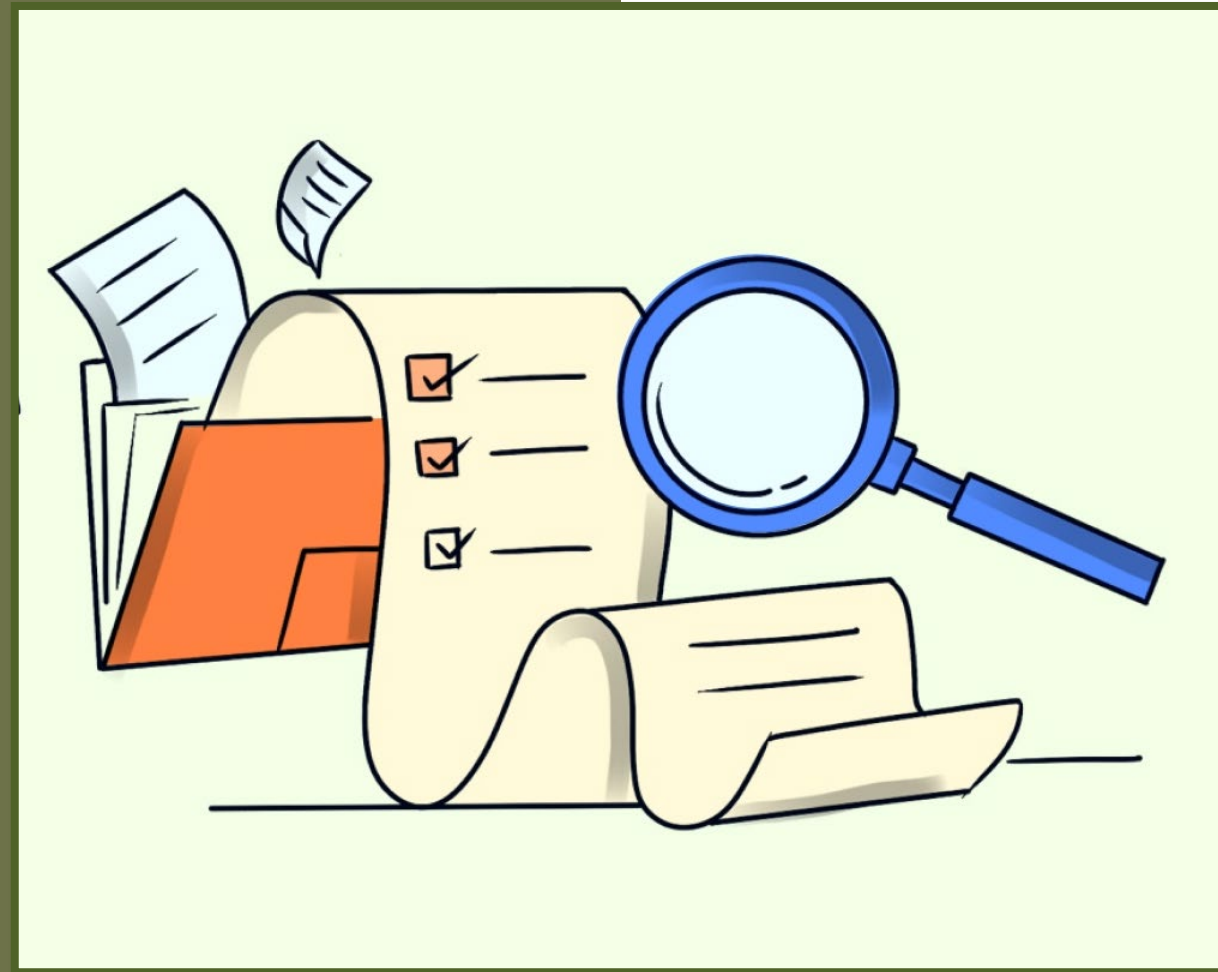


# Documentation System



- Built into electronic record - Salesforce
- Client weight (updated every 6-12 mo)
  - Tack weight (updated if modified)
  - Horse weight & limits (weighed monthly)
  - Total load calculation
  - Compliance status

# Why Documentation Matters



- Objective decision making
- Transparency with clients/families
- Horse welfare tracking
- Easier scheduling decisions

# Horse Weight Limits Report

## Horses - Weight Limits

As of 2026-03-08 22:22:18 Pacific Standard Time/PST • Generated by Randi Shannahan • Sorted by Ho

Horses Name	Weight	Rider Weight Limit	Unbalanced Rider Limit	Manual Rider Weight
Alik	850	150	113	TRUE
Annie II	900	80	60	TRUE
Apple Jax	855	171	128	FALSE
Artex	835	167	125	FALSE
Auggie	785	130	98	TRUE
Baxter	1015	170	128	TRUE
Bella	1065	213	160	FALSE
Blueberry	1330	250	188	TRUE
Braveheart	1065	213	160	FALSE
Cap'n Jack	1017	203	153	FALSE
Dolly	1100	180	135	TRUE
Easy	945	189	142	FALSE
Ginger	710	140	105	TRUE
Huckleberry	1230	246	185	FALSE
Jericho	1081	216	162	FALSE
JJ	920	184	138	FALSE
Mac	280	0	0	TRUE
Major	870	120	90	TRUE
Murray	770	154	116	FALSE
Pearl	1150	230	173	FALSE
Pixie	930	150	113	TRUE
Punkin	525	65	49	TRUE
Razzberry	1085	217	163	FALSE
Remi	900	180	135	FALSE
Sunny	1065	213	160	FALSE
Tucker	950	175	131	TRUE
Warrior	1000	200	150	FALSE
Total	28			

# Horse Weight Limits – Manually Adjusted

Horse	Balanced Rider Weight Limit (lbs)	% of BW	Unbalanced Rider Weight Limit (lbs)	% of BW
Major	120	14%	90	10%
Annie II	80	9%	60	7%
Dolly	180	16%	135	12%
Baxter	170	17%	128	13%
Blueberry	250	19%	188	14%
Ginger	140	20%	105	15%
Alik	150	18%	113	13%
Auggie	130	17%	98	12%
Tucker	175	18%	131	14%
Pixie	150	16%	113	12%
Punkin	65	12%	50	9%

# Weight Audit Report

## Horse Weight Restriction Audit Report V2

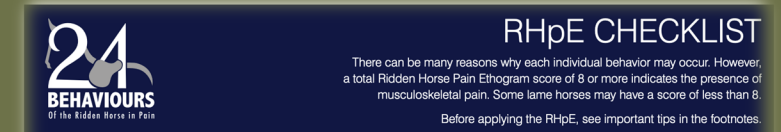
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Horse ↑	Start Date ↑	Within Weight Limit ↑	Day of Week	Program Name (DLS)	Staff	Tack	Contact Link	Unbalanced Rider	Weight	Total Equipment Weight	Mounted Weight	Rider Weight Limit	Weight Difference	Manual Rider Weight (Horse)	
Brave	3/10/2026	Yes	TUE	<a href="#">AR</a>	Shari Masline	07, SP, RTL, X Billets, RR,	<a href="#">Mila</a>	FALSE	130	24	154	213	59	FALSE	
			TUE	<a href="#">AR</a>	Shari Masline	SUR #9, AR, BFP, RR, SP,	<a href="#">Jaidyn</a>	TRUE	130	0	130	160	30	FALSE	
	3/11/2026	No	WED	<a href="#">AR</a>	Ellie Herrick	SUR #4, AR, BFP, BBP, Whit	<a href="#">Charles</a>	TRUE	168	0	168	160	-8	FALSE	
			Yes	WED	<a href="#">AR</a>	Ellie Herrick	07, SP, RTL, X Billets, RR, NS	<a href="#">Kaiyin</a>	FALSE	102	24	126	213	87	FALSE
			WED	<a href="#">OT</a>	Melissa Braun	FS, AR, BFP, SB1,	<a href="#">Danny</a>	FALSE	125	0	125	213	88	FALSE	
	3/12/2026	Yes	WED	<a href="#">AR</a>	Alice Krezymon	FS, AR, BFP, RR,	<a href="#">Taylor</a>	TRUE	126	0	126	160	34	FALSE	
			THU	<a href="#">AR</a>	Shari Masline	32b, MWP, WC, RR, NS,	<a href="#">Abigail</a>	FALSE	160	33	193	213	20	FALSE	
			THU	<a href="#">AR</a>	Christie Lynch	32b, MWP, WC, Handle Reir	<a href="#">Elizabeth</a>	TRUE	122	33	155	160	5	FALSE	
	3/13/2026	Yes	THU	<a href="#">OT</a>	Karen Yamasaki	28b, WP, TFC, SB1,	<a href="#">Eli</a>	TRUE	90	36	126	160	34	FALSE	
			FRI	<a href="#">OT</a>	Jennifer Lee	AR, BFP, Handle Reins, SB1,	<a href="#">Serenty</a>	TRUE	151	0	151	160	9	FALSE	
			FRI	<a href="#">OT</a>	Karen Yamasaki	FS, AR, BFP, SB1, +RR,	<a href="#">Everette</a>	FALSE	63	0	63	213	150	FALSE	
	3/14/2026	No	SAT	<a href="#">AR</a>	Mari Rockwood	10b, SP, YTL, RR, Short Stirr	<a href="#">Cole</a>	TRUE	150	23	173	160	-13	FALSE	
			Yes	SAT	<a href="#">SLP</a>	Jennifer Mansoor	16, SP, GTL, X Billets, SB1,	<a href="#">John</a>	FALSE	145	19	164	213	49	FALSE
			SAT	<a href="#">PT</a>	Matt Mitchell	SUR #1, AR, BFP, SB1, SP,	<a href="#">Caleb</a>	TRUE	92	0	92	160	68	FALSE	
			SAT	<a href="#">OT</a>	Melissa Braun	FS, AR, BFP, SB1,	<a href="#">Sonia</a>	FALSE	85	0	85	213	128	FALSE	



# Equine Welfare Monitoring

- Identify possible discomfort or when a horse could be working near or above capacity → **vet check consult**
- General behavioral observation
  - Conflict behaviors
    - Red flags: biting, head tossing, kicking, evading aids
    - Yellow Flags: tail swishing, reluctance to move forward
  - Pain/soreness signs
  - Withdrawal
- Should be used as supporting measures, NOT decision tools
  - Ridden Horse Pain Ethogram ( $\geq 8$  MSK pain)<sup>12</sup>
  - Horse Grimace Scale (*validated for acute pain only*\*)<sup>13</sup>



HORSE NAME \_\_\_\_\_ DATE \_\_\_\_\_

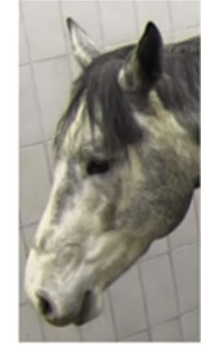
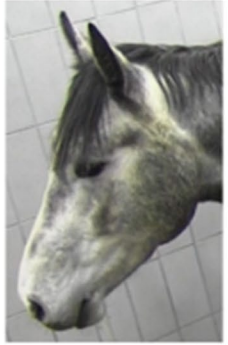
## FACIAL MARKERS

- 1 Ears Back  
Ears behind vertical position for at least 5 seconds.  
Notes: \_\_\_\_\_
- 2 Eyes Closed  
Eye lids half closed or closed for at least 2-5 seconds.  
Notes: \_\_\_\_\_
- 3 White of the Eye\*  
Repeated exposure of the sclera (white of the eye).  
Notes: \_\_\_\_\_
- 4 Intense Stare  
Glazed expression (zoned out), or staring intensely for at least 5 seconds.  
Notes: \_\_\_\_\_
- 5 Mouth Open/Close  
Mouth open with separation of teeth for at least 10 seconds, or repeatedly opening and shutting mouth with separation of teeth for at least 10 seconds.  
Notes: \_\_\_\_\_
- 6 Tongue Out  
Tongue hanging out or moving in and out more than once.  
Notes: \_\_\_\_\_
- 7 Bit Pulled Through\*\*  
Bit pulled through to one side of the mouth.  
Notes: \_\_\_\_\_

Stiffly backwards ears			Eyelid closure		
The ears are held stiffly and turned backwards. As a result, the space between the ears may appear wider relative to baseline.			The eyelid is partially or completely closed. Any eyelid closure that reduces the eye size by more than half should be coded as "obviously present" or "2".		
Tension above the eye area			Prominent strained chewing muscles		
The contraction of the muscles in the area above the eye causes the increased visibility of the underlying bone surfaces. If temporal crest bone is clearly visible should be coded as "obviously present" or "2".			Straining chewing muscles are clearly visible as an increase tension above the mouth. If chewing muscles are clearly prominent and recognizable the score should be coded as "obviously present" or "2".		
Mouth strained and pronounced chin			Strained nostrils and flattening of the profile		
Strained mouth is clearly visible when upper lip is drawn back and lower lip causes a pronounced "chin".			Nostrils look strained and slightly dilated, the profile of the nose flattens and lips elongate.		



### Stiffly backwards ears



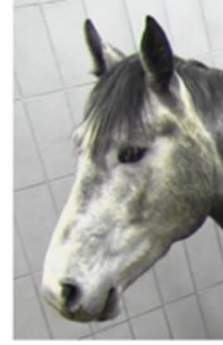
Not present  
(0)

Moderately  
present (1)

Obviously  
present (2)

The ears are held stiffly and turned backwards. As a result, the space between the ears may appear wider relative to baseline.

### Orbital tightening



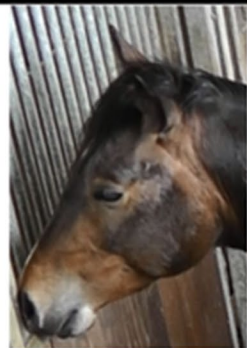
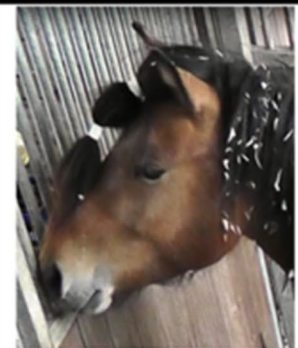
Not present  
(0)

Moderately  
present (1)

Obviously  
present (2)

The eyelid is partially or completely closed. Eyelid closure that reduces the eye size by more than half should be coded as "obviously present" or "2".

### Tension above the eye area



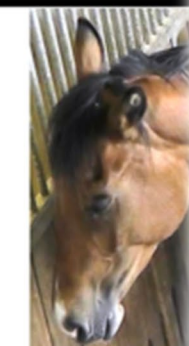
Not present  
(0)

Moderately  
present (1)

Obviously  
present (2)

The contraction of the muscles in the area above the eye causes the increased visibility of the underlying bone surfaces. If temporal crest bone is clearly visible should be coded as "obviously present" or "2".

### Prominent strained chewing muscles



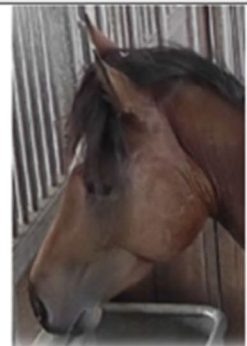
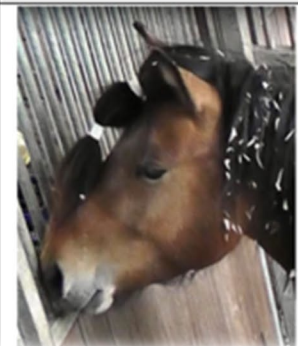
Not present  
(0)

Moderately  
present (1)

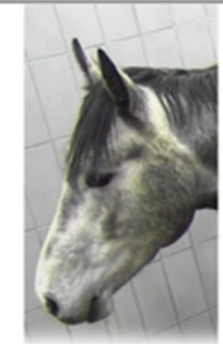
Obviously  
present (2)

Straining chewing muscles are clearly visible as increase tension above the mouth. If chewing muscles are clearly prominent and recognizable score should be coded as "obviously present" or "2".

### Mouth strained and pronounced chin



### Strained nostrils and flattening of the profile



# RHpE CHECKLIST

There can be many reasons why each individual behavior may occur. However, a total Ridden Horse Pain Ethogram score of 8 or more indicates the presence of musculoskeletal pain. Some lame horses may have a score of less than 8.

Before applying the RHpE, see important tips in the footnotes.

HORSE NAME \_\_\_\_\_ DATE \_\_\_\_\_

### FACIAL MARKERS

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Ears behind vertical position for at least 5 seconds.

Notes: \_\_\_\_\_

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Notes: \_\_\_\_\_

6 Tongue Out  
Tongue hanging out or moving in and out more than once.

Notes: \_\_\_\_\_

7 Bit Pulled Through\*\*

# Alternative Programming

- Modified mounted AR lesson plan
- Unmounted horsemanship
  - Grooming, feeding, horse care, barn chores
  - Groundwork: Leading, lunging, work in hand
- Other program referrals
  - Clinic based (unmounted) therapies
  - Equine Assisted Learning



# New Program Development

- Fitness for riding (AR)
- Vocational training (EAL → OT)
  - Continued engagement
  - Increased access
  - Lower horse workload
  - Connecting with other non-profits



# New & Alternative Programming

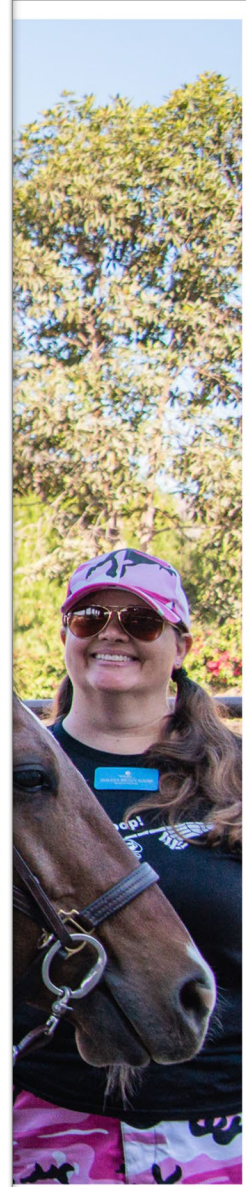


# Case Example: Linda



- Prior mounted AR client when higher-capacity horses were available
- Took an unrelated break; no appropriate horse available within updated carrying guidelines
- Transitioned to unmounted adaptive horsemanship program
- Client reports improved enjoyment, hand function and a 25-pound weight loss over 6 mo
- Attributed to participation in unmounted activities

# Case Example: Paul



- Long time mounted client with increasing difficulty participating
- Transitioned to clinic PT and vocational activities
- Served as greeter for Shea Center fundraising event and for non-profit partner Wonderfully Made Coffee
- Now has his first paid employment at the Mission Viejo YMCA

# Case Example: Gigi

- New client with severe balance deficits and weight considerations that made mounted activities unsafe
- Started in alternative unmounted adaptive horsemanship program
- Meaningful short-term progress: within 3 weeks, accepted closed toe shoes after wearing flip flops exclusively for the past 5 years



# Case Example: Mac'n'Cheese



- 26-year-old miniature horse
- Previously used intermittently for client services and events
- Now regularly scheduled 8+ hours per week for ground-based appointments
- 100# weight loss from Aug 2025 to March 2026

# Lessons Learned

## Successes →

- Standardized protocol, ongoing auditing system, staff confidence and autonomy, clearer communication, improved outcomes with clients

## Challenges →

- Difficult conversations, limited horse availability, schedule adjustments, cultural shift, client discharges





# Final Thoughts

- Weight limits are not just about numbers
- Balance classifications are key
- Horse and tack selection matter
- Documentation keeps decisions objective
- Alternative programming can still be fun, effective and meaningful
- Overall goals surround client needs, horse welfare, program sustainability

# Acknowledgements



Christina Lee – Equine Operations Manager  
Anissa Rodriguez – Systems Intelligence  
Trish Evans – Program Director  
Janelle Robinson – Chief Program Officer

*The Shea Center Program Staff &  
Client Families*



# Questions & Discussion

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