Nutrition of the Racehorse

- Racehorses in training have VERY high nutritional requirements

- Maintenance: 16.7 Mcal /100%
- Competition: 23.3 Mcal /140%
- Racing: 34.5 Mcal /206%

How are Horses Fed at the Track?

- Unpublished survey by Dr. Amy Burk of Maryland Trainers:
  - Hay:
    - More than 90% of trainers feed timothy hay
    - About 1/3 offer it free-choice
    - About one-third feed it twice daily
    - Only 20% of trainers offered only timothy hay!
    - Almost 80% of trainers feed alfalfa hay
    - 30% feed once daily
    - 30% feed twice daily
    - 30% offer it free-choice

- Unpublished survey by Dr. Amy Burk of Maryland Trainers:
  - Grain:
    - ~50% of trainers use a commercial grain mix
    - ~40% of trainers use a commercial grain mix plus one or more added ingredient (most add oats, others add bran or beet pulp)
    - ~7% feed a “custom mix”
    - 2/3 of trainers feed grain in two meals per day, the remainder feed 3 meals per day

- Nearly 85% of trainers give their horses at least one supplement (blood builder, fat, vit/min, joint...)

EXERCISE REGIMENS

- Dr. Burk’s study...
- No. of times per week horses trained:
  - 1-2 times = 4.4%
  - 3-4 times = 20.0%
  - 5-6 times = 68.9%
  - 7 times = 6.7%

- Frequency of racing:
  - Every 10 days = 23.7%
  - Every 14 days = 50.0%
  - Every 21 days = 22.4%
  - Every 28 days = 3.9%
Nutrition–related Problems

- Dr. Burk’s study...
- Trainers with horses diagnosed with:
  - Tying-up = 56.0%
  - Ulcers = **48.4%**
    - As many as 90% of racehorses have gastric ulcers
  - Colic = 29.7%
  - Thumps = 9.9%
  - Laminitis = 6.6%
  - Choke = 2.2%

Summarize

- Most racehorses are worked 5–6 times per week
- They eat grain 2x per day
- Timothy hay is the forage of choice and it is fed at least 2x per day, but may be offered free choice
- About ½ of racehorses receive alfalfa hay
- Ulcers, tying–up and colic top the list of nutrition–related problems

Performance Types

- **Endurance**
  - Aerobic (hours)
  - Competitive trail, draft/farm work, lessons
- **Middle–distance**
  - Aerobic/anaerobic (minutes)
  - TB, SB racing, cutting
- **Sprinting**
  - Anaerobic (seconds)
  - QH racing, draft pulling, rodeos

Energy Requirements – Performance Defined

- **Light Work**
  - Heart rate = **80 bpm**
  - 1–3 hours per week
  - 40% walk
  - 50% trot
  - 10% canter
  - Examples:
    - Trail riding
    - Beginning of training
    - Occasional show horses

- **Moderate Work**
  - Heart rate = **90 bpm**
  - 3–5 hours/week
  - 30% walk
  - 55% trot
  - 10% canter
  - 5% low jumping and other skill work
  - Examples:
    - School horses, trail riding, breaking/training, frequent show horses, polo, low level eventing

- **Heavy**
  - Heart rate = **110 bpm**
  - 4–5 hours per week
  - 20% walk
  - 50% trot
  - 15% canter
  - 15% gallop, jumping, other skill work
  - Examples:
    - Polo, show horses (frequent, strenuous), medium–high eventing, race training (middle stages)
**Energy Requirements – Performance Defined**

- **Very Heavy**
  - Heart rate = 110–150 bpm
  - Duration varies → 1 hr/week speed work to 6–12 hr/week slow work
- **Examples**:
  - Racing (QH, TB, STB, Endurance)
  - Elite 3-Day Event

**Making the Transition**

- Don’t cut the grain “cold turkey”
  - Always make changes gradually
  - Never feed more than 5 pounds of grain in one meal
- Use a very high quality forage fed free choice, if possible
  - Alfalfa is not your enemy!
- Monitor body condition score on a regular basis
  - Don’t wait until the horse has lost a lot of weight to make a diet change!

**Ulcer Severity Scoring**

- 0 – Normal Mucosa (may have mild reddening)
- 1 – Small single or small multifocal lesions
- 2 – Large single or large multifocal lesions; extensive superficial lesions
- 3 – Extensive lesions with areas of apparent deep ulceration

**Ulcers!**

- Causes of ulcers in Racehorses?
  - Non-steroidal anti-inflammatories
  - Physiological stress
  - High grain/low forage diets
    - Meal-feeding
    - Exercise effects on digestive tract
    - Bacterial infection?
  - Studies show that ulcer risk is positively correlated with time in training
    - In other words – horses in training for longer are more likely to develop ulcers

**Exercise and Gastric Function**

Table 1—Effect of exercise on pH in the proximal portion of the stomach of 3 horses from which food was withheld for 2 hours (Food) or 18 hours (Food withheld) prior to initiation of exercise

<table>
<thead>
<tr>
<th>Period</th>
<th>Fed</th>
<th>Food withheld</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before exercise</td>
<td>5.30 ± 0.30*</td>
<td>5.25 ± 0.07*</td>
</tr>
<tr>
<td>Walking</td>
<td>3.95 ± 0.12*</td>
<td>3.15 ± 0.17*</td>
</tr>
<tr>
<td>Trotting and galloping</td>
<td>2.82 ± 0.62*</td>
<td>1.81 ± 0.13*</td>
</tr>
<tr>
<td>Return to walking</td>
<td>2.19 ± 0.34*</td>
<td>2.61 ± 0.13*</td>
</tr>
<tr>
<td>After exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3.92 ± 0.30**</td>
<td>3.04 ± 0.18**</td>
</tr>
<tr>
<td>2</td>
<td>4.52 ± 0.48**</td>
<td>5.05 ± 0.35**</td>
</tr>
<tr>
<td>3</td>
<td>5.36 ± 0.23**</td>
<td>5.46 ± 0.32**</td>
</tr>
<tr>
<td>4</td>
<td>5.35 ± 0.25**</td>
<td>5.71 ± 0.37**</td>
</tr>
<tr>
<td>5</td>
<td>5.17 ± 0.89**</td>
<td>5.16 ± 0.40**</td>
</tr>
<tr>
<td>6</td>
<td>5.47 ± 0.25**</td>
<td>4.66 ± 0.39**</td>
</tr>
</tbody>
</table>

Lorenzo-Figueroa and Meissner
AJVR 2002; 63: 1481-1487
Management of Horses with Ulcers

- How do you know the horse has ulcers?
  - Endoscopy
  - Colonic ulcers?
  - Many owners opt to treat without endoscopy
  - Clinical Signs
- Only drug licensed to treat ulcers = Gastrogard®
  - What about generic omeprazole?
- Reduce stress
  - Maintain consistent schedule
  - Turn-out

Racehorse Feet – Most common problem

- Long toes, low heels, thin walls
- Frequent shoeing
- Frequent bathing (drying effect)

RESULTS:
- Brittle feet
- Heel pain
- Abscesses, bruising
- Quarter/toe cracks
- Excessive strain on DDFT

Dietary Management for Ulcers

- Maximize forage
  - Pasture is best
- Alfalfa hay?
- Probiotics?
  - May be useful during treatment
- Supplements
  - Seabuckthorn Berry Extract
  - Prevented an increase in ulcer score severity but didn’t get rid of ulcers in 8 horses
- Supplements...
  - Calcium Carbonate
  - Requires frequent feedings to maintain higher pH
  - Oils
  - Studies are conflicting
  - Oral Electrolytes
  - INCREASES number and severity of gastric ulcers!
  - Use with caution in horses prone to ulcers

Fixing the Feet

- LOOOOONG process
  - Can take up to a YEAR
  - Will probably never be “fixed” but can be managed
  - May require egg bar shoes or other heel support system

Racehorse Feet

Studies indicate higher prevalence in Thoroughbreds than in other breeds
- Time spent in a stall is directly related
- Certain TB bloodlines seem more likely to develop stereotypic behaviors than others
- Difficult to exclude environmental or management factors
Development of Vices:

- Risk increases:
  - ✓ When amount of forage fell below 15 pounds per day
  - ◦ When bedding other than straw is used
  - ◦ When total number of horses at a farm is fewer than 75
  - ✓ When stall designs minimize contact between horses
  - ✓ When hay, rather than pasture, was used
- Notice any similarities between ulcer risk factors and vice risk factors?

Management of Cribbing

- Aversion learning:
  - Anti-chew chemicals
  - Electrified fence
  - Nails hammered into cribbed wooden surfaces
- Drugs and surgery ➔ if behavior is causing obvious harm to the horse
  - Opiate antagonists: naloxone, nalmefene
  - Use of antacids/GastroGard to prevent/treat ulcers

Why do they start to crib?

- ✓ Low forage, high concentrate diet = risk factor
- ✓ High forage ration may reduce time available to crib?
- High forage ration increases gut-fill which reduces desire to crib?
- ✓ May be associated with formation of gastric ulcers!

Weaving

- Horse rocks from one foreleg to the other for long periods of time
- Generally occurs in horses kept in stalls
- Usually occurs while horse is standing with head over the stable door

Management of Cribbing

- Reduce stall time
- Increase forage and decrease grain in diet
- Cribbing straps or rings
- Surgery to reduce function of muscles necessary to crib

Why do horses start to weave?

- Many start to weave when they’re about 1 year old
- May have been sold from their birthplace and are stabled in new surroundings
- Particularly done when companions are removed from stable
  - May start to occur when their desire to leave with friends is thwarted?
Predictors for Weaving

- Use of bedding other than straw
- Number of hours ridden/worked per week
- Use of a non-snaffle bit (gag, pelham, kimberwick, or curb)
- Number of times per day a horse is fed hay
- Number of hours spent in a stall
- Number of hours spent in a pasture with grass
- Sex, age, breed

Management of Stall Walking

- Same as weaving
- Hang tires, bricks etc. from ceiling in path
- Stable toys to reduce boredom

Management of Weaving

- Reduce stall time
- Increase forage
- Close door of stall
- Add mirrors to stall
- Keep other horse in stable
- Provide horse with toys
- Barriers (weaving bars)
- Harnesses to restrict movement

Transition from Stall to Pasture

- Once you turn him loose...you may never catch him again, but most will happily meet you at the gate!
- Start small
  - Small paddock (1–2 acres) with one friendly companion
- Ideal: paddock with shelter and 24/7 turn-out.
- Worries about grass founder? Valid concern!
- If forage is in abundance, introduce horse to pasture gradually.

Stall-Walking

- Horse constantly circles their stall
- Causes uneven wear pattern on hooves
- Caused by confinement, lack of interaction with other horses, lack of grazing
- Two categories:
  - Frantic - rapid walking from separation anxiety
  - Stereotypic – response to poor environment

Advantages of Pasture

- Promotes normal healthy behavior
  - Providing space for play and exercise
  - Promotes social interaction
  - Reduces development of vices
Advantages of Pasture

- Reduces likelihood of colic
- Lowers incidence of gastric ulcers
- Decreased incidence of Recurrent Airway Obstruction (Heaves)
- Increases bone mineral content (increased bone strength)