Canterbury Pony Club

H-B Bookwork

- Teaching
- Bandaging
- Anatomy
- Conditioning
- Conformation, Lameness, and Unsoundnesses
- Stable Management
- Health Care and Veterinary Knowledge
- Turn-out and Preparation for Rating

Three Different Learning Styles

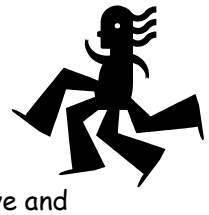
Visual

- Take numerous, detailed notes
- Tend to sit in the front
- Are usually neat and clean
- Often close their eyes to visualize or remember something
- Find something to watch if they are bored
- Like to see what they are learning
- Benefit from illustrations and presentations that use color
- Are attracted to written or spoken language rich in imagery
- Prefer stimuli to be isolated from auditory and kinesthetic distraction
- Find passive surroundings ideal

Auditory

- Sit where they can hear but needn't pay attention to what is happening in front
- May not coordinate colors or clothes, but can explain why they are wearing what they are
- Hum or talk to themselves or others when bored
- Acquire knowledge by reading aloud
- Remember by verbalizing lessons to themselves (if they don't, they have difficulty reading maps or diagrams or handling conceptual assignments like mathematics.

Kinesthetic



- Need to be active and take frequent breaks
- Speak with their hands and gestures
- Remember what was done but have difficulty recalling what was said or seen
- Find reasons to tinker or move when bored
- Rely on what they can directly experience or perform
- Activities such as cooking construction, engineering and art help them perceive and learn
- Enjoy field trips and tasks that involve manipulating materials
- Are uncomfortable in classrooms where they lack opportunities for hands-on experience
- Communicate by touching and appreciate physically expressed encouragement, such as a pat on the back

What is Your Learning Style

http://www.usd.edu/trio/tut/ts/stylest.html Accessed October 5, 2006.

Choose the first answer that comes to mind. Don't spend too much time thinking about any one question.

1. When you study for a test, would you rather
   a. read notes, read headings in a book and look at diagrams and illustrations?
   b. have someone ask you questions or repeat facts silently to yourself?
   c. write things out on index cards and make models or diagrams?
2. Which of these do you do when you listen to music?
   a. Day dream (see things that go with the music)
   b. Hum along
   c. Move with the music, tap your foot, etc.
3. When you work at solving a problem, do you
   a. make a list, organize the steps, and check them off as they are done?
   b. make a few phone calls and talk to friends or experts?
   c. make a mold of the problem or walk through all the steps in your mind?
4. When you read for fun, do you prefer, a
   a. travel book with a lot of pictures in it?
   b. mystery book with a lot of conversation in it
   c. book where you answer questions and solve problems
5. To learn how a computer works, would you rather
   a. watch a move about it?
   b. listen to someone explain it?
   c. take the computer apart and try to figure it out for yourself?
6. You have just entered a science museum. What will you do first?
   a. Look around and find a map showing the locations of the various exhibits.
   b. Talk to a museum guide and ask about exhibits.
   c. Go into the first exhibit that looks interesting and read directions later.
7. What kind of restaurant would you rather not go to?
   a. One with the lights too bright
   b. One with the music too loud
   c. One with uncomfortable chairs
8. Would you rather go to
   a. an art class?
   b. a music class?
   c. an exercise class?
9. Which are you most likely to do when you are happy?
   a. Grin
   b. Shout with joy
   c. Jump for joy
10. If you were at a party, what would you be most likely to remember the next day?
    a. The faces of the people there, but not the names
    b. The names but not the faces
    c. The things you did and said while you were there

11. When you see d - o - g, what do you do first?
    a. Think of a picture of a particular dog
    b. Say the word "dog" to yourself silently
    c. Sense the feeling of being with a dog (petting it, running with it, etc.)
12. When you tell a story, would you rather
    a. Write it
    b. Tell it out loud
    c. Act it out
13. What is most distracting for you when you are trying to concentrate?
    a. Visual distractions
    b. Noises
    c. Other sensations like, hunger, tight shoes, or worry
14. What are you most likely to do when you are angry?
    a. Scowl
    b. Shout or "blow up"
    c. Stomp off and slam doors
15. When you aren't sure how to spell a word, which of these are you most likely to do?
    a. Write it out to see if it looks right
    b. Sound it out
    c. Write it out to see if it feels right
16. Which are you most likely to do when standing in a long line at the movies?
    a. Look at posters advertising other movies
    b. Talk to the person next to you
    c. Tap your foot or move around in some other way

Total your a's, b's, and c's.

Look at the numbers:

More A's means that you are a visual learner.

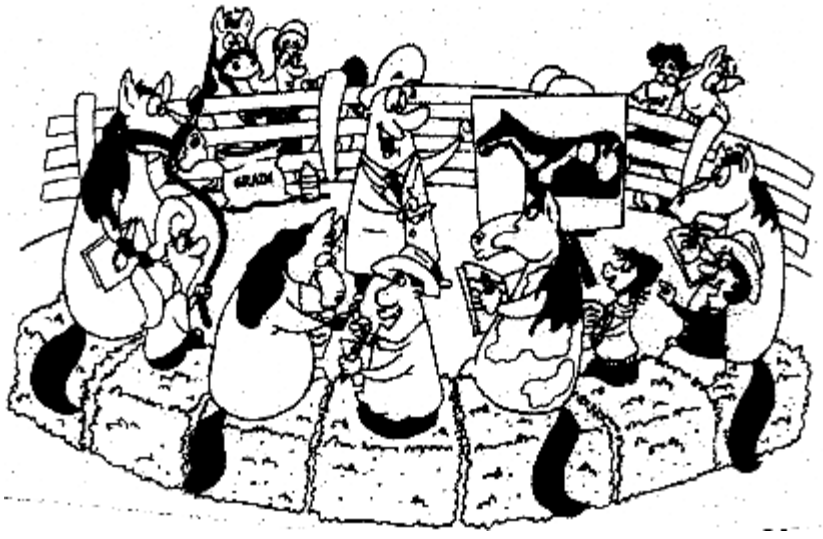
More B's means that you are an auditory learner.

More C's means that you are a kinesthetic learner.

Qualities of a Good Teacher

Loosely adapted from *The Instructor's Handbook of Horsemanship Safety*

- Makes safety the first priority
- Has a well-thought out plan for each lesson but is flexible if the situation needs adjustment
- Considers carefully the ages and backgrounds of the students.
- Assumes the students know little about the topic . . . often there are 'holes' in students' knowledge that need to be filled
- Uses examples and personal experiences in teaching
- Explains any terms or words the students may not completely understand
- Does not talk longer than FIVE minutes without involving the students in some way
- Does not talk down to students or use sarcasm or ridicule
- Gauges effectiveness during the lesson by observing the facial expressions, body language and participation of the students.
- Whenever possible, keeps all students busy, even when working with an individual
- Knows when and how to use an assistant
- Wears neat, professional attire . . . correct riding attire for mounted lessons
- Has good voice projection and makes eye contact with students
- Is on time and reliable
- Is patient, friendly, professional and ENTHUSIASTIC



Using Pony Club Members in Instruction

When to Start Teaching

- Not all young people are natural teachers, and in fact, may not desire to teach. However, it is important to teach these skills and make available the opportunity to those Pony Club members who wish to learn and teach.
- Not all Pony Club members like to teach and some may be insecure in doing so.

D-3

- D-3's can begin teaching with supervision. Topics can be assigned to the D-3's. They can teach parts of the horse, as an example. The best way for this is on a one-to-one basis.
- D-3's can assist in the riding phases of lessons by having the Instructor use them as helpers to walk with young Pony Club members or work on a specific problem.
- C-1's continue with supervised teaching of stable management topics for the D level. The student: teacher ratio can increase to 2-4 D students. The role of riding lessons can also expand. A simple lesson plan for a part of a lesson four to six times a year can begin.
- A simple lesson plan will make the D-3/C-1 aware of what will take place in the lesson. Again, this activity should be supervised by a B, HA, A, or knowledgeable instructor.

C-2 and C-3

- Continued expansion of teaching skills, under supervision. Can do unmounted and portions of mounted lessons with guidance.
- It takes time and practice to learn to teach a group of 3-5 riders with safety. Riding camps are a good lace to learn teaching skills.
- The B continues to expand skills and can do all unmounted, most levels of D and C's (with supervision of they have not had experience).

HA and A

- HA and A's are able to teach all phases of the D and C levels. To achieve their ratings, they must have fulfilled their teaching requirements.

Tips for Teaching

Laurie Beall, Canterbury Pony Club, December 29, 2004

For more information, see USPC Instruction Website and USPC Horse Management Website.

For sample lesson plans and teaching ideas, see USPC Instruction (articles), USPC Lesson of the Month, and Lesson Plans and Horse Management Articles.

- What are some attributes of a good teacher to you? Make a list and keep these in mind when you teach.
- Things to keep in mind:
  - Involve the senses! The more senses you use, the greater the chance the student will remembers.
  - Different learning styles: visual, auditory, and kinesthetic
  - Variety is the spice of life! Try to word things in different ways or use scenarios students can relate to.
  - Speak clearly, project your voice and talk on the same level as the students (you would speak differently to an 8-year old D-1 than to an 18-year old C-3).
- Know the Pony Club standard. Know the topic you are teaching. Be a resource fro your students. Be prepared to learn from your students as well. What do you do if you don't know the answer to a question the student asks?
- Be organized. Come prepared with everything you will need (handouts, materials, lesson plan). Be prepared to modify your plan if needed – sometimes thing happen and you must be flexible.
- Repetition/Review/Quiz – games with prizes are always fun.
- Involve the whole class – pay equal attention to everyone, not just the outspoken student.
- Set a good example for your students.
- Finish your lesson on an upbeat note.
- And of course, remember safety is always of utmost importance.

Good luck and happy teaching!

Helpful Hints for Teaching a Lesson

Jan Nelson

Title
Give your lesson a title that tells what you plan to teach.

Supplies/Equipment
List all supplies that you need to teach the lesson.

Goal
- Write a statement that tells what you hope to accomplish in this lesson.
- Be specific; don't try to teach too much. Decide how much time you will be teacher and plan your lesson to fit in that timeframe.

Procedure
- List the steps that you will teach to accomplish your goal.
- Break your lesson down into pieces that will allow learning. Most learning needs to be taught in a sequence. For example, if you are teaching how to put a saddle on a horse, there will be a correct order of how to put on the pad, girth, and saddle.
- Frequently ask if the students have questions.

Practice
- Give students time to practice what you have taught them.
- Give helpful assistance, but do not do it all for them.

Review
- Go over your goal and/or the skill with the students by asking if they understand and can do what you were teaching. They may not be expert right away since it is a new skill and may need a lot of practice.
- Thank the students for coming to the lesson and encourage them to practice the skills taught (with supervision if needed).

Reteach (if necessary)
- If your students did not understand your lesson, try to use different words or different ways to teach the same thing.
- Break your lesson into smaller pieces to achieve understanding.

Tips for Implementing a Lesson Program

Before you begin your series of lessons within the program . . .
The lessons in this program are listed 1-39 in skill presentation order. Close adherence to this skill order will facilitate rating progression.

- Ask the riders to come ½ hour earlier than their ride time.
- Remind them not to prepare their horses until after your short introduction.

INTRODUCTION
Be prepared to enthusiastically, and in your own way, welcome them into this new series of programmed lessons.
Introduce yourself – give a background of your experience.
Explain that the lessons will be age-based with different rating levels working at their own skill level.
Quickly review what you hope to accomplish in a pre-determined part of the year.
Remind them that the skills to be taught in your section of the program will relate to the others.

Now the riders prepare their horses for the first lesson and present themselves for safety inspection.

PROGRESSION OF ANY SPECIFIC LESSON
While riders are unmounted, use the lesson plan outline to explain today's lesson.
Proceed with the lesson as planned, remembering to prepare for the unexpected.
At the end of the lesson during the cool-out of their horses
Remind the riders of any practice you expect them to do.
Give a short explanation of how you will proceed from this skill to the next.

VERY IMPORTANT REMINDERS FOR YOU AS THE INSTRUCTOR:
You must have read and re-read the skills and teaching techniques needed to teach them. Use resources from Pony Club as your **definitive** basis for the skills and add to that from any outside materials that you may have.

The following are <u>must read</u> pages before starting the program:

'A' Manual, p. 184-219; New Zealand Instructors Manual, p. 32-34, 110-111, 130-132.

Try things out yourself if you need to test the timing and efficiency of any teaching technique.

Be prepared with alternate ideas and approaches to keep the lesson progressing, or if need be, to reinforce prior skills that have not been mastered.

Speaking of 'mastered,' do not keep riders doing a single skill lesson after lesson until that have 'mastered' it. Instead, go on to another related skill as the basis for the next lesson and bring the unmastered skill in at the end of a lesson for review and polishing. **If skills still need work – redo flat/fences/open again to reinforce.**

However, there may be times when you will want to discuss the need to review at times not listed in the lesson program. ALWAYS check with the other instructors and D.C. before changing the lesson progression – all three disciplines must add the extra lesson to keep in sync.

Order of Presentation

D=D Manual C=C Manual A=B/HA-A Manual NZ=New Zealand Instructors Manual

Page Reference		Lesson
Work on the Flat: Review and Strengthening of the Basics		
1	D 139-140 D 34-38, 42-44, 108-109 C 61-63 A 67-72	**Leading in the bridle at the walk and halt** **Transitions Review** Walk/halt; trot/walk; walk/trot; trot/walk/halt; halt/walk; halt/trot
4	D 24-26 C 46 D 28-31, 49-54, 59-66, 89-97 A39-42	**Mount/Dismount** **Basic Balanced Position** Halt/walk/trot – using balancing exercises Riders discuss diagonals – yes/no
7	D 100 C 106-109, 118-119 A 50, 66-67 NZ 112-115	**Rein back, Half-halt, Diagonals and Leads** Walk/trot/canter
10	D 56-58, 101-104, 106-107	**Large curved lines and changes of direction** Walk/trot/canter Riders discuss their leads – attained or not
13	D 87-88 D 99, 105	Adjust stirrups and girth while mounted **Increase/decrease speed** In group – trot **Work without stirrups** Trot
16		**Review all skills in individual work** Riders discuss their riding progress Evaluate riders for rating upgrades Discuss with other instructors and D.C. – any needed remedial work and schedule
Work on the Flat: Adding to the Basics to C-3		
19	C 3, 15-20, 57-60, 95-97, 112-118	**Warm-up for flatwork** Evaluate basic balanced position for use next lesson **Movement away from leg** Walk/trot – leg yield or turn on forehand, or both Discuss aids – did they work:
22	C 4-8, 20-21, 49-57 NA 104-108	**Demonstrate lengthening/shortening reins** **Basic Balanced position** Trot/canter using exercises with and without stirrups
25	C 5, 8-11, 63-66, 97-103 NZ 1-8, 111	**Use of leg and other aids for corners** Walk/trot/canter **Change horses** Walk/trot/and ? Riders discuss horses' accuracy and forward and their aids – did they work?

Page Reference		Lesson
28	C 21-24, 110	**Correct 20-15 meter circles and serpentines** Trot/canter 'o'/trot serpentines Riders discuss accuracy of circles
31	C 20-21, 109-112	**Maintain 'forward' and accuracy of transitions** Walk/trot/canter Riders discuss forward and lengthening and accuracy of movement
34	C 119	Warm-up for flat work **Change horses** Walk/trot/canter, other work as able – change more than once if possible Riders discuss differences in horses and their own
37		**Review Skills** Riders discuss rhythm, etc. Riders discuss complete evaluation of ride
Work over Fences: Review and Strengthening of the Basics		
2	D 40, 440-46, 66-67, 75-78, 109-114 NA 66-68, 122-124	**Leading in bridle** Walk/trot from both sides **Smooth approaches to trot poles to an 'X'** Walk/trot (or ?) Riders discuss reasons for various riding positions
5	D 67-71, 75-78, 115-116 A 89-98, 104-110 NZ 117	**Basic balanced position to trot poles to 'X' to vertical** Trot – plus exercises
8	C 75, 78, 117-119	**Half-halt approaches to trot poles to 'X' to vertical** Trot/canter – also improve halts Riders discuss whether aids worked or not
11	C 66-67 A 95 NZ 68-74	**Use of sitting in curved lines over '8' course**
14	C 66-67	**Use of increase/decrease of pace to various types of fences** Riders discuss steadiness of pace – yes/no, giving ideas to improve
17		**Review all skills to date over gymnastics and courses** **Riders discuss complete rides and ways to improve.**
Work over Fences: Adding to the Basics to C-3		
20	C 67-68 A 111	**Discuss reasons for various stirrup lengths** **Use of leg for approaches during course work**
23	C 69, 120-131 A 116-121	**Basic balanced position** Trot/canter approaches – grids and roll back lines
26	C 72-80, 132-137 NZ 140-142	**Use of all aids** Canter over all types of lines **Change horses**
29	C 120-131	**Basic balanced position without stirrups** Trot/canter – grids with exercises
32		**Review and improve as needed plus basic balanced position**
35	C 119	**Change horses (more than one change) – over course** Riders discuss differences in horses and their own

Page Reference		Lesson
38		**Review all skills individually** Riders discuss their riding progress Evaluate riders for rating upgrades Discuss with other instructors and D.C. – any remedial work that is needed and schedule
Work in the Open: Review and Strengthening of the Basics		
3	 *C* 82-85, 122-127	**Lead in bridle** Walk/trot/halt using voice and whip as aids Discuss ways for control in the open – practice them **Pace in the open** Walk/trot/canter 250-300 to vertical and oxer
6	*A* 128-136 D 97-98	**Basic balanced position over fences and at pace** Trot/canter **Emergency dismount at trot**
9	*C* 79-82	**Use of half-halt in hand gallop to verticals and down banks**
12	Review above	**Basic balanced position in curved lines, etc. (add combinations)** Riders discuss results of their aids during courses
15		**Work on pace** 300-400 singly and as a group **Ride long and short lines to sharp reverses** Trot/canter/hand gallop
18		**Review all skills** Singly over varied terrain Riders discuss their course work and ideas for improvement Evaluate riders for rating upgrades Discuss with other instructors and D.C. 0 any remedial work that is needed and schedule
Work in the Open: Review and Strengthening of the Basics		
21	 *C* 82-85 NZ 120	**Discuss riding to different types of fences** **Use of aids for line corrections during simple course changes**
24	*C* 66-67, 86-87, 137-142 *A* 140-148	**Discuss control at faster paces** **Basic balanced position** Increase/decrease at trot/canter 300-450
27	C80, 88-93, 138-154 NZ 115	**Discuss ways to handle disobediences** **Use of aids for abrupt course changes** Emphasis on basic balanced position
30	*C* 150-151	**Change horses over simple verticals and oxers** Not to exceed 350
33		**Review all skills and practice** Riders discuss each course or portion ridden
36		**Change horses (as in #30)** Riders discuss impulsion on changed horses and means of achieving it
39		**Review all skills** Riders develop a <u>full</u> discussion of course ridden

Lesson Plan (unmounted)

Lesson Prepared by: **Date/Time:**

Title/Topic: **Rating:**

Assistants: **# Riders:**

Supplies/Equipment/Materials:

1. **Objectives**
   a.
   b.
   c.
   d.
2. **Hands-on whenever possible, focus question/activity**
   a.
   b.
   c.
   d.
   e.
   f.
   g.
3. **Discussion**
   a.
   b.
   c.
   d.
   e.
   f.
4. **Further Inquiry**
   a.
   b.
5. **Extension Activity**
   a.
   b.
   c.
6. **Questions to Test Understanding**

Sample Lesson Plan (unmounted)

Lesson Prepared by: **Date/Time:**

Title/Topic: **Rating:**

Assistants: **# Riders:**

Supplies/Equipment/Materials:

2. **Objectives**
   a. To understand
   b. To become aware
   c. To examine
   d. To evaluate
7. **Hands-on whenever possible, focus question/ activity**
   a. Demonstration
   b. Role play/skit
   c. Diagram
   d. Skeleton
   e. System
   f. Dressage pattern
   g. Tack
   h. Feeds
   i. Etc.
8. **Discussion**
   a. How/why?
   b. How did?
   c. Why did?
   d. Who did?
   e. Where did?
   f. What do you think?
9. **Further Inquiry**
   a. What might happen if?
   b. What might have caused?
10. **Extension Activity**
    a. Assign specific project
    b. Assign reading/research
    c. Follow activity with a specific action
11. **Questions to Test Understanding**

Lesson Plan (mounted)

Lesson Prepared by: **Date/Time:**

Title/Topic: **Rating:**

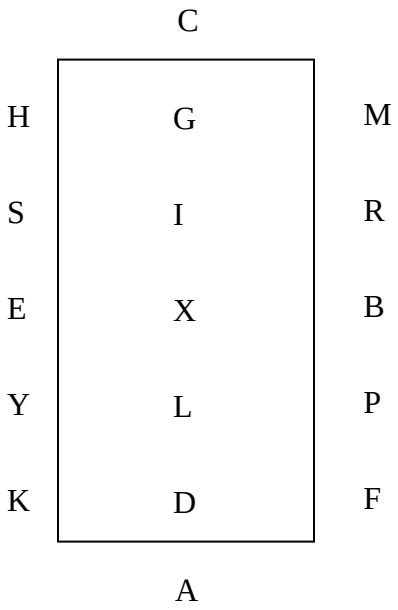
Assistants: **# Riders:**

Supplies/Equipment/Materials:

Goal/Objective:
How will it be known if objective is achieved?

Lesson Procedure/Steps	Time Allowed	Notes
Safety Check		
Warm-up **Review** **Evaluation**		
New Material		
Explanation		
Demonstration		
Application (doing)		
Critique of above		
Practice		
Re-Teach (if needed)		
Summary		
Homework for rider		

Other Notes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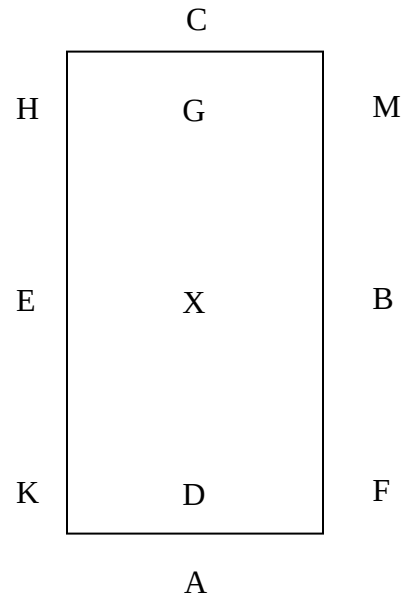
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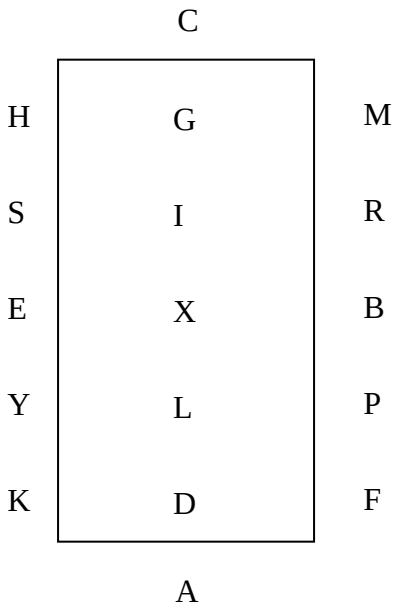
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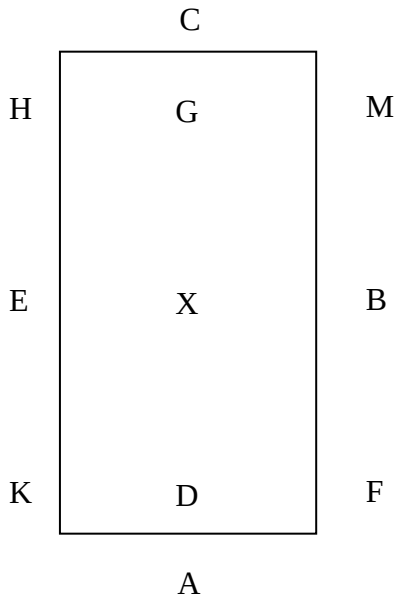
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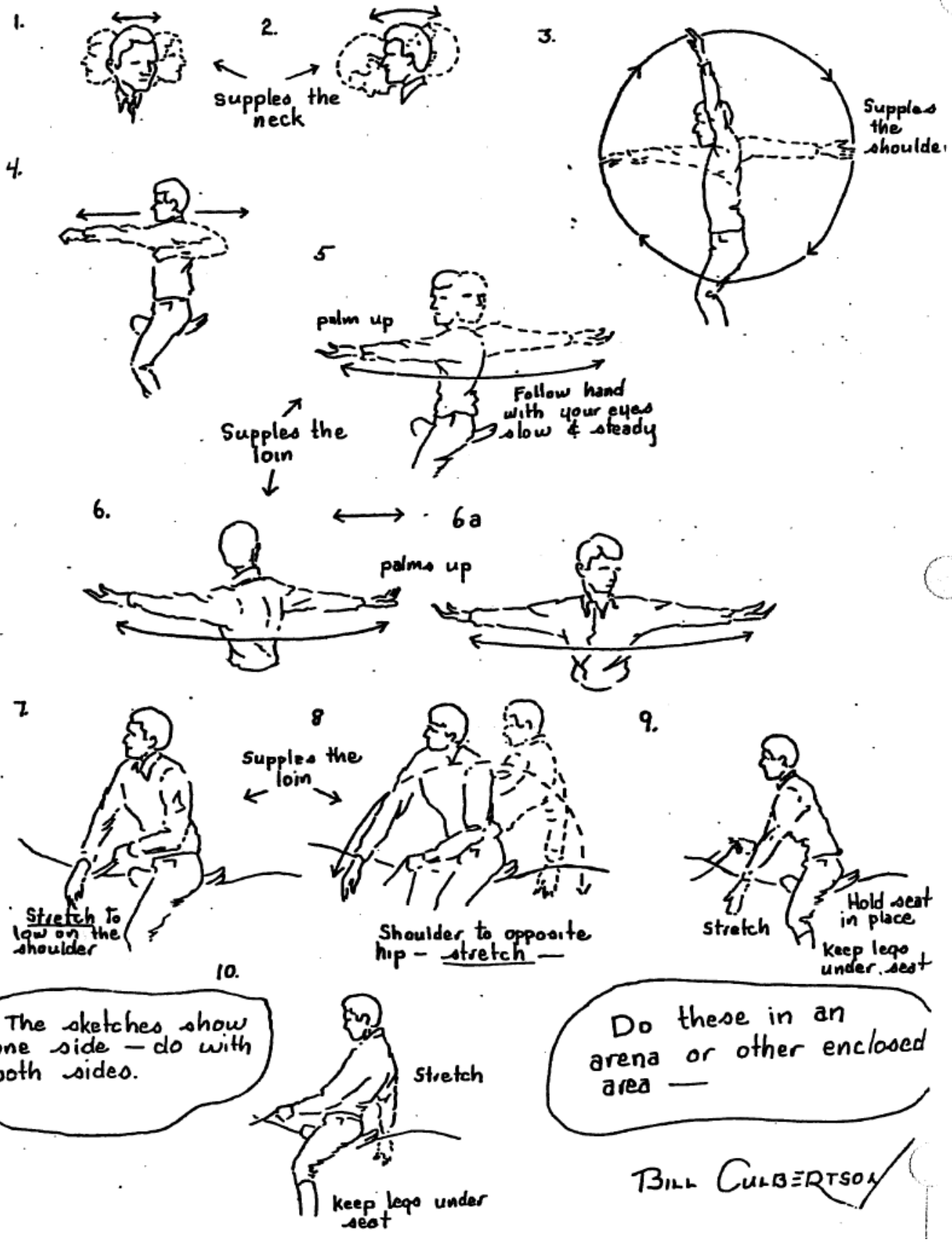
Elementary Mounted Instruction
1933 Edition



Instructor Evaluation

While you watch this lesson, write comments you think might be helpful.

Instructor: **Date:**

Communication

Voice (volume, clarity): Could you hear him/her giving instruction and suggestions?

Working Relationship

Professionalism	Poise
Patience	Manners
Tolerance	Creativity
Enthusiasm	Flexibility

Evidence of Planning

Organization Variety Preparedness

Knowledge

Content area Training methods

Teaching Techniques

Stimulation Student involvement Appropriateness Encouragement
Flexibility Trouble-shooting

Observations

Strengths:

Weaknesses:

Comments:

Answer these questions as you, or after you, watch this instructor teach a lesson.
Pony Club-approved attire?

How long was the lesson? Was it of an appropriate duration? Did it run over?

Were the explanations clear, concise, and understandable?

Were the suggestions and corrections appropriate?

Did the riders seem to understand the instructor's goal of the lesson?

Was "traffic control" okay? Did the instructor organize the ride with safety in mind?

Were the skills practiced enough, e.g., adequate repetitions to re-enforce the concept/skill without boring the horses and riders?

As an observer, did you feel you understood the focus and progression of the lesson? Did it make sense?

Were the students at ease and positive?

Do you feel that this was a learning experience for the students?

Did you see any safety problems?

What changes would you make to improve this lesson?

Instructor Evaluation

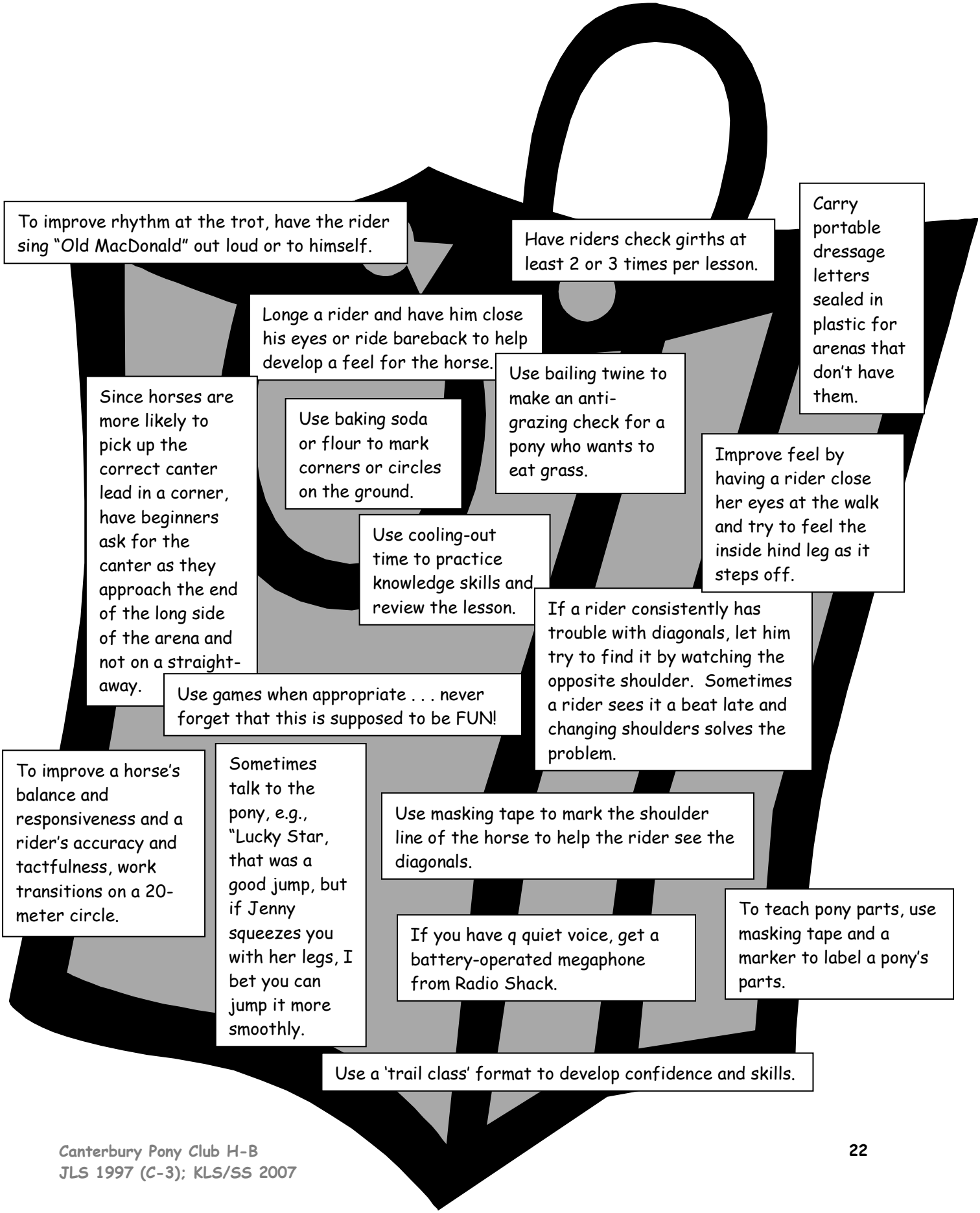
Instructor: **Date/Time:**

Students/Rating:

	Great	Okay	Needs Work	Comments
Preparation				
Lesson Plan Topic from Standard				
Method appropriate for age/rating				
Amount of content for time allotted				
Materials Planned and well-prepared				
Available at lesson time				
Location Selected in advance				
Checked for safety				
Appropriate for topic and method				
Instructor Familiar with reference materials				
Appropriate attire				

	Great	Okay	Needs Work	Comments
Delivery				
Safety				
Behavior Eye contact				
Gestures				
Voice Quality				
Clear and precise, language appropriate for age				
Opening Introduction				
Objectives				
Content Methodology (lecture, demo, game)				
Matched Standard and references				
Adapted to age and responses				
Feedback (positive and specific)				
Closing Summarized content				
Questions				
Personalized follow-up				
Thanks and good-byes				
Reflection				
What went well?				
What could be improved?				

Some Tricks for Your Teaching Bag



To improve rhythm at the trot, have the rider sing "Old MacDonald" out loud or to himself.

Have riders check girths at least 2 or 3 times per lesson.

Carry portable dressage letters sealed in plastic for arenas that don't have them.

Longe a rider and have him close his eyes or ride bareback to help develop a feel for the horse.

Use bailing twine to make an anti-grazing check for a pony who wants to eat grass.

Since horses are more likely to pick up the correct canter lead in a corner, have beginners ask for the canter as they approach the end of the long side of the arena and not on a straight-away.

Use baking soda or flour to mark corners or circles on the ground.

Improve feel by having a rider close her eyes at the walk and try to feel the inside hind leg as it steps off.

Use cooling-out time to practice knowledge skills and review the lesson.

If a rider consistently has trouble with diagonals, let him try to find it by watching the opposite shoulder. Sometimes a rider sees it a beat late and changing shoulders solves the problem.

Use games when appropriate . . . never forget that this is supposed to be FUN!

To improve a horse's balance and responsiveness and a rider's accuracy and tactfulness, work transitions on a 20-meter circle.

Sometimes talk to the pony, e.g., "Lucky Star, that was a good jump, but if Jenny squeezes you with her legs, I bet you can jump it more smoothly.

Use masking tape to mark the shoulder line of the horse to help the rider see the diagonals.

If you have q quiet voice, get a battery-operated megaphone from Radio Shack.

To teach pony parts, use masking tape and a marker to label a pony's parts.

Use a 'trail class' format to develop confidence and skills.

Fear and the Rider

Sports Psychology with Kathy Kelly
Kathy Kelly Clinic, February 12-13, 1999

What is fear?

Which of the following statements indicate fear?

1. What if I fall off?
2. What if I forget my course in the middle of my rider?
3. I don't think I can jump that high.
4. I haven't competed in so long; I have butterflies in my stomach!
5. I don't want to canter on this horse.

Statements 1, 3, and 5 indicate fear. Statements 2 and 4 suggest performance anxiety and nervousness, respectively. Fear is frequently confused with being anxious about performance or feeling the typical nerves associated with an adrenaline rush. Yet, true fear is a different story. True fear indicates a sense of foreboding or dread, and can bring up feelings of terror or panic. One's fight or flight mechanisms can be turned on, leaving us flushed, heart beating wildly, not thinking clearly, and feeling nauseous. Fear is usually the body's response to some type of threat. Sport psychologists typically try to find out what that threat may be to the individual who is afraid and can't seem to "get over it." There are several reasons we can't wish fear away.

- Fear is our body's internal warning signal; it lets us know that something is wrong. We are in unknown territory or we are out of our comfort zone.
- Humans have the capacity to store vivid memories of our fearful experiences – this ability probably contributed to our early survival, but it makes it hard to forget.
- Humans also have the ability to reason and think. Thus, we tend to think ahead, imagine the worst, and anticipate the consequences of having a bad experience.

Why does fear come up so often in equestrian sports?

- Riding is known to be a high risk sport. Serious injury is a potential reality.
- Unlike other high risk sports, such as downhill skiing or car racing, equestrian sports involves an animal – thus we have to deal with the unpredictable nature of the horse.
- Riding attracts people because of the relationship with one of the earth's most beautiful creatures. Therefore, people of all ages (e.g., toddlers, older adults) enter equestrian sports who typically are unfamiliar with, and not attract to, high risk endeavors.

Some common misconceptions about dealing with fear

Imagine this scenario. Is the newcomer a horse or a rider?

> A newcomer to the sport is competing at his first horse show. During the warm-up, he makes a mistake and crashes over an oxer. He is clearly shaken after getting back on his feet, but the coach insists that he goes right back over the fence. After a few refusals, the coach starts to really pressure the newcomer into getting over the jump. The newcomer finally umps the fence and the coach sends him into the ring with the expectation that "he should not be afraid, everything is fine, and he will do great."

For many of you, this scenario may sound familiar if talking about a rider, but not about a horse. Why? Because riders tend to give horses more permission to be afraid. Riders and instructors might suggest various methods to bring back the horse's confidence after a fall, such as lowering the fence, following another horse over, even pulling out of the class and entering one at a lower level. However, riders are not always given the same considerations. There is a strong myth in the horse world that riders must overcome their fears and get right back on or they will never ride again. While it is true that riders should not be encouraged to give up when they are afraid, pushing ahead when fear is present is not a good idea. Some reasons why:

- Fear is one sign that you may be overfaced, unprepared, or overwhelmed.

- Continuing on when afraid is DANGEROUS. Riders do not think or react the same way when they are scared.
- Ignoring your feelings can leave you feeling disconnected with yourself and is a form of self-denial. You can do this so often that you lose touch with your ability to trust your own judgments and opinions.

How to deal with fear

Physical injuries (e.g., broken arm, twisted ankle) require a period of recovery, but so do "mental injuries" such as fear reactions. That is, the few seconds it takes to fall off can cause a rider to go through a psychological process (similar to grieving) that can take days, weeks, months, or even years. Fear usually robs a rider of self-confidence and a treasured sense of control. Dealing honestly and directly with your fear is often the best way back to regaining your trust in, and enjoyment of, your equestrian pursuits. Here are some tips for dealing with your fear:

- Think of recovery from your fear as a psychological process similar to the five stages of grief (Helen Kubler-Ross, M.D.). The following comments are examples of riders in each stage:

  Denial: "That fall wasn't so bad."
  "I'm okay; no I'm not scared."
  Bargaining: "Maybe if I never ride that horse again."
  "I just won't jump anymore."
  Anger: "If only that idiotic horse . . ."
  "How could I have been so stupid?"
  Depression: "It is no use; I can't get over this."
  "I'll never enjoy riding again."
  Acceptance: "I did fall off, but I wasn't ready to jump that high. I can work to become better prepared before I try that high."
  "All horses spook occasionally, but that doesn't mean that I will fall off every time it happens!"

  - Allow yourself permission to be fearful! Being scared is not something to be embarrassed about – it is a NORMAL reaction to a perceived threat.
  - Accept the fact that you will progress through the stages at your own pace. You may even go back and forth between stages. The key? Be patient and forgiving of yourself no matter what stage you are in.
  - Express your fear to yourself and to others. Talking helps! Sharing how you really feel with others can be powerful medicine.
  - Try to use the same methods you have used to overcome your fear in other situations. You most likely have personal resources you don't give yourself credit for.
  - Seek professional help if you find yourself unable to make progress on your own. Techniques such as Systematic Desensitization can help some riders overcome paralyzing fears.

Anxiety

Feeling anxious feels the same as fear – the body reacts the same to both. But fear has a definite object while anxiety doesn't have a dire threat. Anxiety's home resides in "fake fears" that FEEL like real fear. These are a few of the fake fears:

- Fear of criticism
- Fear of rejection
- Fear of failure
- Fear of change
- Fear of fear (yes, this happens – panic attacks, agoraphobia are extreme examples)
- Fear of death (without a defining danger present)

Anxiety can be called "DISEASE FOR A MOMENT." The cure is TO IGNORE. You do not ignore real fear, but fake fear does not deserve the same treatment. Mental exercises and skills help riders keep the fake fears at bay. They are there out of habit and are learned – are not hard-wired into you - like the true fear response is. Like feed a cold, starve a fever . . . comfort fears, ignore anxiety.

UR, D-1 and D-2 Bandaging

There are many different ways and resaons to bandage a horse. Today we went over how to put them on a horse, what they cover, and why we use them. Well . ..

What part of the horse are the splint boots supposed to cover? Why do we use splint boots?

Those aren't the only kind of bandages we went over today . . . what about your bell boots? Why do you use bell boots? Where on the horse do they go? What do they protect?

What else do you know about your horse's bell boots, splint boots. What about wrapping your horse's legs?

D-2, D-3, and C-1 Bandaging

Supplies: splint boots, bell boots, cotton pads, flannels, horse

Introduction

Review and make sure students understand splint boots

Talk with group about where the boots cover the leg

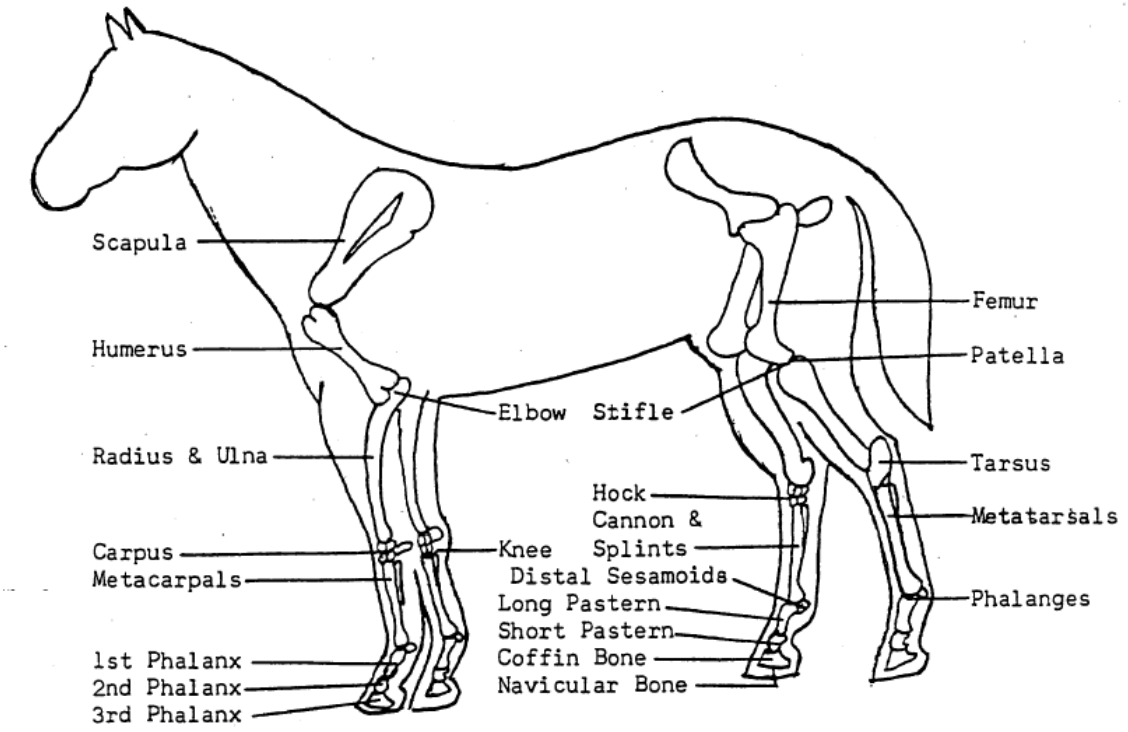
- Shipping boots: cover from half of the knee joint to cover the bulbs of the heel; protect all of the leg between (the splint, fetlock, etc.)
- Stable bandage: cover from the lower half of the knee to the upper half of the fetlock to cover the spling and most of the fetlock where most stress and injuries occur

Discuss why bandages cover these parts and what they do.

Wrap legs with partners and talk about tightness. If there are not enough horse legs, students may take turns with a horse leg, or wrap someone else's leg, or observe on the side.

Review what was done in the lesson. Complete the worksheet.

Horse Anatomy



- The parts of the limb to be included under the term 'leg' depend upon the individual describing it. Some people regard 'foot' as including only the portion of the limb enclosed in the horny capsule. Others extend the term to those structures in the horse which correspond to the foot of humans, including what would be knees and hocks in the horse.
- For the sake of brevity, the leg will be considered only below the knee or hock. The term 'foot' will generally designate the structure within the horny capsule. The horny capsule will be described as 'hoof.'
- The bones of the horse's legs beneath the knees and hocks are primarily the same. The principal differences are in the proportions of the corresponding parts. The hind leg has a longer cannon bone, a more upright pastern, and a more oval hoof with a more concave sole. For the sake of convenience, the foreleg will be discussed.

Cannon Bone (large metacarpal bone): the cannon bone extends from the knee or hock to the fetlock, is cylindrical in shape and stands upright. The upper end is flat to form a large working surface for the bones of the knee of hock. Its lower end has an articular surface with three ridges, separated by grooves. The middle prominence is the highest and extends furthest forward. This articular surface is in contact with the long pastern bones and sesamoid bones. At the sides of the lower end of the cannon bone are two rough surfaces for the attachment of ligaments.

Splint Bone (internal and external small metacarpal bones): the splint bones are incompletely developed long bones and are located one on each side, on the upper rear protion of the cannon bones. The upper ends of the splints are largest to form a more generous talbe for the bones of the joint above, either the knee of the hock to rest upon. The splints taper and terminate at the lower protion of the cannon bone, shaped somewhat like icicles. Fusion of the middle part of the

shaft with the cannon bone is common. The splints are arranged on the cannon bone so that a furro is formed for containing ligaments and tendons.

Long Pastern Bone (first phalanx): the long pastern bone is about one-third the length of the cannon bone. Its upper surface has three grooves to accept the lower end of the cannon bone. The configuration of the cannon-long pastern joint creates a 'perfect joint' that allows no lateral movement. The exterior of the bone is smooth except at either side of the upper portion and an area on the underside of the bone. These roughened surfaces create an area for better attachment of ligaments. The lower end of the long pastern has only one depression in its articular surface.

Sesamoid Bones: the two sesamoid bones are shaped like pyramids. They are located at the upper rear portio of the articulatory surfaces of the long pastern bone. The sesamoids are attahced to the long pastern bone by ligamentous tissue and creae a larger surface for the rotation of the cannon-pastern joint.

Short Pastern Bone (second phalanx): the short pastern or coronary bone is cube-shaped and is about one-half the size of the long pastern bone. Its upper end is concave and shows two depressions to receive the long pastern bone. The upper end is rather large and has attachments for tendons. The lower end has one depression in its convex articular surface.

Coffin Bone (third phalanx): the coffin bone, so named perhaps, because it is encased within the hoof. Its shape resembles the hoof. The coffin bone is exteremly light in comparison with the other bones, and is perforated with many holes. These holes contain blood vessels and nerves that supply the foot. The lightness of the coffin bone allows the horse to use less power in moving the legs.

The wall surface encompasses the front and sides of the coffin bone. It is roughened to aid in attachment of the sensitive lamina which covers it. At the top of the wall sruface in the center is a projection, called the extensor process, to which the extensor tendon is attached. There are extensions to the rear portion of the coffin bone called the wings or basilar processes.

The lower, sole surface of the coffin bone is concave and smooth except at the rear portion. This rear portion is roughened for the attachment of the deep flexor tendon. This is called the tendinous surface, or semi-lunar crest.

The articulatory surface has a prominence in the middle of its concave surface and a depression on each side of the ridge. It is formed to accept the lower end of the coronary bone.

Navicular Bone: the navicular bone is shaped somewhat lie a boat and is situated between the wings of the coffin bone. This bone is triangular in cross-section and is attached to the coffin bone by ligamentous tissue. Its upper surface corresponds to the articulatory surface of the coffin bone and creates a larger rotational surface for the lower end of the coronary bone. The lower side of the navicular bone is covered with cartilage so that the deep flexor tendon can slide easily over its surface. The navcular and sesamoid bones create larger articulating surfaces for the joints. Indeed, the cannon bone could not be contained in its socket without aid of the sesamoid bones.

Phalanges: the long pastern bone (first phalanx), short pastern bone (second phalanx), and the coffin bone (third phalanx) form a column extending downward and forward from the fetlock joint into the hoof. These bones form a straight line, set off from the cannon bone at about a 140° angle. This angle is usually 5° higher in the hind legs and must be maintained by correct hoof reduction or hoof wear to provide proper functioning of the various parts of the limbs.

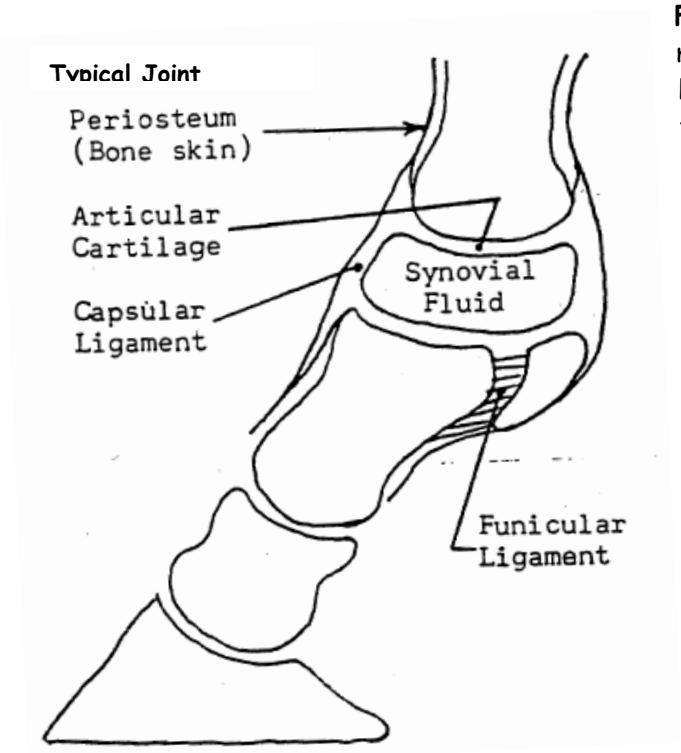
Fetlock Joint: is the junction of four bones: cannon bone, long pastern bone, and the two sesamoid bones. The median ridge and two lateral ridges of the cannon bone fit into the socket formed by

the pastern and sesamoid bones. The median ridge gives security against any movement other than flexion and extension. The restricted movement of the fetlock joint should be compared with the movement allowed by the junction of the long pastern-short pastern and short pastern-coffin bone. The felock joint is a perfect hinge-joint allowing movement in the forward-backward direction only. The pastern and coffin joints are capable of side movement and are termed imperfect hinge-joints; having no medial rdige in their formation allows a horse to stand on uneven gound in comfort.

Bone Cover: articulatory cartilage is the gristle covering the surface of the bones at joints. It creates a smooth working surface and helps absorb concussion. Periosteum covers the bone except at the joints where the articulatory cartilage is present. The periosteum, or bone skin, has a tough outer layer while the inner layer is fine connective tissue. Blood vessels in the periosteum nourish the bone.

Ligaments: help lubricate the joints, bond bone to bone, and hold tendons close to the bones.

Capsular Ligaments: are common to all joints. Their structure is the same as the periosteum and is actually a continuation of the bone skin. The outer layer is tough and fibrous. The inner layer is a delicate tissue and secretes synvial fluid to lubricate the joint.



Funicular Ligaments: are cord-like fibrous material and very strong. They vary in size by location and bind bone to bone so securely that the bones usually fracture more readily than the ligaments rupture.

Annular Ligaments: are made of the same tough material as the funicular ligaments and bind down tendons where they pass over joints, as in the knees and hocks. The fetlock joint and those below that extend into the hoof are exposed to tremendous pressures. These joints are cradled by ligaments that support the horse during these stresses and help the horse relax or sleep in a standing position with little fatigue.

Suspensory Ligament: this very sturdy ligament helps to cradle the entire lower limb. It is attached at the head of the cannon bone between the two splint bones. It lies next to the cannon bone; and at about 2/3 of the way down this bone, the suspensory ligament forks. These two branches continue downward and contact the outer sides of the sesamoid bones and support them. The branches continue downward and forward to join at the extensor process of the coffin bone.

Tendons: are flexible and inelastic, somewhat like steel cables. They join muscle to bone, transmitting power to the horse's limbs. There must be action and reaction to provide motion, or more properly, flexion and extension.

Deep Flexor Tendon: the deep flexor tendon passes down the rear of the cannon bone behind the suspensory ligament, and then passes through the bifurcation of the suspensory ligament. At the fetlock joint, it slides in the depression in the intersesamoidean ligament. It then proceeds downward and forward, and just before reaching the navicular bone, becomes wider and thinner. It

is attached at the lower end to the tendinous surface of the coffin bone, called the semi-lunar crest.

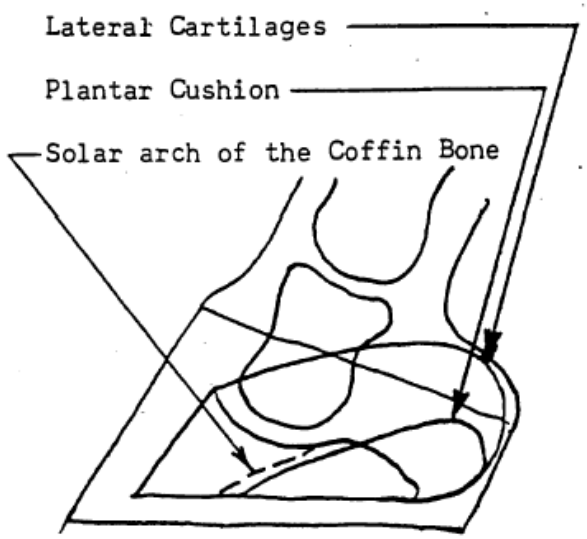
Superficial Flexor Tendon: the superficial flexor tendon is the rearmost tendon in the canon bone area. It passes through the fork of the suspensory ligament, and at the fetlock area, becomes wider. Below the fetlock, this tendon divides, through which the deep flexor tendon emerges. The superficial flexor tendon attaches to the rear of the head of the coronary bone.

Digital Extensor Tendon: the digital extensor tendon passes over the outer side of the knee, or hick, gradually coming to the front of the cannon bone. It passes over the anterior surfaces of the phalanges and attaches to the extensor process of the coffin bone.

Lateral Extensor Tendon: the lateral extensor tendon lies behind and adjacent to the digital extensor tendon. It is attached to the anterior face of the coronary bone, and its function is to aid in extension of the limb. There is no lateral extensor tendon in the hind limb.

Elastic Structures: the elastic tissues of the foot (lateral cartilages and planter cushion) are peculiar to the horse, not occurring in the same form in any other species of animal.

Lateral Cartilages: are attached to the wings of the coffin bone. They are close-grained firm tissue, elastic, and flexible. The lateral cartilages extend rearward and upward forming the outer extremities of the bulbs of the heels. They can be felt above the hoof from the quarters back to the heels. These cartilages run forward to the extensor process of the coffin bone. The outer surface connects tot eh coronary band and sensitive lamina.



Plantar Cushion: is a wedge-shaped triangle of fibrous tissue. It is confined on the sides by the lateral cartilages, on the top by the coffin and navicular bones, and deep flexor tendon, and in the rear portion, form the bulb of the heel. The bottom surface is creased through the center, similar to the crease in the cleft of the frog.

Sensitive Foot Structures: the sensitive structures of the foot create the growth of the horny capsule.

Coronary Band: is a continuation of the skin and joins with the hoof wall. Its sides run obliquely downward and backward, covering the coronary bone and lower rear portions of the lateral cartilages. The surface of the coronary band is covered with papillae which secrete the horny tissues of the wall. These papillae are shaped and closely set so as to resemble the pile of velvet. Although the coronary band terminates at the heels, the papillae are deflected into two converging rows between the margins of the sensitive lamina and of the sensitive frog. These rows form the bars of the hoof.

Perioplic Ring: covers the coronary band. It secretes soft horn called periople. This periople becomes hard and forms a waterproof, varnish-like covering of the hoof wall that prevents evaporation of hoof moisture.

Sensitive Laminae: cover the outer surface of the coffin bone and lower portion of the lateral cartilages and then are deflected at the heel, as is the coronary band. The bars are of the same construction of the walls, a coronary and laminal construction. The sensitive laminae secrete the

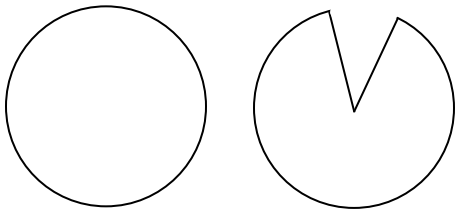
horny lamina. These are dove-tailed and firmly connect the horny wall with the inner structures of the foot.

Sensitive Sole: a thin layer of tissue covering the lower surface of the coffin bone. It is covered with papillae that secrete the horny sole.

Sensitive Frog: covers the plantar cushion and is covered with horn-secreting papillae, creating the horny frog. The sensitive tissues of the foot are interlaced with nerves and blood vessels that nourish the inner and outer structures of the lower limb. They are called sensitive structures because they are exactly that. Any injury to the inner portions will induce great pain and bleeding.

Horny Structures: the periople, wall, sole, frog, and while line are very tough and withstand considerable wear. They are without nerves and will not conduct temperature. A hot shoe can be applied to a sound foot without pain, and can defy ice and show with no inconvenience. The horny structures are porous and elastic. Hard horn, the wall and sole, is extremely tough and much less pliable than soft horn. Hard horn is made of many microscopic sized tubes held together by an adhesive substance that joins the tubes in a solid form. Soft horn, found in the frog, white line and periople, is more flexible and contains more moisture than hard horn.

Horny Wall: encases the portion of the foot visible from the front and sides of the standing horse. The toe, quarters, and heels grow at an equal rate all around. Growth is downward from the coronary band, and is nourished from above by the coronary band, and from below by ground surface moisture. The wall grows to an indefinite length, and unless carefully attended, can reach enormous length and grotesque proportions. Although the wall terminates at the heels, the lamina deflects itself inwardly to form the bars of the hoof forming a circle with a 'V' in it. The triangular shape of horn is very strong and solid, yet capable of expansion.



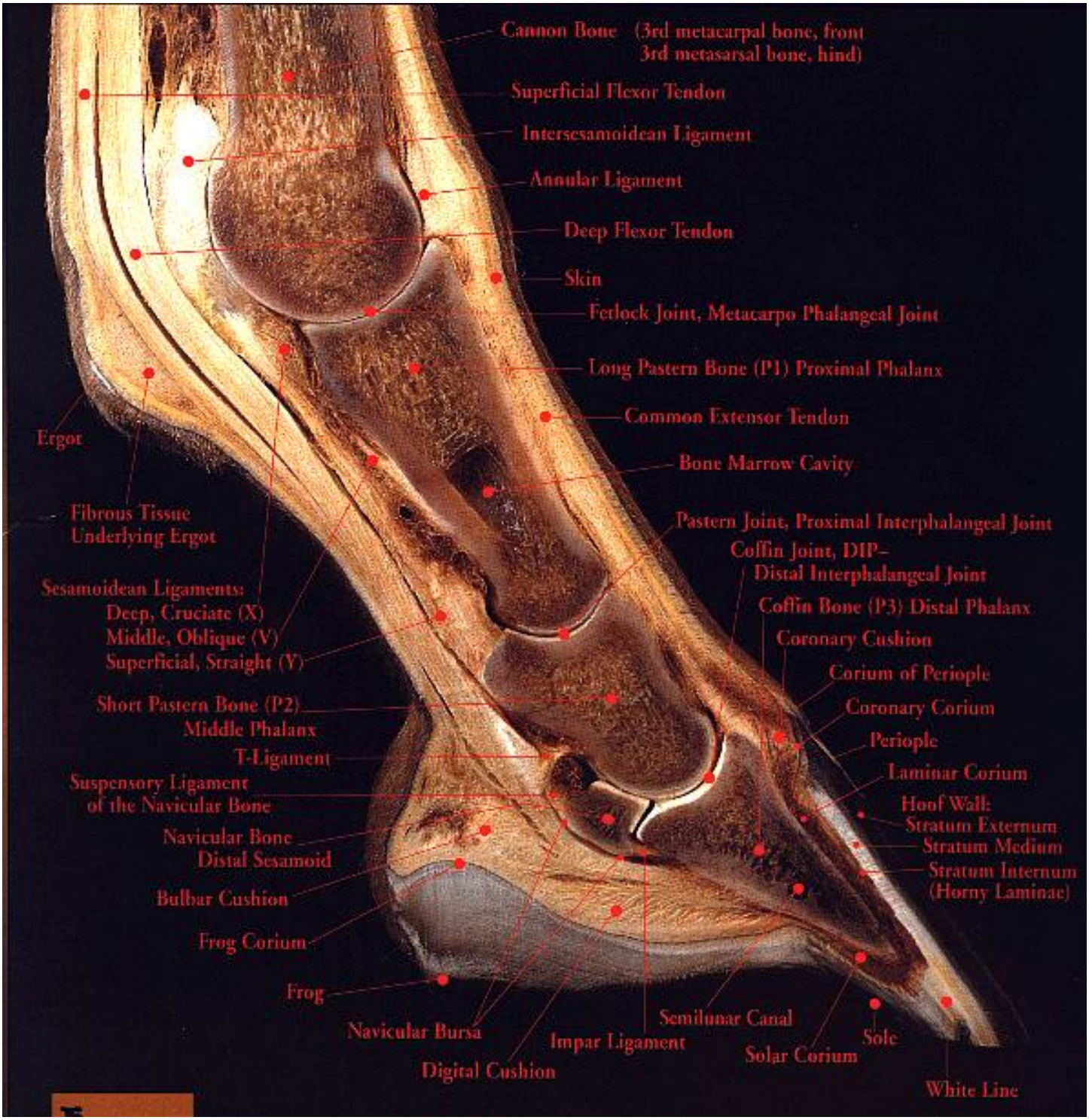
Seamless tubing is very strong, yet it cannot withstand blows on the end of the tube without mushrooming. Put a 'V' in the circle and it is still very strong and will flex and not shatter as easily! Can this be compared to a hoof?

Horny Sole: grows to a definite length, then flakes away, a process called exfoliation. It is concave on its ground surface and thickest at the outer periphery of the sole where it terminates at the white line. Upon trimming the sole, the texture changes are dramatic. The first thin slice reveals horn that is chalky, dry and brittle. Further paring will reveal moist, flexible sole with an absence of flake cracks (exfoliation) that indicates live horn. The sole should not be trimmed beyond this point.

White Line: is the bond or union between the sole and the wall. It is soft horn and indicates the amount of wall in which the shoer has to place a nail. The white line is not necessarily white; it is usually gray or cream-colored, depending on the color of the hoof. It is easily identified by the variation of color and texture – it is soft and bounded by the wall on the outside and sole on the inside, both of which are hard horn. The thickness of the white line varies (about 1/8" on a normal-sized saddle horse), but it does have some dimension – it is not just a line.

Horny Frog: closely resembles the plantar cushion, showing the enter depression called the cleft of the frog. It is soft horn, normally having the consistency of a rubber eraser. It sheds in a mass, usually twice a year, rather than flaking away as the sole does.

Periople: the soft horn secreted by the perioplic ring that covers the coronary band. The periople hardens soon after exposure and creates a hard, varnish-like protective covering for the wall.



http://www.horseshoes.com/anatomy/horsesense/horsesense.htm. Accessed October 11, 2006.

Carpal Bones

Dorsal, lateral and palmar views of the carpal bones are shown with the articulating ends of the radius and metacarpal bones.

Proximal row:

RC radial carpal bone
IC intermediate carpal bone
UC ulnar carpal bone
AC accessory carpal bone

Distal row:

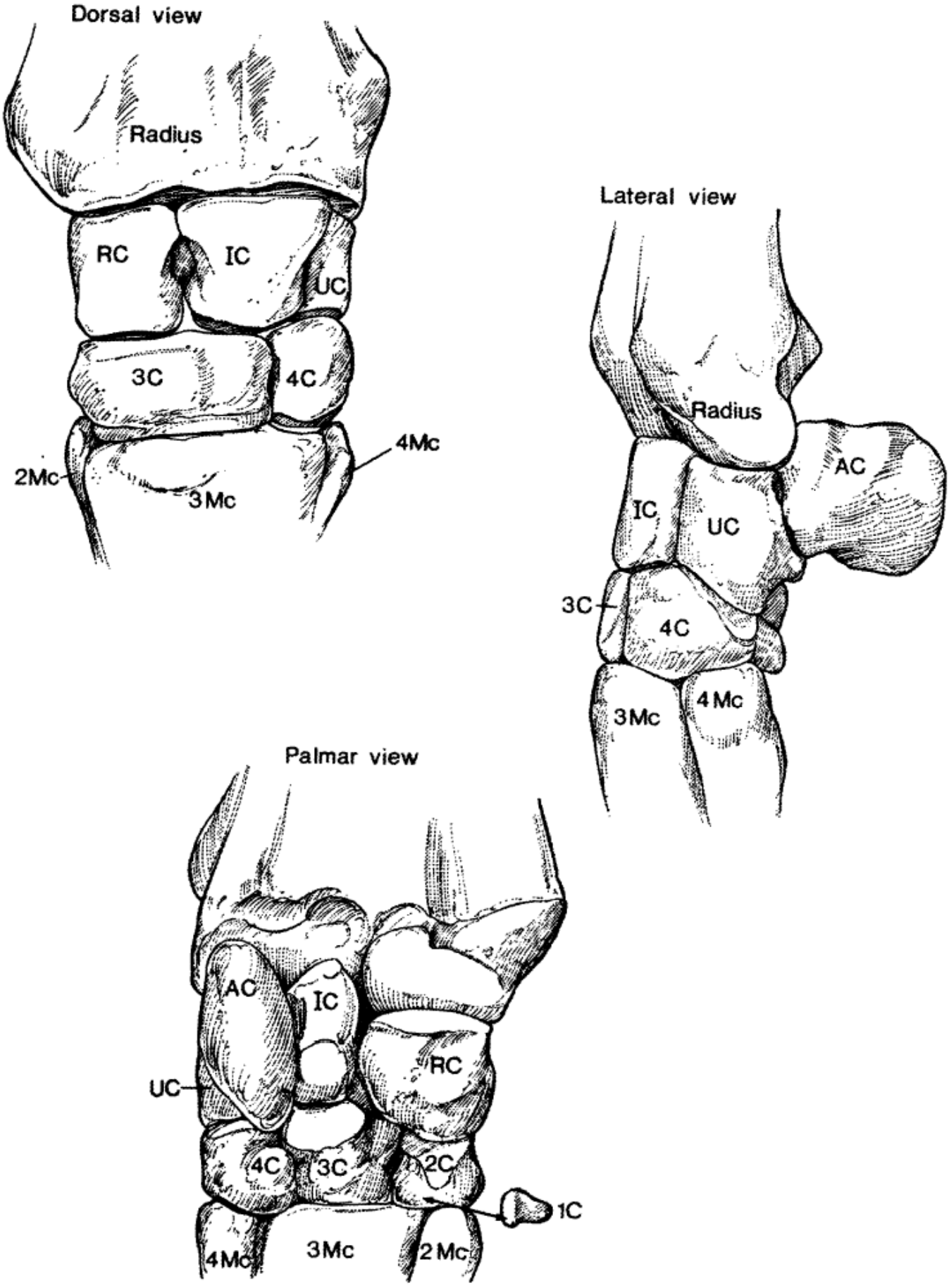
1C 1st carpal bone (Embedded in the medial collateral ligament of the carpus. It may be absent.)
2C 2nd carpal bone
3C 3rd carpal bone
4C 4th carpal bone

Metacarpal bones:

2Mc 2nd metacarpal bone
3Mc 3rd metacarpal bone
4Mc 4th metacarpal bone

Awareness of the details of the structure and relationships of carpal bones is essential to understanding the function of the horse's carpus (knee) and the causes and consequences of lameness due to defects or injury. For example, "calf knee" (palmar deviation of the carpus) is a conformational weakness. In this deformity and in young racehorses in general, *carpal chip fractures* commonly occur within the joints of the carpus in the radial, intermediate and third carpal bones and in the distal end of the radius.

Carpal Bones



Metacarpal and Digital Bones

2 Mc 2nd (medial small) metacarpal bone (splint bone)

3 Mc 3rd (large) metacarpal bone (cannon bone)
1. metacarpal tuberosity
2. ridge on distal articular surface

4 Mc 4th (lateral small) metacarpal bone (splint bone)

PSm medial proximal sesamoid bone

PSI lateral proximal sesamoid bone

PP proximal phalanx (1st phalanx, P1, long pastern bone)
3. extensor process

MP middle phalanx (2nd phalanx, P2, short pastern bone)

DS distal sesamoid bone (navicular bone)
4. articular surface
5. flexor surface

DP distal phalanx (3rd phalanx, P3, coffin bone)
6. extensor process
7. parietal surface
8. solar foramen
9. flexor surface
10. semilunar line
11. solar surface

C cartilages of the distal phalanx

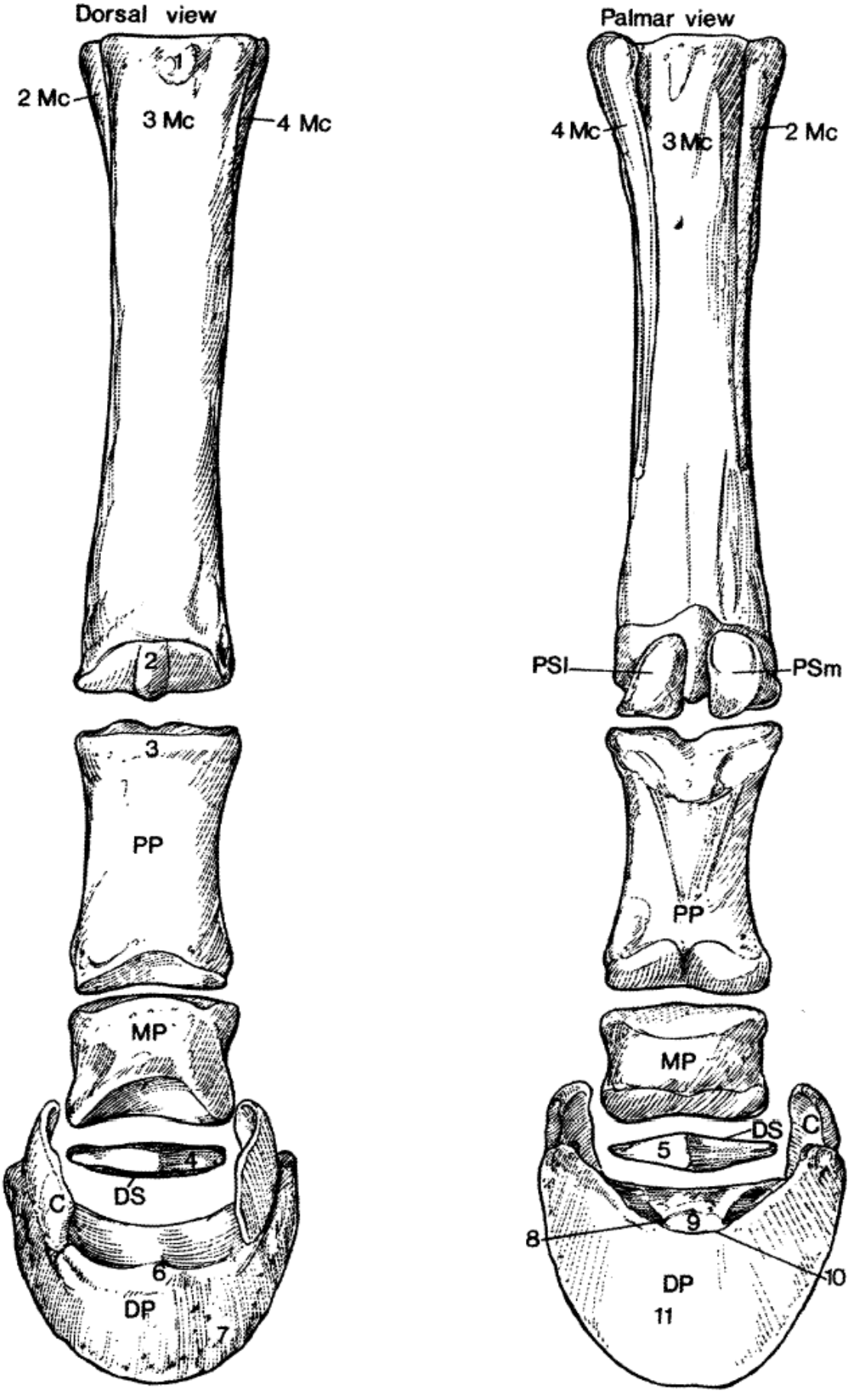
Alignment of bones is important in evaluating the conformation of the limb. The proximal and distal sesamoid bones serve as pulleys that change the direction of the deep digital flexor tendon.

Notice the ridge on the distal articular surface of the third metacarpal bone and visualize how it might produce a "screwdriver fracture" of the proximal phalanx. Although the proximal sesamoid bones are deeply embedded in and supported by ligaments, they are subject to fractures. A variety of fractures can occur in the distal phalanx.

The navicular bone articulates with both the middle and distal phalanges. Progressive degeneration of the navicular bone results in *navicular disease* (see '**Within the Digit**'). As the horse ages, the cartilages of the distal phalanx tend to ossify (become bone), interfering with their flexibility and ability to spread when the foot strikes the ground.

Sidebone is the complete ossification of the cartilages of the distal phalanx.

Metacarpal and Digital Bones



Joints of the Forelimb

Shoulder (humeral) joint: glenoid cavity of scapula and head of humerus. Surrounding muscles act as ligaments.

Elbow (cubital) joint: condyle of humerus, proximal end of radius and trochlear notch of ulna. A thin joint capsule extends a pouch into the olecranon fossa.

Radioulnar joint: shafts of radius and ulna. Interosseous ligament of the forearm forms a syndesmosis in foals that later ossifies distal to the interosseous foramen.

Carpal joints: common collateral ligaments, fibrous joint capsule and palmar ligament

Antebrachiocarpal joint: distal end of radius and proximal row of carpal bones

Midcarpal joint: proximal row of carpal bones and distal row of carpal bones

Carpometacarpal joint: distal row of carpal bones and proximal ends of metacarpal bones

Intercarpal joints: between adjacent carpal bones

Intermetacarpal joints: syndesmoses that ossify with age

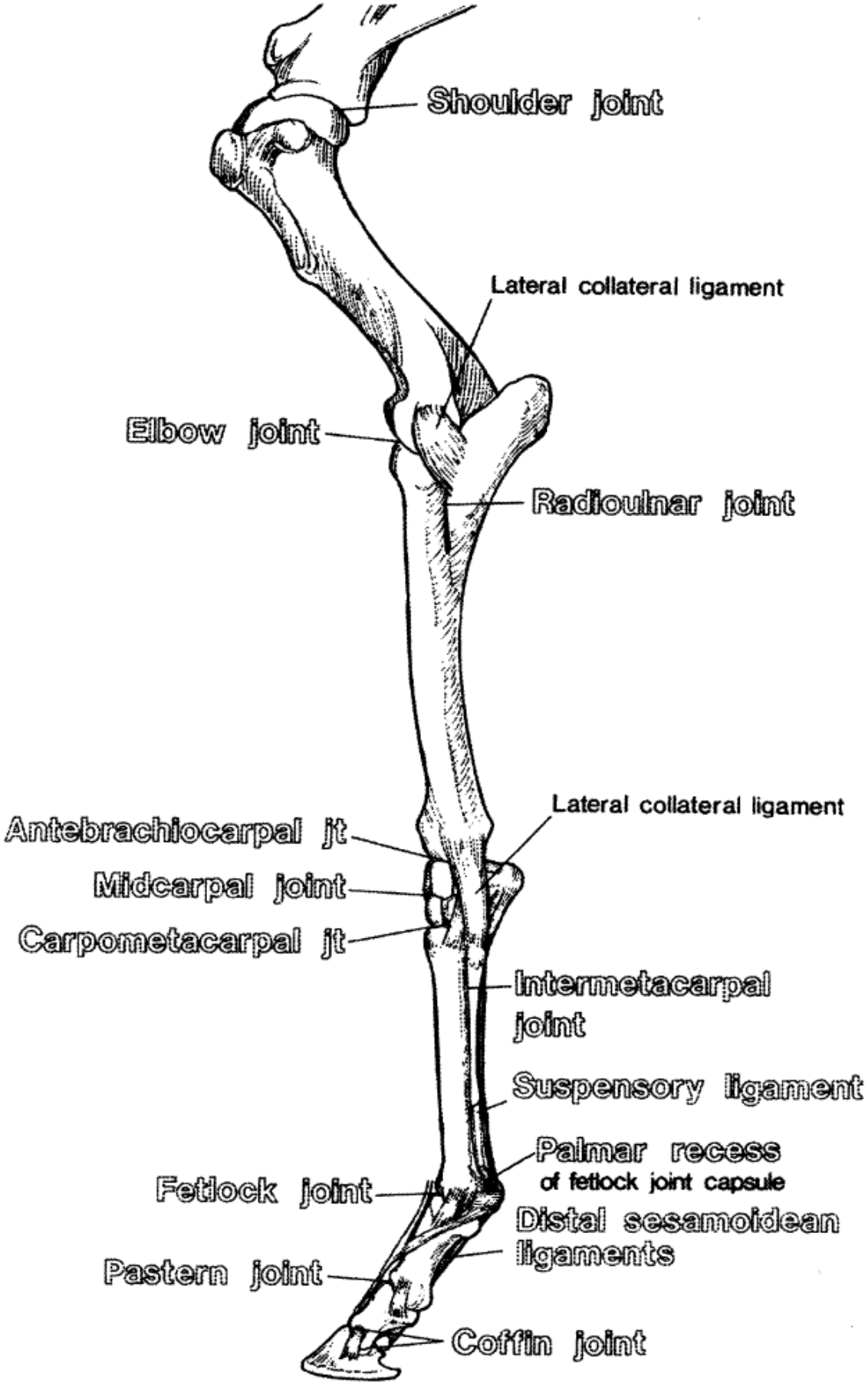
Fetlock joint (metacarpophalangeal joint): distal end of third metacarpal bone, proximal end of proximal phalanx and the two proximal sesamoid bones. Several sesamoidean ligaments connect with and support the proximal sesamoid bones. The **palmar recess of the joint capsule** extends proximal between the third metacarpal bone and the suspensory ligament.

Proximal interphalangeal joint (pastern joint): distal end of proximal phalanx and proximal end of middle phalanx

Distal interphalangeal joint (coffin joint): distal end of middle phalanx, proximal end of distal phalanx and the distal sesamoid (navicular) bone

Wind puffs are swellings of the palmar recess of the fetlock joint capsule. They are due to an excessive amount of synovial fluid produced by the synovial membrane of the fetlock joint. The condition occurs most commonly in hard-worked horses and may or may not result in lameness.

Joints of the Forelimb



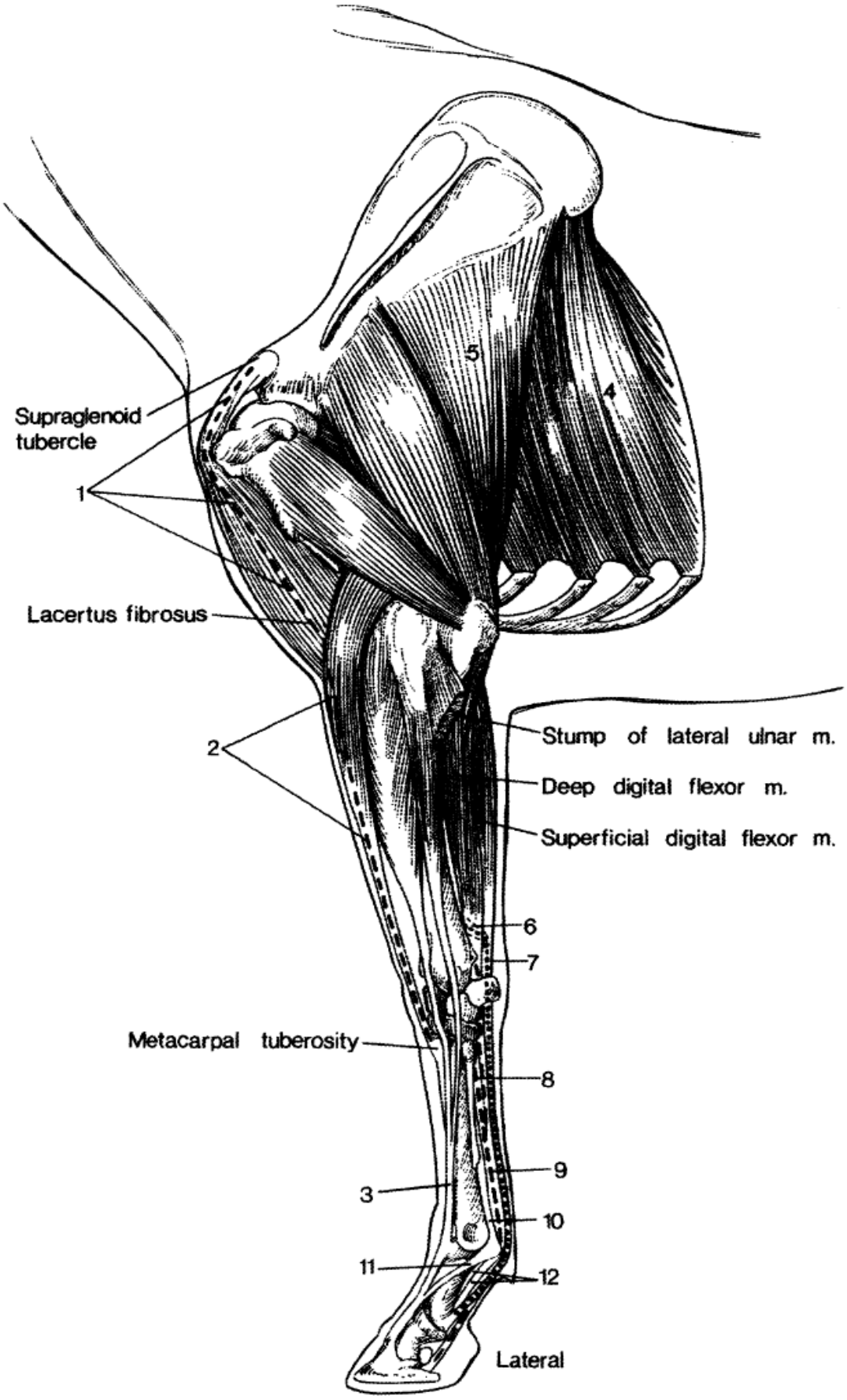
Stay Apparatus of the Forelimb

Tendons are indicated by dashed or dotted lines. Parts of some tendons pass through muscles.

1. Tendons of the brachial biceps muscle
2. Fascial covering and tendon of radial carpal extensor muscle
3. Tendon of common digital extensor muscle
4. Thoracic serrated muscle
5. Long head of brachial triceps muscle
6. Radial check ligament of superficial digital flexor muscle
7. Tendon of superficial digital flexor muscle
8. Carpal check ligament of deep digital flexor muscle
9. Tendon of deep digital flexor muscle
10. Suspensory ligament
11. Extensor branch of suspensory ligament
12. Three distal sesamoidean ligaments

Stabilization of the joints of the forelimb by ligaments and tendons of the stay apparatus with a minimum of muscular activity permits the horse to stand while sleeping. Continuous tendons of the brachial biceps and radial carpal extensor prevent flexion of the shoulder joint, and muscular tension of the long head of the brachial triceps muscle prevents flexion of the elbow and collapse of the forelimb. The carpus is stabilized by the shape of the carpal bones, the palmar carpal ligament, the digital flexor tendons in the carpal canal, and the carpal and digital extensor tendons. Overextension of the fetlock is prevented by the suspensory ligament, the proximal sesamoid bones and the ligaments surrounding them, and the three distal sesamoidean ligaments. The superficial digital flexor tendon extends from the radius by its radial check ligament, ending on the proximal phalanx. The carpal check ligament continues distal from the palmar carpal ligament to join the deep digital flexor tendon in the middle of the metacarpus. The tendon then pierces the superficial digital flexor tendon, goes over the palmar surface of the fetlock and continues distal to pass over the navicular bone and insert on the distal phalanx.

Stay Apparatus of the Forelimb



Within the Digit

Figure 1.
Insertion of deep digital flexor tendon. Palmar view. Identify and color the following structures:

Deep digital flexor tendon
Navicular bone
Collateral sesamoidean ligament (Meets opposite ligament – dashed line.)
Navicular bursa (podotrochlear bursa) – stippled

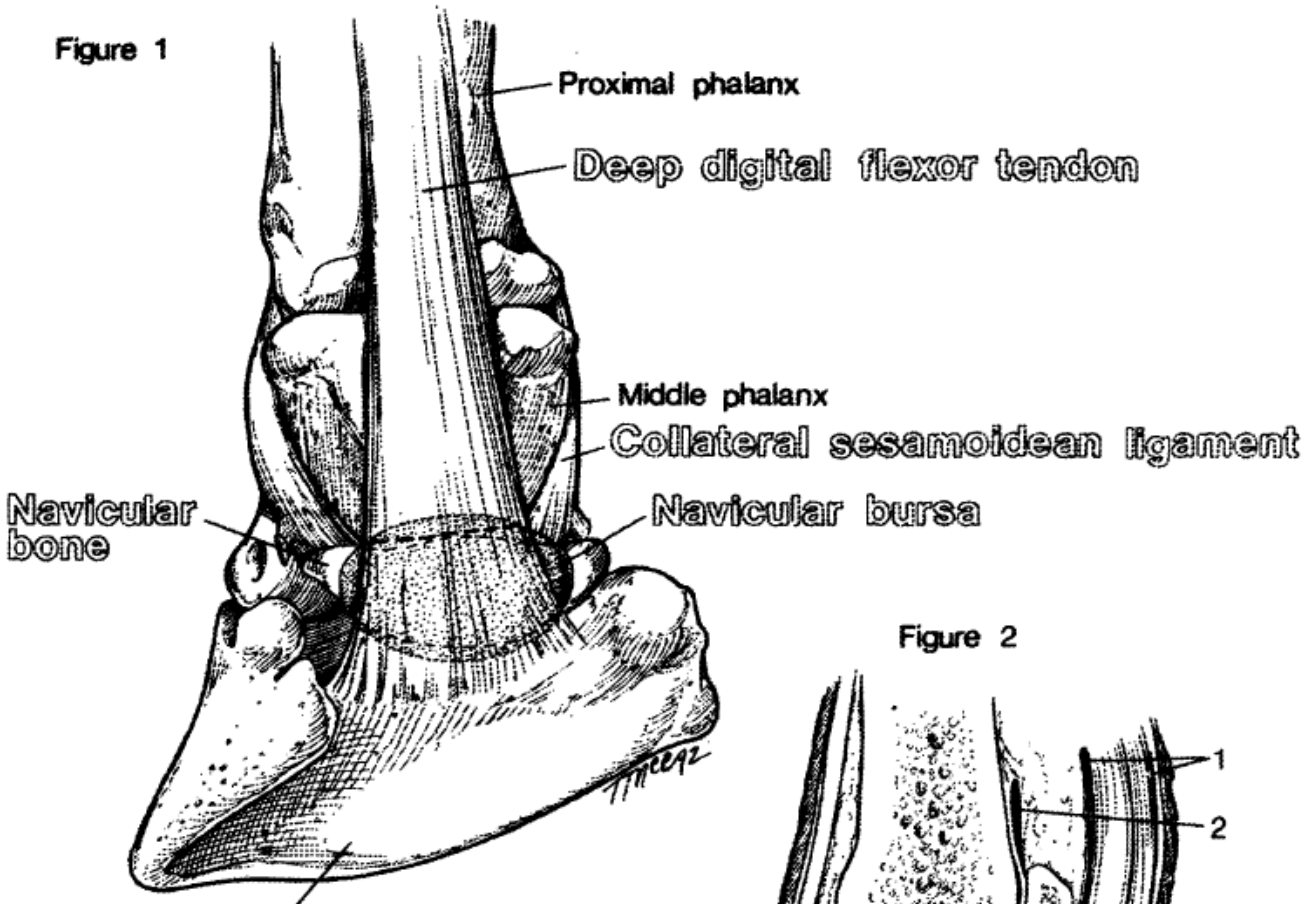
Notice the course of the deep digital flexor tendon over the navicular bone with the navicular bursa forming a cushion between the tendon and the navicular bone. Identify the dashed line indicating the outline of the navicular bone and the dotted line indicating the extent of the navicular bursa.

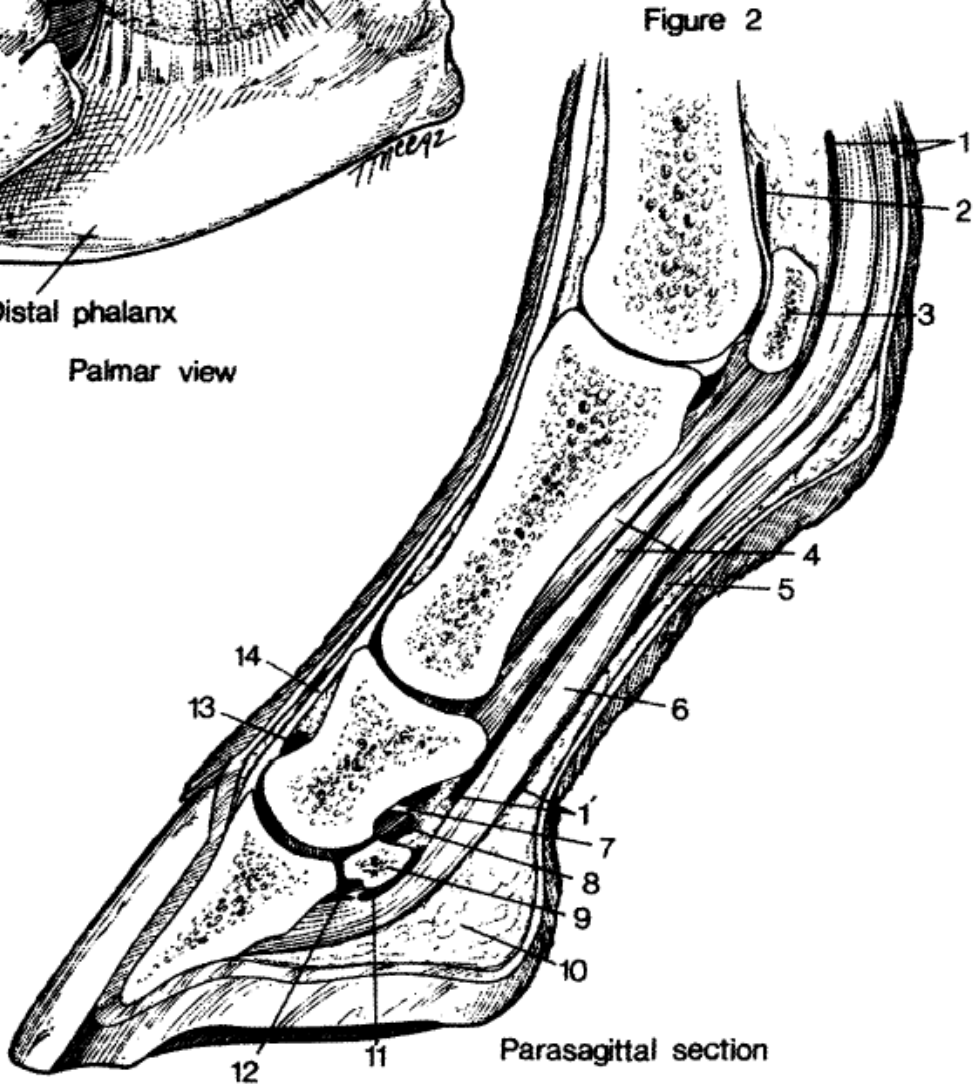
Figure 2.

1. Limits of digital sheath
2. Palmar recess of fetlock joint capsule
3. Proximal sesamoid bone
4. Distal sesamoidean ligaments
5. Superficial digital flexor tendon
6. Deep digital flexor tendon
7. T ligament
8. Proximal pouch of coffin joint capsule
9. Navicular bone
10. Digital cushion
11. Navicular bursa
12. Impar ligament of navicular bone
13. Dorsal pouch of coffin joint capsule
14. Common digital extensor tendon

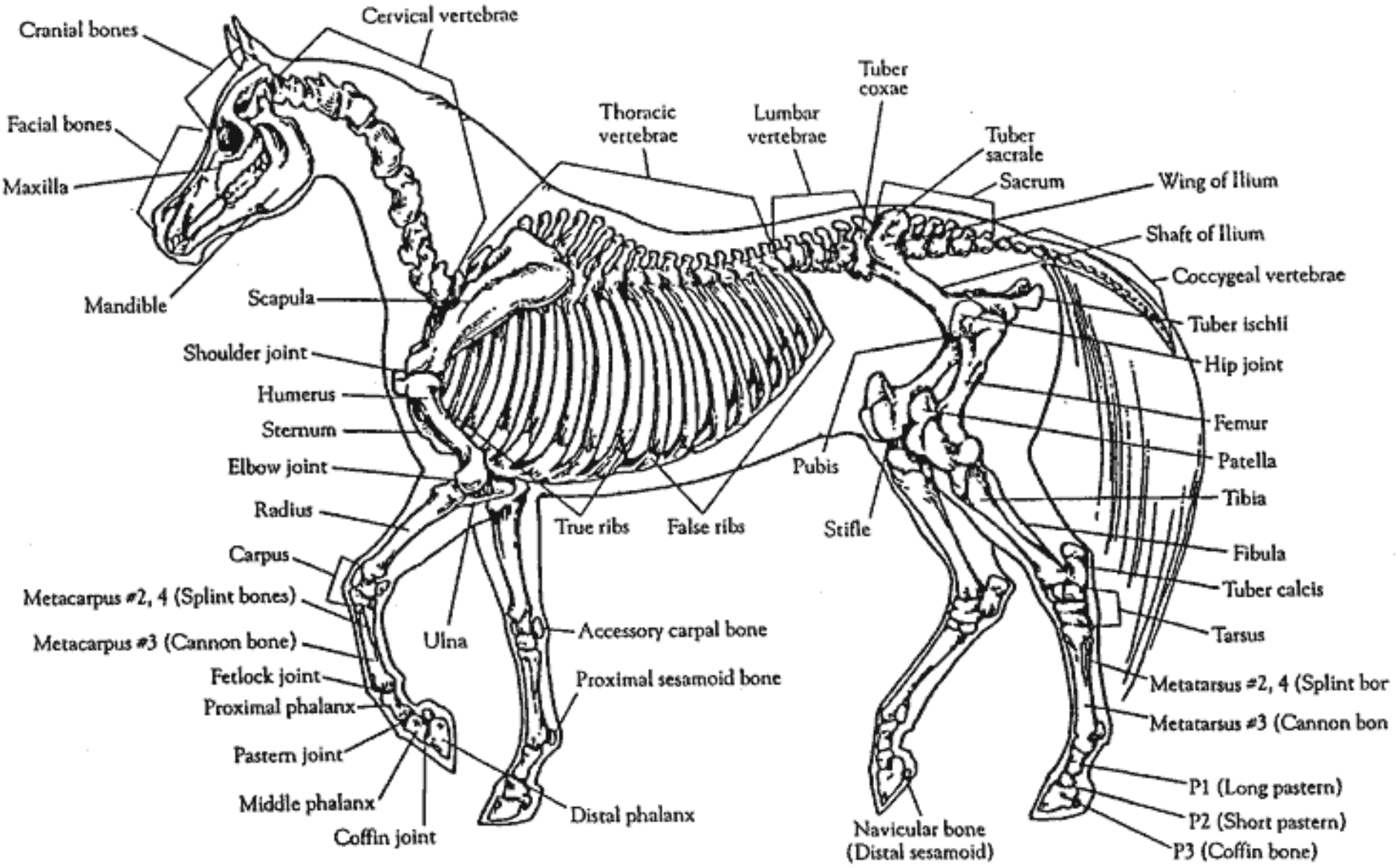
Navicular disease is a progressive, degenerative condition of the navicular bone, also affecting the navicular bursa and overlying deep digital flexor tendon. This condition occurs mainly in the forefeet. Upright conformation of the digit, small feet, improper shoeing, exercise on a hard surface, and very demanding work are thought to cause and aggravate the condition. Off-and-on lameness and shifting and pointing of the forefeet are common signs of the disease.

Within the Digit



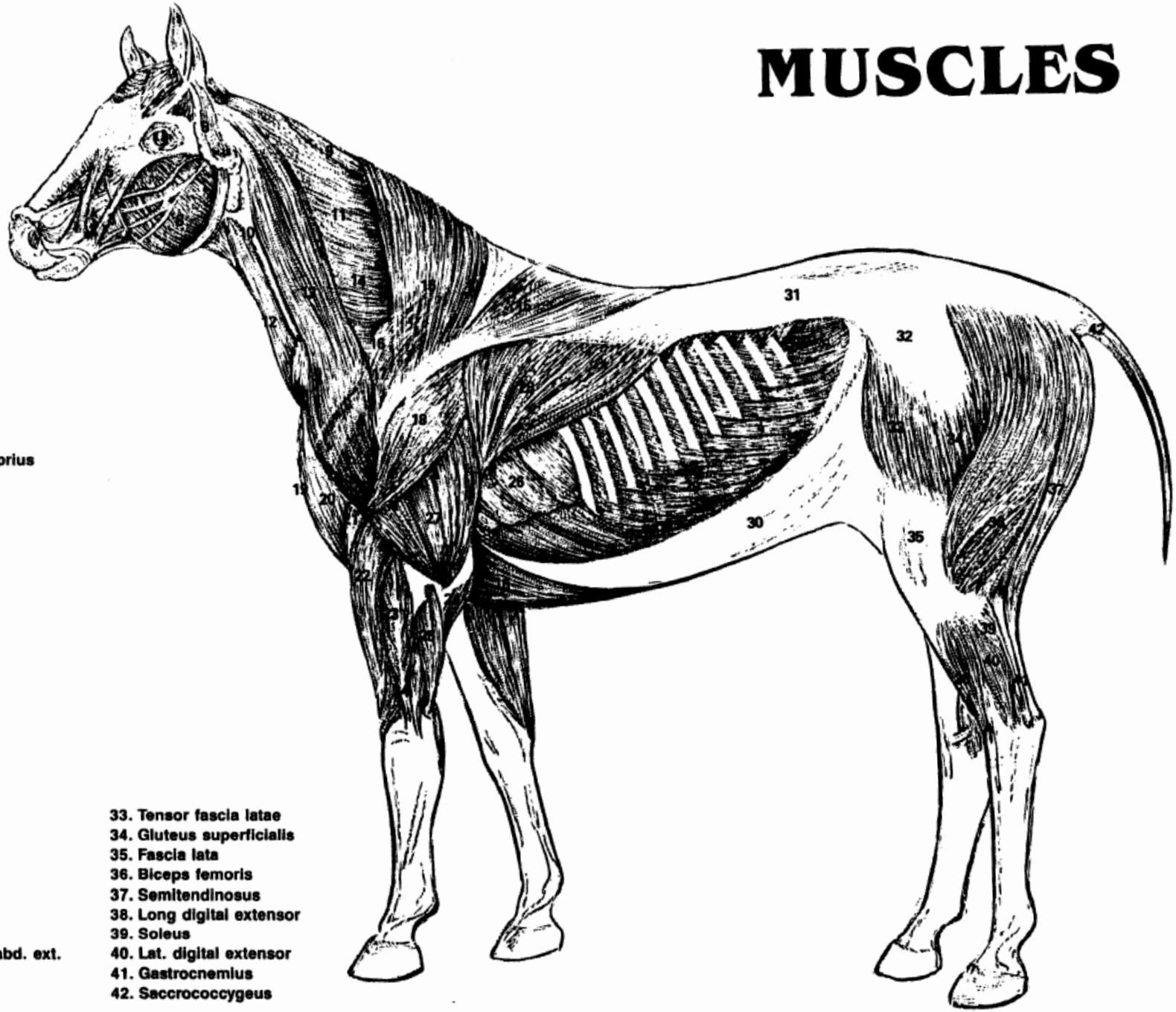


SKELETON OF THE HORSE



http://www.agriteach.com/members/images/horse_skeleton.gif Accessed October 13, 2006

MUSCLES



1. Levator nasolabialis
2. Zygomaticus
3. Buccinator
4. Facial vein
5. Levator labii sup. proprius
6. Masseter
7. Scutularis
8. Parotido-auricularis
9. Rhomboideus
10. Jugular vein
11. Splenius
12. Sterno-cephalicus
13. Brachiocephalicus
14. Serratus cervicis
15. Trapezius
16. Pectoralis, deep
17. Supraspinatus
18. Deltoid
19. Pectoralis, superficial
20. Biceps brachii
21. Brachialis
22. Ext. carpi radialis
23. Common digital ext.
24. Deep flexor
25. Ulnaris lateralis
26. Serratus thoracis
27. Triceps brachii
28. Latissimus dorsi
29. Obl. abdominis ext.
30. Aponeurosis of obl. abd. ext.
31. Lumbodorsal fascia
32. Gluteal fascia
33. Tensor fascia latae
34. Gluteus superficialis
35. Fascia lata
36. Biceps femoris
37. Semitendinosus
38. Long digital extensor
39. Soleus
40. Lat. digital extensor
41. Gastrocnemius
42. Saccrococcygeus

Anatomy, Conformation, Movement, and Unsoundnesses

Kathy Kelly Unmounted Prep Sessions 1999

Anatomy

Conformation is defined as "The way a horse is _____." As a house is framed with wood, a horse is framed with _____. A _____ is where bones meet. These also absorb _____. Bones are joined by straps we call _____. The ligaments around a joint are called _____. he lubricating oil inside a joint capsule is called _____ _____. The ends of the bone are smooth and cushioned by _____, which when damaged causes arthritis. Horses move their bodies using their _____. Bones are attached to muscles by strong cables, which we call _____.

Muscles can only PULL or PUSH (circle one), so they work in pairs. Those that bend are called _____, those that straighten are called _____.

True False Horses have muscles everywhere, even on their lower legs.
True False There is only one ideal type of horse conformation.
True False Conformation can accurately predict which horses will become lame.
True False There are certain conformation qualities which are basic to every breed.

The _____ apparatus, a system of muscles, tendons, and ligaments in the leg, lets a horse relax and sleep and reaming standing. The _____ apparatus is a system of ligaments in the lower leg, which supports the all-important fetlock. It carries most of a horse's _____, especially during the landing of a jump. It also prevents the fetlock from over-_____, or sinking too _____, and absorbs _____.

Gaits and Movement

A _____ is a sequence of steps within a gait, which we learn to count when jumping. There are four phases of a stride, which are _____, _____, _____, and _____. The ability to move forward starts with the _____ _____. The horse's back (vertebrae) is kept in line and protected by the deep muscles of the _____ and _____. Riding a horse _____ is important because only then can the back muscles properly transmit the thrust of the hind quarters. Also, riding a horse round gets him to use his _____ muscles, which help bring the horse's hind legs forward and use his _____ muscles,

which helps bring the horse's hind legs forward and help him flex his back. The horse flexes his back at the point over his loin called the _____ - _____ joint. How far under a horse's body the hind legs can reach is called _____. In the front of the horse, the _____ and _____ act as balancers. The entire system of muscle groups in the horse is often called the _____ of _____.

A horse carries about _____ % of his weight on the front end when standing still. The center of gravity is usually located near the horse's _____. A "good mover" is admired not only because he is pretty to watch, but because he is likely to be _____ at doing his job than a poor mover, plus _____ longer.

Proportions

Looking at a horse's proportions means looking at how his _____ relate to each other. A hose with good proportions is more _____ than a horse with poor proportions. A horse can be divided into _____ sections: _____, _____, and _____.

A long neck favors a LONG or SHORT stride? A _____-_____ neck rises UP from the shoulder, while a _____-_____ neck comes out of the _____ of the _____. A bull neck is _____, _____, and _____. A ewe neck is often referred to as an _____ neck.

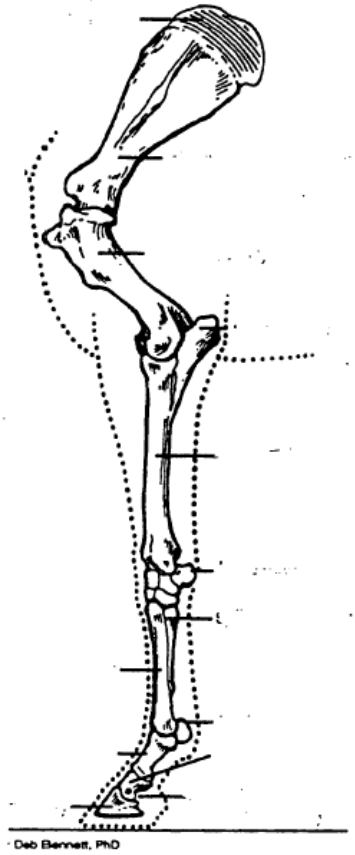
Long muscles help the horse move his _____ farther than short muscles. However, shorter muscles tend to be _____ than long muscles. In the front legs, the ideal proportions are: long _____, short_____, _____ forearm, _____ canon, and _____ pastern. The ideal proportion for the hindquarter is a _____ distance from the hip to hock, so the hocks are "well let down."

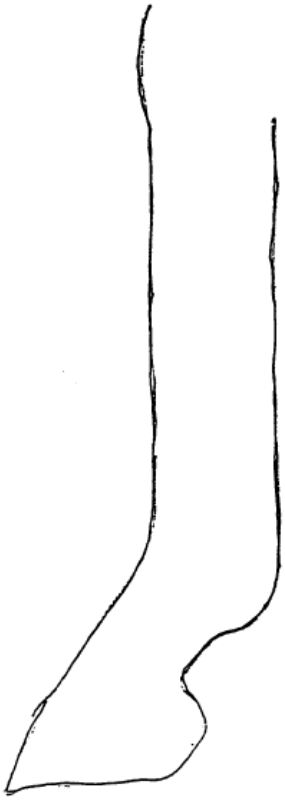
Angles

The angles of the bones affect the _____of _____ and the power and effectiveness of a horse's _____. The hind leg angles help the bones act as _____. **Too much angle in the hind end is called** _____ hocks. Too little angle is called _____ leg. Shoulder angles help the shoulder blade rotate, which determines the length of a horse's _____. A sloping shoulder helps a horse _____ his knees when jumping. The croup angle determines how much a horse can _____ his pelvis. A flat croup makes it hard for a horse to _____ his hind end. A steep croup often produces excessive strain on the _____

Muscling

The type of energy a horse can produce depends on his type of _____. Fast-twitch muscle fibers are good for _____ and _____ efforts. Slow-twitch muscles provide energy for _____ periods of time. All horses have both types of muscles? TRUE or FALSE Event horses should have mostly _____- twitch muscles while barrel horses should have mostly _____- twitch muscles.





Ligaments

1. _____
2. _____
3. _____
4. _____

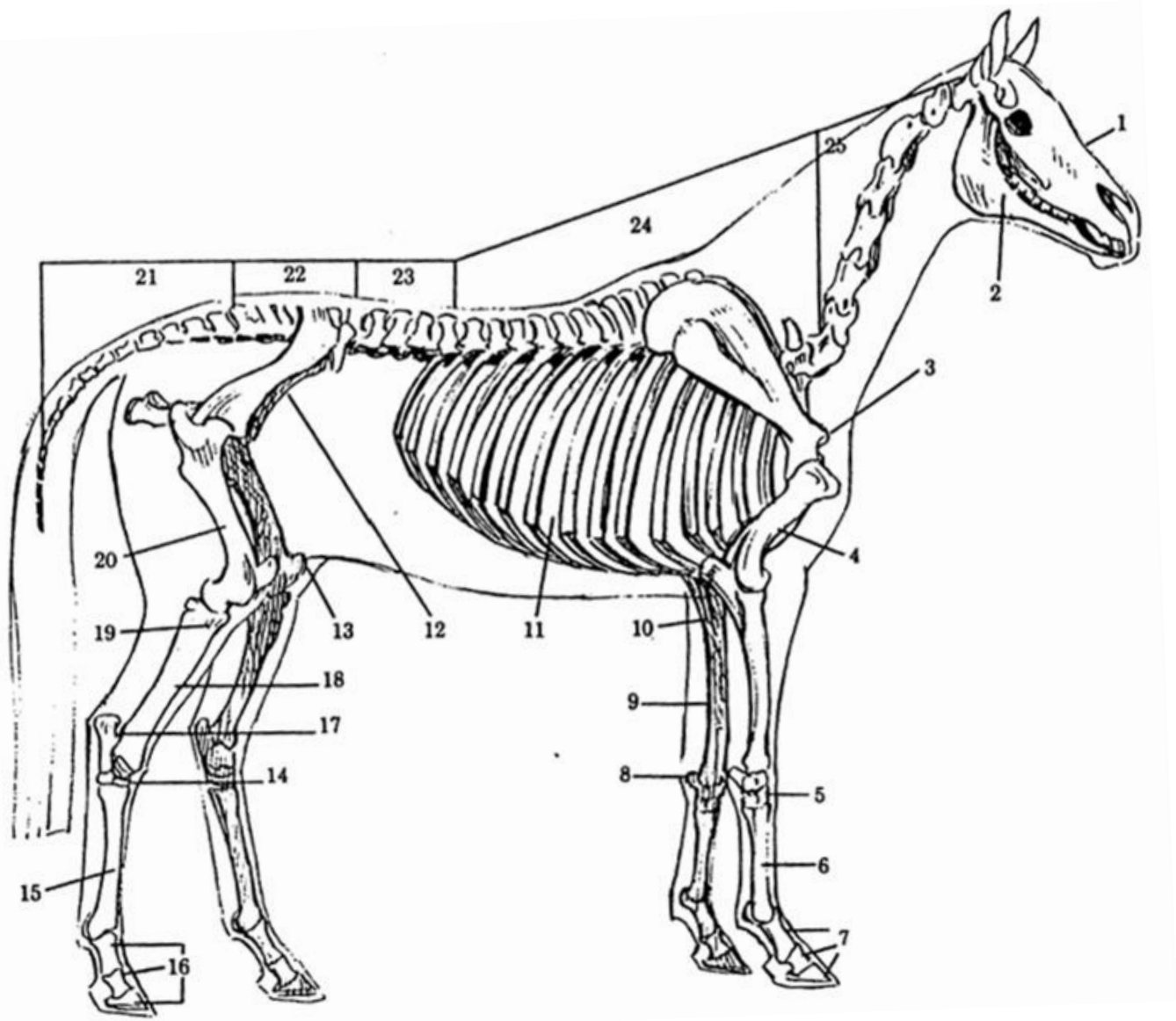
Tendons

1. _____
2. _____
3. _____
4. _____

Hoof

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Basic Skeletal Structure of the Horse



1. _____
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25. _____

Is Your Horse Fit? The Physiology of Conditioning

http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/hrs6942#adapt
Adapted. Accessed February 26, 2008.

Introduction

Whether your horse is competing at high levels or just being used for the occasional trail ride, it must have a certain level of fitness to perform well and endure the activity without injury. Asking the horse to do too much, too soon, can spell trouble. This is especially true for those pasture potatoes that have had little in the way of regular exercise, and are then suddenly expected to carry their equally unfit owner on a two-hour trail ride. Regardless of the discipline the horse is used for, they should be gradually adapted to greater workloads over time. But how do you know when your horse is fit enough?

Top-level athletes are put into rigorous training programs and are often in training year-round. However, the training program of most horses is usually interrupted. In Minnesota, winter often means a substantial decrease in activity level because adverse weather may prohibit riding. Other horses may be given time off after the show season. Injuries may also require a period of lay-up while the horse recuperates. The question then becomes, how much fitness is lost and how fast does it disappear?

Training involves a combination of physical conditioning and task-specific schooling (i.e., schooling in the various tasks required of a specific event or competition). A discussion of schooling techniques for the various equine disciplines is beyond the scope of this paper. Rather, we will focus on how the horse's body adapts to the rigors of regular exercise, with particular attention to the time course of these adaptations. This paper will also cover the principles of conditioning used to obtain and maintain fitness.

Basic Energetics of Exercise

In order to understand the adaptations that occur with physical conditioning, we must first understand the energy-generating processes involved in muscle contraction during exercise. An appreciation of these processes will also help you to design an appropriate training program for a particular event.

The immediate source of energy for muscle contraction is adenosine triphosphate (ATP). The energy released when a phosphate bond is cleaved from ATP is used directly by the contractile mechanism in the muscle. However, the concentration of ATP in skeletal muscle is very limited. If muscle contraction is to continue for more than a second or two, then ATP must be resynthesized. The replenishment of ATP is achieved by two distinct processes: 1) Anaerobic and 2) Aerobic mechanisms.

The generation of ATP by anaerobic processes occurs in the absence of oxygen. ATP is resynthesized anaerobically in the muscle from creatine phosphate or from carbohydrate, such as blood glucose or muscle glycogen. Breakdown of carbohydrate by anaerobic mechanisms is known as glycolysis, and results in the production of not only energy, but also lactic acid.

In contrast to anaerobic metabolism, ATP generated by aerobic mechanisms requires oxygen

provided by blood circulation through the muscles. Carbohydrates and fats serve as the primary fuels for aerobic energy production. Carbohydrate sources include blood glucose and muscle glycogen. Sources of fat include fatty acids released from the adipose tissue, as well as triglyceride stores within the muscle. Another aerobic energy source is protein. However, the break down of proteins for energy is very inefficient and, therefore, does not contribute greatly to energy production during exercise.

Energy is generated more efficiently with aerobic metabolism. The net yield of ATP by aerobic metabolism is 36 ATP for each glucose molecule, whereas anaerobic metabolism of glucose produces only 2 ATP. Even more impressive, aerobic metabolism of a single fatty acid yields 138 ATP. Fats cannot be used as an energy source by anaerobic metabolism because the breakdown of fat requires oxygen.

The greatest advantage of anaerobic metabolism is that it is quite rapid, with glycolysis reaching peak energy production in about 30 seconds. By comparison, aerobic metabolism of substrates is a slower process because of the complexities of the reactions and the cardiovascular lag in supplying oxygen to the muscles. Nonetheless, aerobic processes are in full production within 60 seconds.

The relative contributions of aerobic and anaerobic pathways to the regeneration of ATP during exercise depend on both the intensity and duration of exercise. In general, as the intensity of the exercise increases, so does the contribution of anaerobic energy production. Conversely, as the duration of the exercise bout increases, the more muscles utilize aerobic energy. Trot and slow canter exercise on level terrain can be regarded as primarily aerobic. This means that ATP generated by aerobic metabolism can support almost all the energy demand of the exercise. There is very little contribution of either creatine phosphate or glycolysis, and the exercise may be continued for hours. At the other extreme, sprint exercise lasting less than 25 seconds, such as Quarter Horse racing and timed rodeo events, rely principally on anaerobic energy production.

It is important to remember that although one pathway may generate the majority of the energy at a given exercise intensity, both aerobic and anaerobic pathways are probably utilized in the muscle to some degree at all workloads. For example, most Thoroughbred and Standardbred races last between 100 and 200 seconds. Even though these are high-intensity events, anaerobic energy sources probably contribute less than 30% of the total energy output, leaving the majority of energy to be supplied aerobically. Submaximal events that involve intermittent bursts of activity, such as jumping and cutting, also involve significant energy production by both aerobic and anaerobic pathways.

Adaptations with Training

Five major systems are affected by an adequate period of physical conditioning:

1 Cardiovascular system - improved capacity to deliver oxygen to the working muscles.
2.Muscular system - improved capacity to utilize oxygen and more efficient fuel utilization.
3.Supporting structures (bone, tendon, ligaments, muscle) - an increase in the size and/or strength of these structures.
4.Temperature regulating system- greater ability to lose body heat during exercise, thus avoiding excessive increases in body temperature.
5.Central nervous system - improved neuromuscular coordination, which means the horse is better able to complete the skills required for its particular discipline. All of these adaptations allow the fit horse to exercise more efficiently, as well as perform more work before fatiguing. Tired horses

are more likely to take a misstep or overextend themselves; so proper conditioning may also prevent injury to muscle and supporting structures. The average amount of training needed to elicit these adaptations is presented in Table 1.

Table 1: Average time course for structural and physiological adaptations to exercise training in horses.

Adaptation	Time Course
Increase in VO_{2MAX}	1 - 2 weeks
Increase in plasma volume	1 - 2 weeks
Improved sweating response	1 - 2 weeks
Increase in red blood cells & hemoglobin	2 - 4 months
Increase in muscle capillaries	3 - 6 months
Increase in muscle mitochondria	4 - 6 months
Increase in muscle aerobic enzymes	4 - 6 months
Increase in bone density*	4 - 6 months
Strengthening of tendons and ligaments*	4 - 6 months

*Available research on training adaptations of supporting structures is limited.

Cardiovascular and muscular adaptions:
During exercise, the heart must be able to deliver adequate blood flow to the working muscles, and the lungs must be capable of filling the blood with enough oxygen to help fuel muscle contraction. Furthermore, the muscles must efficiently extract fuels (oxygen, glucose, fatty acids) from the blood and exchange them for metabolic by-products (heat, lactic acid, carbon dioxide) that may hinder muscle contraction. The maximal rate of oxygen consumption (VO_{2MAX}) is a measure of the ability of the respiratory, cardiovascular and muscular systems to work at full capacity. Essentially, a higher VO_{2MAX} indicates the horse is better able to cope with the demands of a given activity.

One of the most important adaptations that occur with training is an increase in VO_{2MAX}. The most substantial increases in VO_{2MAX} generally appear in the first few weeks of training, with smaller increases occurring as the horse becomes fit. In one recent study in Thoroughbred horses, there was a 9% increase in VO_{2MAX} after only 10 days of moderate-intensity training. Even with training of longer duration, the most substantial increase in VO_{2MAX} appears to occur within the first six to eight weeks of training. With a progressive increase in training load, increases in VO_{2MAX} of up to 30% have been measured in horses. Such increases in VO_{2MAX} will confer a marked increase in overall work-capacity. That is, the horse will be able to sustain a higher running speed, or greater exercise intensity, for a longer period of time before fatiguing.

Interestingly, the intensity of the exercise during initial weeks of training is probably not an important determinant of the rate of change in VO_{2MAX}. One study found that there was no difference in the changes in VO_{2MAX} with training in two groups of horses trained at either 40% of VO_{2MAX} (trotting) or 80% of VO_{2MAX} (cantering). An increase in VO_{2MAX} was noted in each group of horses, despite the difference in training intensity. However, it is worth noting that while the intensity of training may not be an important factor for increasing VO_{2MAX}, training intensity is important for adaptation of skeletal muscle and the supporting structures (bone, tendons, ligaments).

Adaptations within the cardiovascular and muscular systems are responsible for the improvement in VO_{2MAX} seen with training. Very little, if any, improvement is seen specifically within the respiratory system itself. The early changes in VO_{2MAX} are related to improved oxygen delivery by the

cardiovascular system, whereas later alterations in VO_{2MAX} are due more to an increase in the muscle's ability to utilize oxygen for aerobic energy production.

Within two to three weeks of the start of a regular program of exercise, there is an increase in blood volume, due to an increase in the number of red blood cells and the volume of plasma (the non-cellular component of the blood). In one study, a 29% increase in plasma volume occurred within 2 weeks of the commencement of low intensity training. The majority of this increase occurred within 1 week of the start of training. This rapid increase in plasma volume, coupled with an increase in red blood cells and haemoglobin, provides an increase in the oxygen carrying capacity of the blood (that is, more oxygen can be transported in the blood to the working muscles). As stated above, this improvement in oxygen delivery is likely responsible for the increase in VO_{2MAX} that occurs early in response to training.

Over a longer period of training (three to six months), there is an increase in the number of small blood vessels (capillaries) within skeletal muscle. The purpose of this increased capillarity appears not to be related to an increase in the supply of blood to the working muscle per se, but to prolonging the transit time for blood through the muscle. This increased transit time improves the exchange of substrates (oxygen, glucose, fatty acids) into the muscle and metabolic by-products (carbon dioxide, lactic acid, heat) from the muscle.

Training also results in hypertrophy (enlargement) of the heart muscle, which enables the heart to circulate blood more efficiently. As a result, the horse will have a reduction in heart rate (up to 10 beats/minute) at a given level of exercise. Essentially, the heart is able to pump more blood with each beat (increased cardiac output), so it doesn't have to work as hard during submaximal exercise (trotting and cantering). The maximum heart rate does not appear to change with training; however, the speed at which the maximum heart rate is reached increases with increasing fitness. Therefore, the fit horse can perform more work than an unfit horse before reaching its maximum capacity. Recovery of heart rate following exercise is also faster in well-trained horses, particularly endurance athletes. Therefore, monitoring heart rate during and after exercise is an important tool for assessing fitness (see section on Monitoring Fitness).

A big component of the increase in VO_{2MAX} associated with training is an increase in the oxidative capacity of muscle. That is to say, trained muscles are able to produce more energy by aerobic pathways because they are able to extract more oxygen from the blood. Aerobic metabolism of fuel stores (glycogen and fat) occurs in small structures called mitochondria that are located within muscle fibres. Training results in an increase in the size and number of mitochondria within working skeletal muscle. Consequently, there is an increase in the quantity of enzymes needed in the chemical reactions involved in aerobic metabolism of carbohydrates and fats. Low- to moderate-intensity, long duration training produces the greatest increase in the number of mitochondria and the activity of the aerobic enzymes. These increases occur in the first few months of training.

The increase in the oxidative capacity of muscle allows a more efficient utilization of fuel substrates. During submaximal work, there is an increase in the amount of fat utilized with a corresponding decrease in the utilization of blood glucose and muscle glycogen. In this way, these limited carbohydrate reserves are spared. Because depletion of carbohydrate stores may contribute to the onset of fatigue during prolonged exercise, a greater utilization of fat as a fuel by trained muscle may allow the horse to exercise for a longer period of time before fatiguing.

Although the metabolic advantages of an increased oxidative capacity in muscle will be greatest in

horses required to undertake more prolonged exercise, there are positive benefits for horses participating in more intense activities. Specifically, the trained horse will be able to sustain a higher workrate (greater exercise intensity) for a longer period of time without a build-up of lactic acid in muscle. As mentioned earlier, lactic acid is a by-product of anaerobic metabolism of carbohydrates. The enhanced oxidative capacity of trained muscle will allow a greater proportion of energy to be produced by the aerobic pathways earlier in the exercise bout. As a result, the production of lactic acid and hydrogen ions by anaerobic metabolism will be delayed, reducing the potential of these by-products to adversely affect the muscle's ability to contract, a factor that contributes to fatigue during intense exercise. Ultimately, a shift in substrate utilization towards more fat and less carbohydrate is an advantage during both low- and high-intensity exercise because it prolongs the horse's capacity to work at a given intensity.

In contrast to the increases in aerobic enzymes, there are few changes in the activities of anaerobic enzymes in response to most routine training programs. Only when training involves short-term, intense bursts of exercise will it result in an increase in the activities of glycolytic enzymes needed for anaerobic energy production.

Adaptations to the supporting structures:
Compared to the cardiovascular and muscular systems, the supporting structures (bones, ligaments, tendons) appear to adapt more slowly to training (Table 1). For completely untrained horses, the cardiovascular and muscular systems are well adapted to exercise within a 10 to 12 week period, whereas up to six months might be needed for adaptation of the supporting tissues. As a result, the relatively slow adaptation of the bones, ligaments and tendons limits the rate of progress of the entire conditioning program. Therefore, it is important to remember that the training time allotted to prepare the horse for a particular activity or competition may have to be adjusted to allow time for the supporting structures to adapt.

Relatively few studies have examined how the bones of the horse's limbs adapt during training. The density of the bone is an important determinant of strength. Some studies have demonstrated increases in the density of the metacarpal (cannon bone) and third carpal (knee) bones of horses during training while others have not. However, the intensity of training has an important bearing on this response. Training at the trot or slow canter (submaximal exercise) results in minimal changes in bone mass or density, whereas an increase in bone density has been shown in horses training at the gallop (maximal exercise). Although the exact time-course of these changes is unclear, recent studies have detected increases in bone density after four to five months of training. Currently, an incremental training program that gradually increases the length, speed and repetition of galloping is recommended for enhancement of bone strength. Although the modeling response of bones is stimulated by fast work, the speed does not have to be maintained for a long duration.

Unfortunately, even less is known about adaptations of tendon and ligament tissue during exercise training. A recent series of investigations have found that the tendons of mature horses have a limited ability to respond to training. In contrast, the tendons of young horses (less than 2 years) are able to strengthen in response to training. Thus, contrary to the common belief that exercise training of immature horses is detrimental, the results of these recent studies raise the possibility that early training might enhance development of the supporting structures of the limbs and perhaps reduce the incidence of injury during training and competition. While the tendons of mature horses have a limited ability to adapt, their training program should still be increased gradually to allow these tissues to strengthen as much as possible.

If the training workload is greater than the capacity of the supporting structures to adapt, injuries will occur. The supporting structures should be monitored closely during training. On a daily basis, each limb should be palpated for signs of swelling, heat and pain and the training program adjusted accordingly.

Thermoregulatory adaptations and acclimatization to heat:
Conversion of chemical energy (glucose, glycogen, fat) into mechanical energy (muscle contraction) is a very inefficient process. In fact, more than 75% of the energy is lost as heat. This heat must be dissipated from the body to avoid overheating the muscles (and brain). The most important weapon the horse has against excessive heat production during exercise is sweating. The evaporation of sweat from the body allows the horse to regulate its body temperature by removing excess heat produced by working muscles.

The expansion of the plasma volume that occurs within the first few weeks of training is likely to contribute to improved capacity for thermoregulation. An augmented plasma volume facilitates increased blood flow to the skin while maintaining blood flow to working muscles during exercise. Therefore, heat can be dissipated and muscles can continue to receive the oxygen and fuels needed to sustain muscle contraction. Trained horses also start sweating earlier in the exercise bout compared to untrained horses, thereby removing excess heat before it can overload the thermoregulatory system.

As the ambient air temperature creeps closer to the horse's body temperature (30°+ C), it becomes increasingly difficult for the horse to dissipate heat. This is especially true if the humidity is also high, because the effectiveness of sweating is reduced. Horses that are not acclimated to high heat and/or humidity must be allowed time to adjust to the new conditions to perform optimally, the same as an unfit horse must be conditioned to withstand the rigors of exercise.

Due to the past two Olympic Summer Games being held in warm climates (Atlanta, Georgia and Sydney, Australia), research was conducted to determine the time-course necessary for horses to acclimate to high heat and/or humidity. Essentially, the same thermoregulatory adaptations that occur in response training occur as the horse adapts to higher heat and humidity, but to a greater extent. An increase in plasma volume occurs after a week of exercising in hot, humid conditions. However, the changes in sweating response, including an increase in sweating rate and an earlier onset of sweating, may take up to 2 weeks of exercising in hot, humid conditions. Therefore, a minimum of 2 weeks may be necessary to acclimate the horse to performing in higher heat and humidity. Furthermore, for these adaptations to take place, the horse must be exercised in the new environment. Simply exposing the horse to elevated heat and humidity will not confer the same adaptations. If the horse is unfit prior to arriving in the hotter environment, adaptations will take much longer. Therefore, untrained horses should not be subjected to exercise training in the heat until an adequate level of fitness has been achieved in cooler conditions.

Principles of Conditioning

The success of a conditioning program relies on the body's adaptive response to the stress of exercise. If the horse performs the same amount of exercise every day, a certain level of fitness is attained as the horse adapts to the workload. However, without a further increase in training load (an increase in training duration, intensity, or both), there will be no further increase in fitness. To achieve a conditioning or training effect, the horse must be subjected to gradual increases in workload. Each new level of training is maintained until the body has adapted to the added stress, after which a further increase in training load can be applied. Alternating periods of increasing

workload with a period of adaptation is known as **progressive loading**.

The idea behind progressive loading is to prescribe an exercise bout that will gradually stress the horse sufficiently, such that he will be able to tolerate the same exercise the next time with less stress. For aerobic conditioning, progressive loading is accomplished through gradual increases in either the duration or intensity (speed) of the exercise on a weekly basis. For anaerobic conditioning, progressive loading is accomplished by a weekly increase in the exercise intensity (speed) or in the number of repetitions of high-intensity activity.

For any equine discipline, performance is most effectively improved by training the specific muscles and systems involved in that discipline. In other words, training exercise must be focused on the specific demands of the particular event the horse is training for. The physiologic and psychological demands of competitive events such as the 3-day event, show jumping, dressage, endurance rides and racing over distances of 400 m to 3200 m are extremely different. Therefore, training should be specific to the event so as to train the appropriate structures and physiologic systems. This principle of conditioning is known as **specificity**.

Training of horses should be specific to the athletic event involved whenever possible. This principle need not be followed rigidly, since there are circumstances when alternative types of exercise may be appropriate for some horses. For example, working the horse over hilly terrain has the advantage of increasing heart rate (workload) without increasing speed, thereby sparing the bones, tendons and ligaments from excessive stress.

One of the most important principles of conditioning is that of **individual differences**. Horses vary in their individual response to conditioning. Some horses will respond quicker than others and will tolerate faster increases in training load. The magnitude of the overall training response will also vary among horses. Genetic factors play a major role in this variation in training response, but another consideration is the state of fitness at the beginning of a training program. A horse which has been inactive for a long time (12 months or more) will require a longer period of training to reach a certain level of fitness compared to a horse which has had a six or eight-week layoff after a season of training and competition. Age is also important. Younger horses are capable of greater adaptations in response to training. By comparison, recent studies have confirmed that older horses (age 20+ years) have a reduced capacity for exercise. Ultimately, **training programs must be individualized in order to attain maximum benefit while minimizing the risk of injury**.

Obtaining and Maintaining Fitness

Regardless of the horse's eventual occupation, the initial stage of conditioning is based on a period of low intensity exercise known as long slow distance (LSD) training. Some refer to this phase of training as "legging a horse up." This phase involves walking, trotting and cantering, and it may incorporate both arena work and trail riding. This type of conditioning results in improved cardiovascular and muscular efficiency, enhances the horse's ability to regulate body temperature, and stimulates adaptive changes in the limbs. LSD training builds aerobic endurance or stamina, allowing the horse to exercise for prolonged periods at a low- to moderate-intensity.

The LSD phase may occupy a period of 2 to 12 months, depending on the breed and age of the horse, its previous conditioning history and the competitive objectives. LSD is particularly important in young horses that are being conditioned for the first time, when the rule is to make progress very slowly, with plenty of intervening rest days. In contrast to the young horse, the LSD phase is completed somewhat more rapidly in a sound horse that has been fit in the past. A period

of LSD is also needed when a horse is brought back into work after a prolonged rest. For example, a horse that was fit the previous year but has not been ridden through the winter months is brought back gradually using LSD. LSD also plays an important role in rehabilitation following injury, with special consideration being given to strengthen the injured area.

The objective of LSD training is to prepare the horse to cope with 45 to 60 minutes of easy exercise at a walk, trot and canter, at an average speed of 6 to 8 km/h. When this stage is reached, it is time to evaluate the competitive objectives in relation to the conditioning requirements, and then gear the training program toward the specific activity for which the horse is being prepared. To make the conditioning program as sport-specific as possible, the intended activity should be analyzed to estimate the relative contributions of the aerobic and anaerobic energy systems. The longer the duration of the competitive activity, the greater the need for aerobic endurance. In contrast, anaerobic metabolism will be important during activities with rapid acceleration or deceleration, sprinting, jumping and abrupt changes of direction

In general, horses that will be used for pleasure riding or for low intensity sports, such as lower level dressage or hunter competitions, need only to maintain their present level of fitness by doing LSD workouts twice a week. For horses that will compete in endurance sports (endurance racing, competitive trail riding), the progression is from LSD to a more rigorous aerobic program, in which the prime consideration is to build the duration at moderate speed. On the other hand, horses that will specialize in power and speed events (barrel racing, cutting, roping, jumping) train these attributes by reducing the distance and increasing the intensity of the workouts. For sports requiring an intermittent pattern of energy expenditure (eventing, combined driving, reining, cutting), a combination of conditioning methods is used to maximize the aerobic base while maintaining sufficient anaerobic capacity for the bursts of high intensity exercise.

The appropriate frequency of exercise depends on whether the objective is to improve, maintain or reduce the level of fitness. When the objective is to increase cardiovascular fitness, workouts are usually performed three times per week on alternate days, which allows time for tissue repair and rebuilding between successive workouts. More frequent bouts of exercise are unlikely to produce a faster conditioning response and may predispose to injury by not allowing sufficient time between workouts for tissue repair. Light exercise may hasten the repair process, so it is not necessary for the horse to have complete rest on the intervening days. For maintenance of cardiovascular fitness, one or two workouts per week is sufficient. During a busy competition season, the actual competition may serve as the workout. Fitness is lost when the workouts are performed less frequently than once per week or when workload is reduced.

Too little stress on tissues will not produce a beneficial adaptation, but too much stress or insufficient recovery time between workouts leads to a state of **overtraining**. Excessive aerobic conditioning may overload the cardiovascular system causing poor appetite, poor performance and an increase in packed cell volume. Overloading of the muscular system through excessive training causes muscular strains, which vary from mild to severe. However, it is the supporting structures of the limbs (bone, cartilage, ligaments and tendons) that adapt most slowly to the stimulus of exercise and are particularly susceptible to overloading injuries in the form of fractures or strains. Therefore, training intensity should be carefully monitored.

Monitoring Fitness

One of the difficulties in training horses is determining if, and when, the horse is fit. Scientists have the ability to measure a large number of parameters to assess changes in fitness while horses

are exercising on a high-speed treadmill in a climate-controlled laboratory. Obviously, most of us do not have the luxury of such facilities. Fortunately, much information can be gained by monitoring your horse's heart rate. Heart rate is perhaps the best, and certainly the most practical, means for judging work effort during exercise. In addition, the heart rate during recovery from exercise can be a very useful guide to a horse's progress during training.

The usefulness of heart rate as a means to quantify work effort comes from knowledge that there is a linear relationship between heart rate and exercise intensity. More strenuous workloads or faster running speeds will produce higher heart rates. We also know that heart rate decreases at a given intensity of exercise after the horse becomes more fit. In addition, as fitness improves heart rate will decline more quickly following exercise. Therefore, at periods throughout the training program, heart rates can be compared during and after a bout of exercise. It is important that the exercise be standardized (same distance, terrain, footing, environmental conditions, etc.) to make heart rate comparisons more valid.

Methods of determining the heart rate include palpation of an arterial pulse, auscultation of the heart sounds with a stethoscope, and the use of an electronic heart rate monitor. Because the heart rate drops quickly once exercise ceases, palpation or auscultation of the heart rate will not accurately reflect the heart rate during exercise. Therefore, these manual methods can only be used to assess heart rate before and after exercise. The advantage of the heart rate monitor is that it gives a continuous reading of the horse's heart rate before, during and after a workout.

Because not everybody has an electronic heart rate monitor, measurement of recovery heart rate becomes the best option for assessing the horse's capacity to adapt to the training load. After a standard bout of exercise, take note of the heart rate at 2, 5 and 10 minutes after completion of the exercise. In well-conditioned horses, the heart rate will be around 60 beats per minute after 10 minutes of recovery, even following reasonably strenuous workouts. However, a recovery heart rate of 72 to 80 beats per minute or more might indicate that the work effort was beyond the horse's current level of conditioning.

It is important to remember that the heart rate during exercise and recovery is sensitive to a variety of environmental factors, including weather, the work surface and excitement. Hotter weather or more yielding footing usually result in higher heart rates and slower heart rate recoveries. And excitement may mask the true heart rate at lower exercise intensities. Monitoring the heart rate is also useful for detecting early signs of disease or lameness. If the horse's heart rate before, during or after exercise is elevated above normal, and it can't be explained by fear, excitement or environmental challenges, lameness or illness should be suspected and the horse should be evaluated further.

In contrast to what is commonly believed, the respiratory rate is not a reliable indicator of fitness. The respiratory system plays an important role in thermoregulation, helping to remove the heat produced during exercise. Therefore, the respiratory rate following exercise may be more of a reflection of heat dissipation (especially in hot conditions) than adaptation to training.

Detraining

The training program of most horses will inevitably be interrupted for any number of reasons (adverse weather, an end to a competitive season, injury, or sickness). When a horse ceases exercise training, it loses fitness. This loss of fitness is referred to as detraining. The rate at which cardiovascular fitness, musculoskeletal strength and suppleness are lost determines the time

required to recondition the horse following a layoff.

Horses taken out of training for a month or less usually experience a minimal loss of cardiovascular fitness, especially if they had been in training for several months prior to the lay-up. However, the workload should be reintroduced gradually over a period of several days before resuming the previous work schedule, particularly if training was stopped due to injury.

Following a layoff longer than a month, there is a greater loss of cardiovascular condition, as well as musculoskeletal strength, that must be regained before progressing. While cardiovascular fitness may be regained relatively rapidly, the strength of the muscles, bones, tendons and ligaments will be regained relatively slowly. Therefore, just as in the original conditioning program, the rate of adaptation of the supporting tissues dictates the rate of progress during reconditioning. As a rule of thumb, each additional month off beyond the first month of lay-up requires a month's reconditioning.

When the horse is let down at the end of the competitive season, a baseline level of fitness can be maintained during the off-season by performing cardiovascular workouts twice per week at a reduced intensity and duration. If a baseline level of fitness is maintained through a reduced work schedule, reconditioning proceeds much more rapidly the following season. It is not recommended that horses be let down completely, except during recuperation from injury, because large oscillations in fitness may be detrimental to long-term soundness. In older horses, it is particularly important to maintain fitness in the off-season because reconditioning takes longer as the horse ages.

Conclusions

An adequate level of fitness is necessary for horses to perform to their potential. Proper conditioning also helps prevent injuries that may arise when an unfit horse is pushed beyond its physical capacity. When developing a conditioning program, it is important to remember that different tissues in the body vary in their rate of adaptation to exercise. The cardiovascular and muscular systems respond rapidly, with significant changes being produced in only a few weeks. This is in contrast to the supporting structures (bone, ligaments, tendons), which adapt much more slowly over a period of many months. Therefore, training programs should allow adequate time to condition all the body systems to withstand the rigors of riding and competing.

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Dr. Lori Warren - Dr. Warren recently joined Alberta Agriculture, Food & Rural Development as Provincial Horse Specialist. She received her M.S. and Ph.D. in Equine Nutrition and Exercise Physiology from the University of Kentucky. She is interested in the nutrition of performance horses and forage utilization by young growing horses.

Lori Warren, PhD, PAS
Provincial Horse Specialist
Alberta Agriculture, Food and Rural Development
Edmonton, Alberta

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Conformation and Lameness

Kathy Kelly Unmounted Prep Sessions 1999

A conformation fault is a _____ problem, not a muscle problem. A blemish is something a horse is born with? TRUE or FALSE An unsoundness causes a horse to go _____ or somehow impairs his health or ability to work. Conformation defects are considered unsoundnesses? TRUE or FALSE

SO WHAT?

Write the problems associated with the following conformation faults.

Base wide _____

Base narrow _____

Toes in _____

Toes out _____

Over at the knee _____

Back at the knee _____

Bench knees _____

Knock knees _____

Standing under _____

Sickle hocks_____

Post legs _____

Camped out _____

Cow hocks _____

Straight stifle _____

Upright pastern's _____

Long pastern's _____

Straight shoulder _____

Long back _____

Short back _____

Slab-sided _____

Unsoundnesses

Kathy Kelly Unmounted Prep Sessions 1999

	Unsoundness	Location	Definition
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Aging a Horse

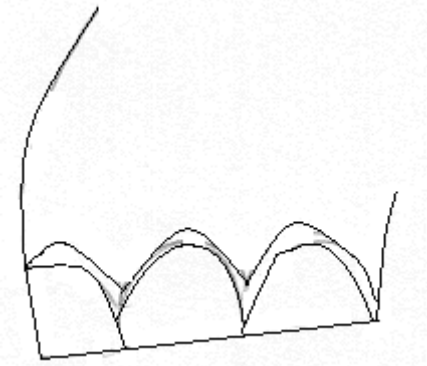
(www.hanne.com/teeth-ageing.html Accessed August 7, 2007)

Through history, determining the horse's age by its teeth has been widely used for the purpose of insurance, identification and sale of horses. Finding out the age of the horse through the wear of the teeth is not as an exact science as once thought (and still thought), and can be difficult in horses between 8-9 years and 20. The wear of incisors has a lot to do with the individual, the individual diets, bad habits such as cribbing, etc, and there can also be differences between breeds. But it is still used as a general guideline.

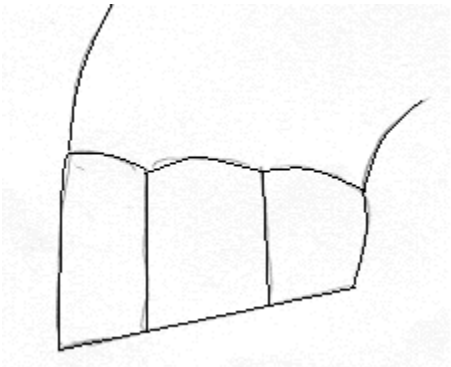
There are several ways you can look at the teeth to get an idea of the age of the horse.

1. Determine what teeth the horse has present

This is usually easiest to do on the incisors, but if in doubt you can also check the number of cheek teeth the horse has present. Both a year old and a grown horse will have a full set of incisors, so it is important to look at the incisors and determine if they are deciduous teeth or permanent teeth. The baby teeth (decidious) look different from the permanent teeth. The surface of the milk teeth is white and there are usually several grooves on the surface. The permanent teeth are larger, more rectangular and are usually more yellow in color. The gum margin of the baby teeth incisors is also rounded compared to the margin of the permanent teeth which is more square. If the horse is in the age where they are shedding their incisors, it is easy to tell the difference between the two sets of teeth. Don't try to determine the age of the horse by the incisor wear on the basis of baby teeth.



Decidious teeth (baby teeth)



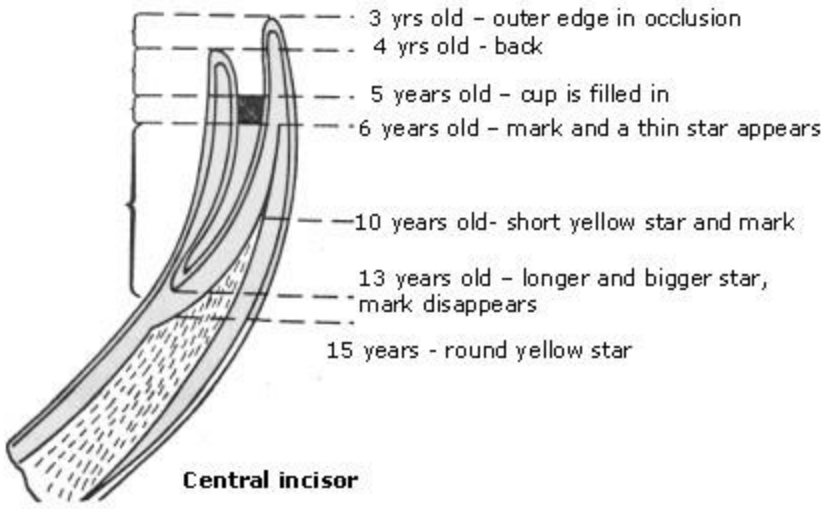
Permanent incisors

Check if the horse has acquired canine teeth. Remember that not all horses get tushes, but if they have them the horse is at least 4-5 years old. Mares rarely get them.

Sequence of tooth eruption

	DECIDIOUS (BABY TEETH)	PERMANENT
INCISORS		
first	birth- first week	2 ½ -3 years
second	4-6 weeks	3 ½- 4 years
Third	6-9 months	4 ½-5 years
CANINES	Absent	4-5 years if ever
PREMOLARS		
first (wolf)	Absent	5-6 months, if ever
second	Birth-2 weeks	2 ½ years
third	Birth-2 weeks	3 years
fourth	Birth-2 weeks	4 years
MOLARS		
first	Absent	9-12 months
second	Absent	2 years
third	Absent	3½ years

2. Look at the wear on the occlusal surface of the incisors



Check the wear of the incisor occlusal surface - a rough guide. I have added a few illustrations to explain what structures we can see on the wear surface of the incisors at different ages. The pattern seen on the occlusal surface of the teeth has to do with the folding and anatomy of the tooth and the different structures show at different ages because of wear. See the anatomy section for explanations to what the different

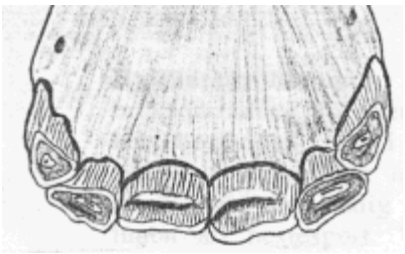
structures showing actually are. The time for the appearance of these characteristics can vary between horses. Because the shedding/eruption of the central, middle and corner incisor are around a year apart, the wear will also be one year behind when going from the central and outwards. The times mentioned are for the central incisor.

Appearance of the dental star (the time when the dentin-filled pulp chamber comes into wear): In the central incisor, this is around the age of 6 years. The dental star gradually goes from a narrow line and gets more oval and round and moves to the middle of the tooth when the tooth wears down. The dental star is a yellow-brown structure. It is colored dark in the following illustrations. It is closer to the horse's lip than the cup and later mark is.

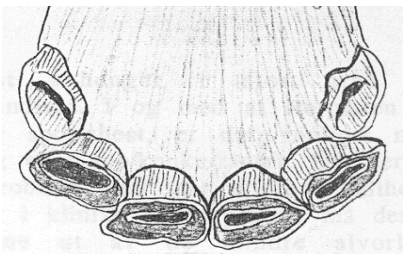
The mark : The infundibulum (a folding in the tooth) is filled with cement, and is usually filled with food pigments and debris at the top. The mark will at first look dark, and later whiter when the dentin shows. When the mark shows, the cup disappears (the cup is actually just an empty space on top of the cement filled infundibulum).

Disappearance of the mark: When the infundibulum is worn away we say that the mark disappears. This will happen at 12-20 yrs and is a very variable and not very reliable factor.

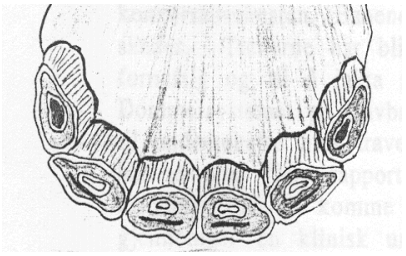
After the mark is gone you will see an *enamel ring* that marks the bottom of the former filled infundibulum. This will disappear in the early to mid teens in the horse.



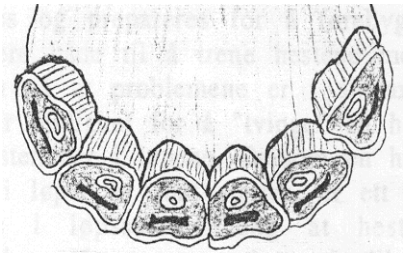
3 years old. The central incisor is permanent and the outer edge is in occlusion (wear), the middle and the corner incisors are decidious. The surface of the central incisor is depressed to form a cup.



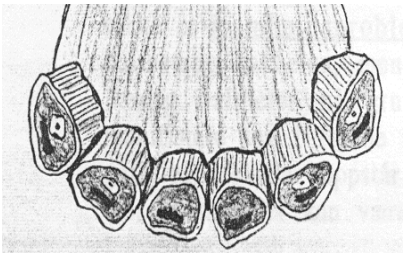
5 years old.. The central incisor has marks, the corner incisor does not have the back edge in occlusion (wear) yet. Al incisors are now permanent.



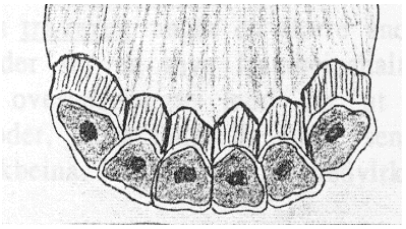
7 years old. The central and middle incisors have a mark and a narrow star. The corner incisor still has a dark mark.



10 years old. The occlusal surfaces of the teeth look more triangular now. The mark is getting smaller and the star wider.



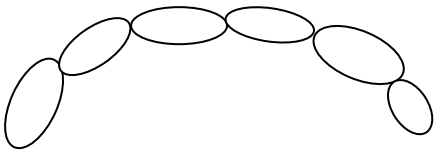
14 years old. In the central incisor the mark is now completely worn away, but you can still see it in the middle and corner incisor. The star is getting bigger. Note how the teeth are now pointing more outwards.



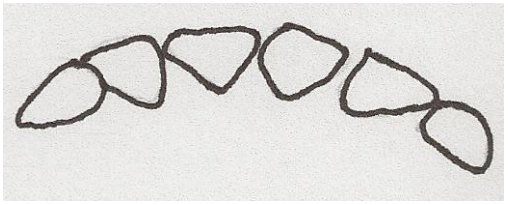
20 years old. The marks in all the incisors are worn away, and the occlusal surfaces are more rectangular than before in a front to back direction. The row of teeth is narrower from side to side now and is almost in a straight row.

3. Check the shape of the teeth on the occlusal surface of the incisors and the shape of the row of incisors

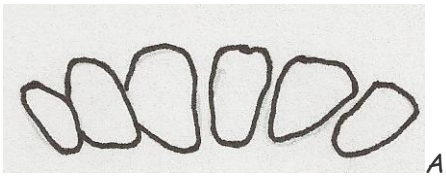
When an incisor tooth wears down closer and closer to the root, the shape changes from being oval to more rectangular and trapezoid. This is also because of the anatomy of the tooth as you look at a cross section closer and closer to the root. The shape of the row of the incisor teeth change from going longitudinally with the row in a younger horse it seems almost to be across in the older horse. Note also how the shape of the occlusal surface changes from oval to trapezoid.



A young horse



A middle aged horse

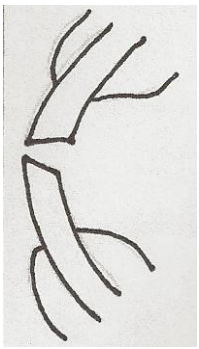


An old horse

4. Check the angle of which the incisors meet (seen from the side)

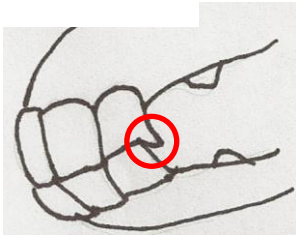
In young horses the upper and lower rows of incisors meet at an angle of about 135°, the older the horse the smaller the angle, meeting at about 90° at the age of 20. In the older horse, the incisors will also be longer than in the young horse.

The incisor angle in a young horse, viewed from the side

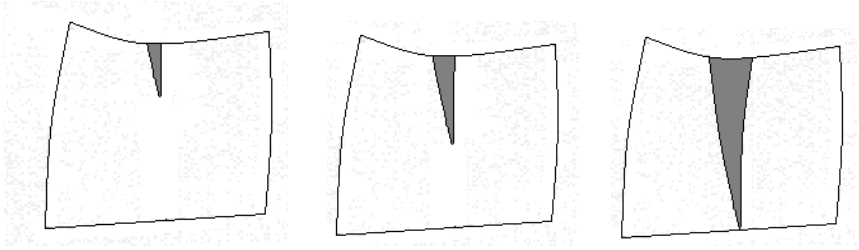


The incisor angle in an aging horse, viewed from the side

5. The hook - The hook is a little beak that develops on the corner of the upper corner incisors. It is not a reliable sign to determine the age of a horse. It will appear from around the age of 6 and stay for the rest of the horse's life unless it is rasped off or worn down. It is developed simply because the upper I_3 is slightly wider than its corresponding tooth and will not wear like the other teeth do.



6. Galvayne's groove - a line that runs longitudinally on the upper corner incisor, and it shows first by the age of around 10. By the age of 15 it stretches half way down the tooth and by 20 all the way down the crown. It has been shown however, that not more than 50% of horses actually get this feature.



10 years 15 years 20 years

Horse Science: Determining the Age of a Horse by Its Teeth

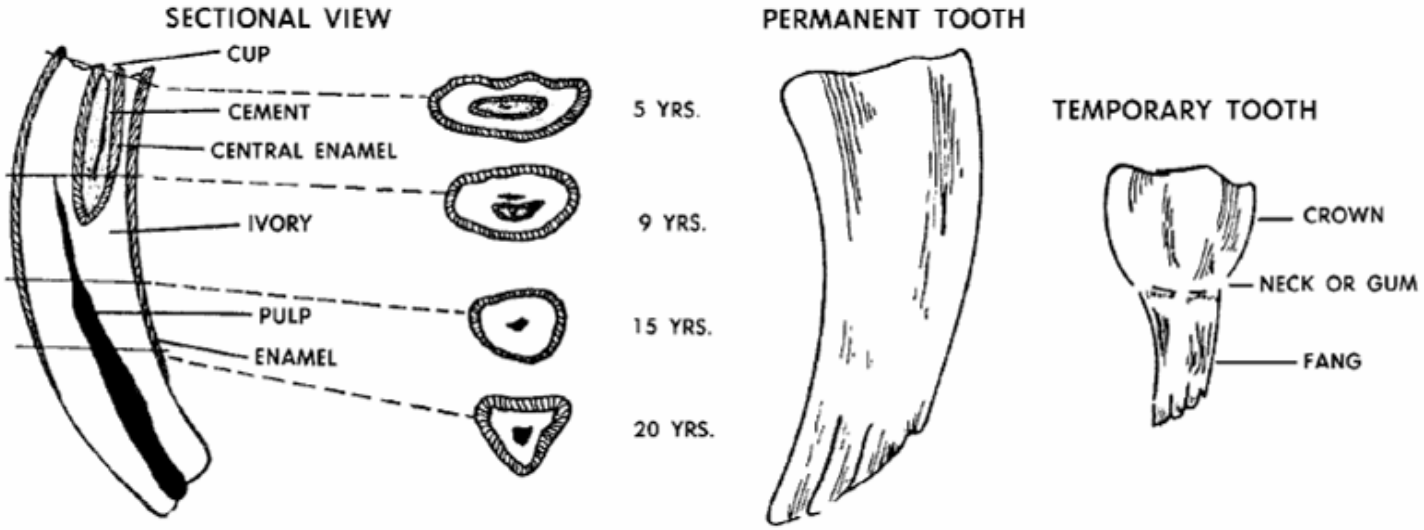
June 1989 (http://www.florida4h.net/Curriculum/projects/animal_sci/HS_pdfs/HSM11/hsm11_ch4.pdf Accessed August 5, 2007)

"How old is your horse, mister?" To such a 4-H question, the owner might answer full-mouthed, smooth-mouthed, he still has corner cups or I don't know as he isn't registered. Such answers tend to confuse the youngster of the motor age, nor can he readily find these answers too easily until he questions the grandfather age group.

General features of horses which indicate advanced ages are grey hairs around the eyes and muzzle, deep depressions above the eyes, slender and hardened muzzles and loose heavy lips with a longer "grin" than younger horses. But, these features are not accurate enough to estimate ages on younger horses. Since the horse is most useful to us from 3 to 15 years of age, we need more accurate methods for age determination during this period.

The teeth of horses under 12 years old can be most closely identified with their approximate age. In general, we must examine the incisor teeth for most accurate results. Of course, the registered horse has a recorded birth date, but many horses are not so fortunate. However, this technique is not foolproof as prolonged droughts, short grazing on sandy soils, cribbers, parrot mouths etc. all tend to make the horse appear different than his actual age. For instance, a horse at 7 years of age grazing in sandy country over a prolonged period might appear to be 8 or 9 by his teeth.

The technique of horse age determination is not new nor especially scientific as it has been passed down for many generations. The basics for determining the age of horses by their teeth are rather simple and not an art only to be guarded by the horse trader or veterinarian. Age can best be estimated by examining the wear and slant of the incisor teeth.



1) Number and anatomy of teeth.

   a) The foal of either sex has 12 molars or grinders and 12 incisors or front teeth for a total of 24 teeth.

   b) The mature male horse has 24 molars or grinders and 12 incisors or biters plus 4 canine teeth or tushes for a total of 40 teeth.

   c) However, the 4 canine teeth located in the interdental space between the incisors and molars erupt only in the gelding or stallion. These canine teeth in the mare are underdeveloped and seldom erupt above the surface of the gums thus giving the mare a tooth count of 36.

   d) There are 6 incisors in each upper and lower jaw. There are 2 central incisors at the midline, 2 lateral incisors and 2 corner incisors in each jaw. The corners being closest to the interdental space.

   e) Anatomy of teeth. By studying the longitudinal section of incisor teeth we can see how the tooth wears as age progresses.

2) Examining teeth.

Approach the horse gently from the left side and examine the teeth by parting the lips with the thumb and forefinger leaving the jaws closed. In examining groups of horses of mixed ownership ask the holder to part the lips. The angle of bit and size and color of teeth are noted first. For the next examination grab the tongue with the right hand and grab the lower lip with the left hand and the mouth will open for clear examination of the cups, wear etc.

3) General tooth eruption and development by ages. The temporary or milk teeth of the young horse are smallish and white with a distinct neck. The permanent teeth are much larger, stronger and have a darker color with distinct cups on the younger horse.

   a) First period (birth to $2\frac{1}{2}$ years).

      1. 10 months. All milk teeth have erupted and in wear at 16-18 months.

      2. 2-year-old. All milk teeth in wear.

   b) Second period ($2\frac{1}{2}$ to 5 years).

      1. $2\frac{1}{2}$ years. Temporary centrals loosen and permanent centrals erupt. Age determination is most accurate from 2-5 years. Shedding of milk teeth and eruption of permanents may not occur.

      2. $3\frac{1}{2}$ to 4 years. Permanent laterals erupt.

      3. $4\frac{1}{2}$ to 5 years. Permanent corners erupt simultaneously and may overlap one another.

   c) Third period (6 to 9 years)

      1. 6 years. Age from here on is estimated mainly by the size, shape and disappearance of cups until 10-12 years of age. Cups disappear at rather regular intervals beginning with the lower centrals at 6 years.

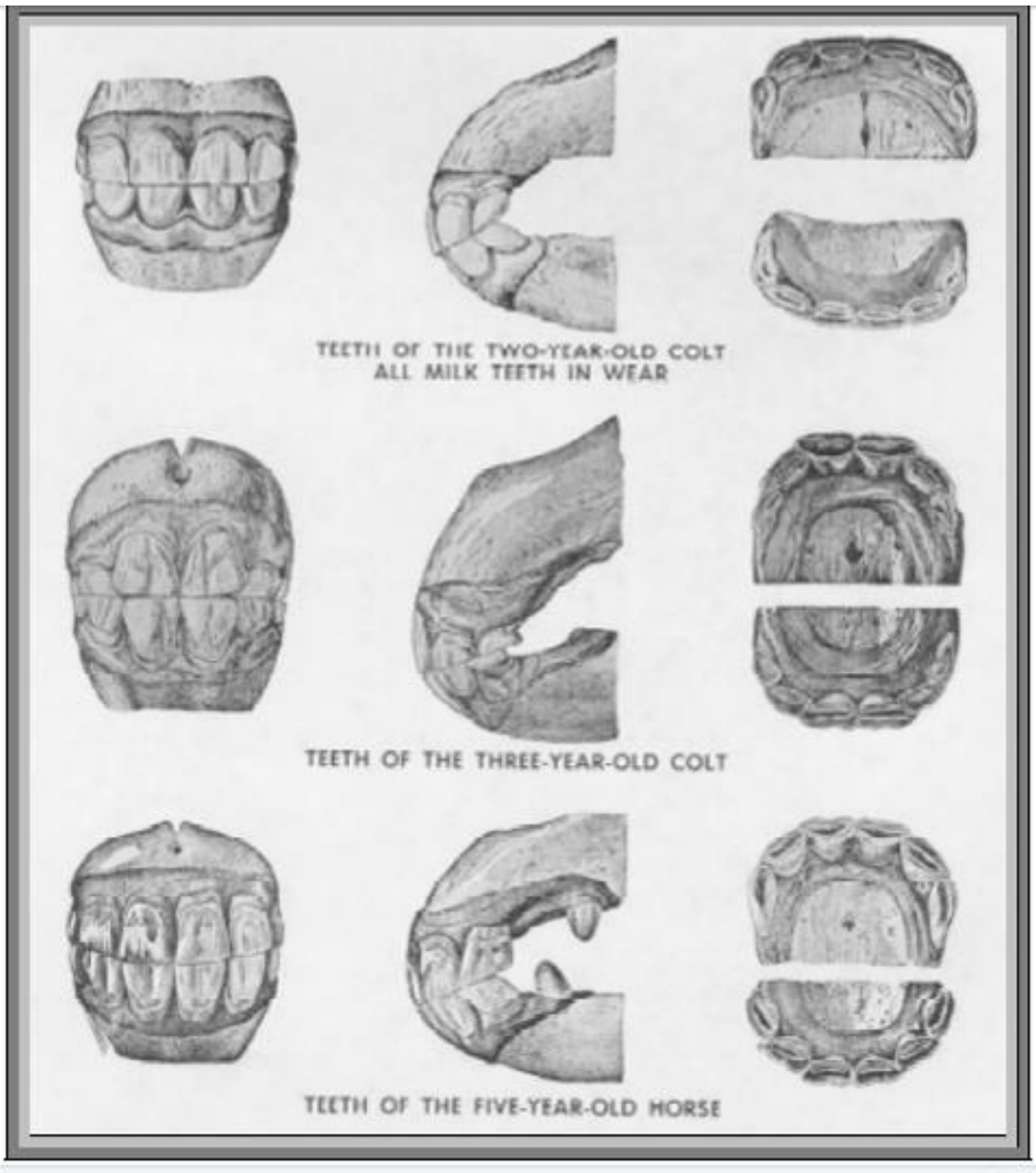
      2. 8 years. Cups have disappeared in the lower centrals and laterals.

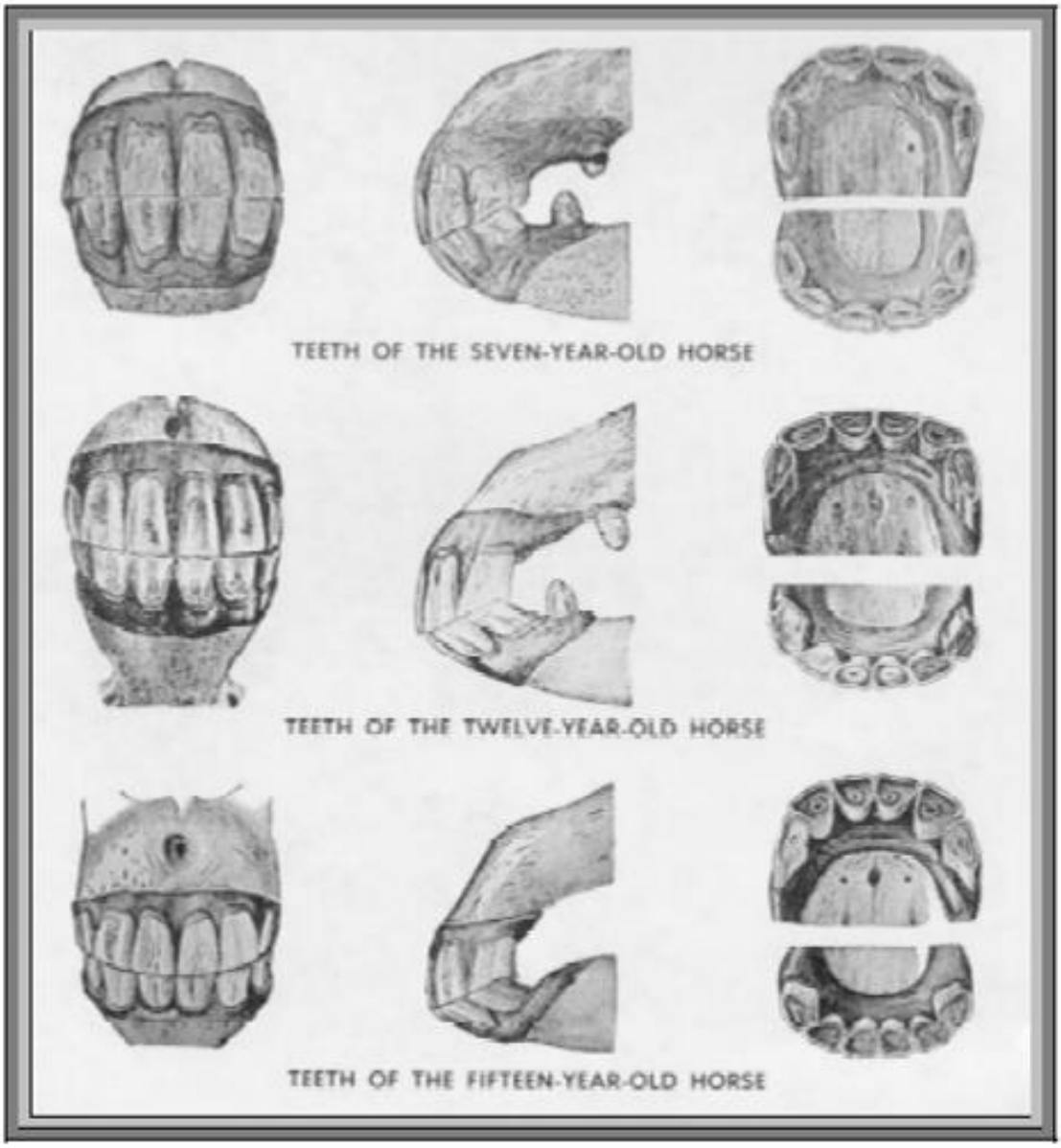
   d) Fourth period (aged).

      1. 10-12 years. After 9 years the accuracy of age determination becomes more difficult. At this age the angle of the bite slants more outward than the perpendicular bite

noticed in younger horses. By 12 years, the cups have disappeared in the upper incisors and the horse has a "smooth mouth."

2. 15 years. The dental stars are smaller but more distinct and more centrally located.
3. 20-21 years. At this age teeth may become shorter, more triangular in shape on the wearing surface, have a noticeable spacing between adjacent incisors and the dental stars may become larger and occupy a central position on the wearing surface. Also, at this age, the bite is very slanting. It is well to note that horses in this age group may appear to have much younger mouths if they have had excellent care with regard to lush grazing and grain feeding with accompanying good health throughout their life.

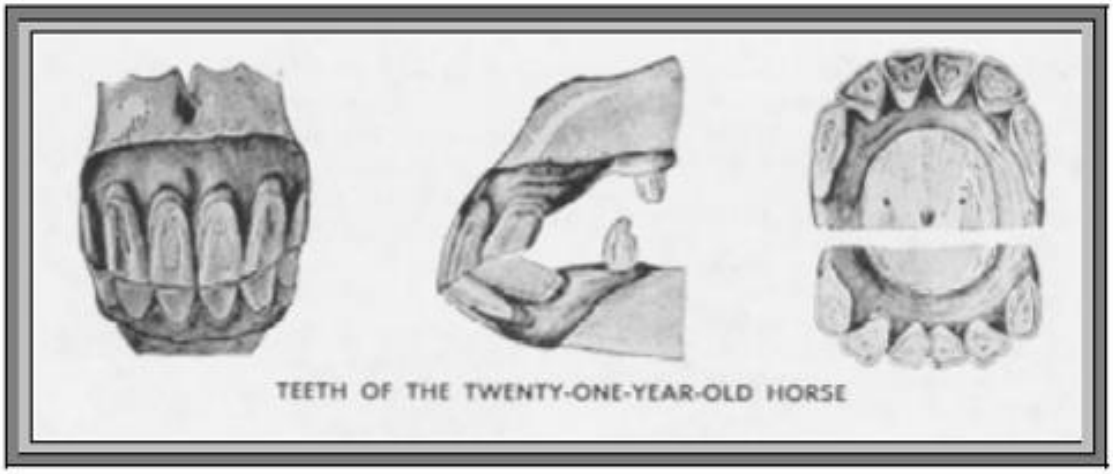




TEETH OF THE SEVEN-YEAR-OLD HORSE

TEETH OF THE TWELVE-YEAR-OLD HORSE

TEETH OF THE FIFTEEN-YEAR-OLD HORSE



TEETH OF THE TWENTY-ONE-YEAR-OLD HORSE

GLOSSARY

Anatomy - The science of the structure of the animal body and the relation of its parts.

Angle of bite - The outer angle at which the upper and lower incisors meet.

Canine teeth - Teeth that appear in the interdental space on the male horse at 5 years of age. Sometimes referred to as tushes.

Centrals - The first centrally located upper and lower incisors.

Corners - The corner incisors or those located back and adjacent to the forward edge of the interdental space (third set of incisors).

Cribbing - A bad habit of some horses in which the animal grasps the manger or other object with the incisor teeth, arches the neck, makes peculiar movements with the head, and swallows quantities of air. Called also wind-sucking.

Crown of tooth - The top of a tooth protruding above the gum.

Cups - The hollow space on the wearing surface of the incisor.

Dental star - A star shaped or circle like structure near the center of the wearing surface of the permanent incisors.

Full mouth - When the horse has a complete set of permanent incisors.

Incisor - Slender teeth in front used for biting grass, feed, etc.

Interdental space - The gum space between the incisor teeth and molar teeth.

Laterals - The second set of incisors located between the central and corner incisors.

Longitudinal - Lengthwise. Parallel to the long part of the tooth.

Molars - Rear teeth or grinding teeth of the horse generally not used to determine age.

Neck of tooth - The part of the tooth between the crown and root located at the surface of the gums.

Parrot mouth - The upper incisors overhang the lower incisors and do not properly meet and therefore cause uneven wear.

Smooth mouth - Refers to the smooth biting surface of the upper and lower incisors after the cups have disappeared at 12 years of age or older.

Wear - Refers to the amount of use or wear observed on the biting surface of the incisors.

What Is A Galvayne's Groove?

http://www.cowboyway.com/What/GalvaynesGroove.htm (Accessed August 6, 2007)

A Galvayne's groove is a dark or brownish groove in the upper corner incisor teeth of horses. It is only visible in horses of a certain age, and depending on whether or not it can be seen, how long it is, and where it is (at the top of the tooth or at the bottom) it may be helpful in determining a horses' age.

Determining the age of a horse by its teeth must take into account a wide variety of factors, but even then there are many horses whose age cannot be accurately determined by their teeth. Simply put, while there are guidelines about how teeth should look in a horse at any given age, teeth do lie. Environment factors, diet, management practices, breed, individual variances, age (it is a bit more predictable to age a younger horse by its teeth compared to an older horse), and more can all cause a horse's teeth to inaccurately represent how old a horse actually is.

Photo of a Galvayne's groove in a 14 year old horse.

When using teeth to try to determine the age of a horse older than 10 years, the Galvayne's groove is one of the indicators many horsemen will use. In the text and photos below we explain what a Galvayne's groove is, show several photos of Galvayne's grooves in different horses, and explain what it is expected (but not guaranteed) to look like when a horse is a certain age.

Where The "Galvayne's Groove" Got Its Name

The Galvayne's groove got its name from Sidney Galvayne, a 19th-century horseman born in Australia who gained recognition as an excellent judge of a horse's age by examining it's teeth while traveling Europe in the 1880's.

The Galvayne's Groove - The Basics

As we said above, the Galvayne's groove is a dark or brownish groove in a horse's upper corner incisor teeth. If present, it should be present on each side of a horse's mouth.

In general, the Galvayne's groove:

- First appears at the gum line in horses about 10 years of age. Each year, the groove will extend a little farther down the tooth.
- It is expected to be about halfway down the tooth at 15 years of age, and all the way down (visible from top to bottom) at 20 years of age.
- After 20 years of age, the Galvayne's groove begins to disappear from the tooth, starting at the top. By approximately 25 years of age the Galvayne's groove will be gone from the top half of the tooth, but still visible on the bottom half.
- By the time a horse is 30, it is expected to be gone completely.

Below are photographs of Galvayne's grooves in four different horses. Please keep in mind that a Galvayne's groove alone is often a poor indication of a horse's age and should be used, when aging horses by their teeth, only in combination with other factors.

This is photograph of an upper corner incisor in a 5 year old Quarter Horse mare. A Galvayne's groove is not visible. That isn't surprising since a Galvayne's groove is not expected to begin showing until a horse is approximately 10 years old.

This is photograph of a Galvayne's groove in a 14 year old Quarter Horse gelding. It is almost halfway down the tooth. Since a Galvayne's groove is expected to first be visible at the top of the tooth around age 10, and to extend to about halfway down the tooth at age 15, this horse's groove is representing his age accurately.

This is a Galvayne's groove in a 26 year old one-half Quarter Horse, one-half Belgian gelding. According to the generally accepted theories regarding the groove, this one is not representing the horse's age accurately and is indicating he is younger than he actually is. By age 20 the groove should extend all the way from the top of the tooth to the bottom, and at age 26 this horse's groove still hasn't reached the bottom. In addition, after age 20 the groove is expected to begin to disappear from the top of the tooth, and this horse's groove is still clearly visible on the top half.

This is a Galvayne's groove in a 26 year old Quarter Horse mare. Similar to the horse immediately above, the groove alone is not indicating her age accurately and is making her appear younger than she actually is. It has barely reached the bottom of her tooth and is still clearly visible at the top. Using the Galvayne's groove alone, you would guess this mare to be about age 20.

Galvayne's Groove - Splitting The Difference

Interestingly, Galvayne's grooves might not be identical in a horse when comparing the upper corner incisor tooth on one side of its mouth to the one on the other side. In this case, it is generally considered a good idea to assume the age is somewhere between what each groove is indicating.

For example, if the Galvayne's groove on the incisor on one side of a horse's mouth is about half-way down from the top (indicating the horse is 15 years old) but the incisor on the other side is only about a quarter of the way down (indicating the horse is 12 and-a-half), you would probably guess the actual age to be older than 12 but younger than 15.

In Closing...

When it's all said and done it can be interesting to try and age a horse by its teeth, including looking at the Galvayne's groove. Relying on the age indicated by a horse's teeth, however, particularly in horses older than about age 9, can at best be an educated guess.

U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

Visit our Website at: www.extension.umn.edu/horse
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UNIVERSITY OF MINNESOTA EXTENSION

Barn Fire Safety

By B. Gilkerson Wieland & J. Shutske, PhD, U of M

Recently, a large horse barn in Wright County, MN burned, leading to several questions regarding fire safety in horse barns. Fire is caused when any type of "fuel" meets an "ignition" source. Hay and bedding material are common examples of fuel. Smoking, faulty electrical wiring, and improperly cured hay are common sources of ignition. The key is to minimize the potential for fuel and ignition sources to come together. Often, this is a matter of basic housekeeping. Here are some tips to help reduce your chance of a barn fire.

Identify ALL potential ignition sources, and take steps to eliminate them. For example, smoking should never be allowed on a property with horses. Electrical wiring must be done by a qualified electrician and inspected by a local building inspector or insurance expert. Lightning protection systems must be installed to code and maintained. Do not use extension cords except for short-term uses such as powering a tool. Make sure heating systems are properly installed and maintained. Store/buy hay only at the correct moisture (<17% moisture) and check its condition frequently. Hay over 25% moisture poses the threat of combustion. Commercially available hay temperature probes can be used to check the internal temperature of hay bales (the internal temperatures should be below 130° F) and stack hay to encourage air circulation (for more information see fact sheet on Horse Hay at www.extension.umn.edu/horse).

Take a close look at all potential ignition and fuel sources and how they might come together to start a fire. Take specific actions to separate these hazards. An example is a heat lamp located over bedding materials or any type of flammable surface. Liquid fuels should be stored in protected locations.

Look for immediate steps you can take. Things like "No Smoking" signs posted in barns and hay storage areas are not expensive and are effective if enforced.

Check wiring for obvious problems. Make sure no bare wires are exposed. Look for marks on the wire that indicate heating or arcing. DO NOT overload circuits. If you blow breakers or fuses, investigate and correct the problem. Do not use extension cords to replace fixed electrical wiring. Extension cords are a major fire hazard and can lead to an electrocuted animal or person. Make sure electrical motors on ventilation fans, heaters, and other equipment are well-maintained.

Separate hay and bedding from the livestock. Most insurance companies will only allow a small amount of hay to be stored in the same building as animals or require the installation of a firewall between where horses are housed and storage areas. Make sure that the areas around barns and other outbuildings are kept clear of brush, shrubs, woodpiles, and other materials that could feed a fire.

Install and frequently inspect fire extinguishers. Your insurer can advise you on the best type of portable fire extinguishers or fire sprinkling systems to install. Fires in hay or in wood structures will require large amounts of water.

Develop an emergency plan and post it in the barn. Everyone must know how and when to evacuate the barn, how the animals will be removed, and who does what. Go over this plan with everyone including family members, employees, and boarders. All buildings must have multiple unblocked exits that people and animals can get out of quickly.

Check local building codes and fire safety regulations. For more information contact your local city hall and visit with a city/township building inspector who can provide additional resources.

Consider installing emergency lighting and lit exit signs. This will help if the power is out or if there is a lot of smoke. Such lighting may be more important for commercial facilities.

Plants Poisonous to Livestock

Lisa M. Axton, Beverly R. Durgan
University of Minnesota Extension Service, FO-05655 1991
http://www.extension.umn.edu/distribution/livestocksystems/DI5655.html
Accessed October 4, 2006

Introduction

Recognition of poisonous plants and the proper management of animals and pastures will help to minimize the potential for poisoning animals from poisonous plants.

When an animal goes off feed, loses weight or appears unhealthy, poisonous plants may be the cause. Poisonous plants contain toxic compounds which can injure animals. Some contain compounds that can kill, even in small doses. Others contain substances which cause a reduction in performance, such as weight loss, weakness, rapid pulse and unthriftiness. Poisonous plants should be given consideration as the potential cause, especially if the following situations exist.

a. Forage supply in a pasture is sparse due to overgrazing, drought or poor early season growth.
b. Animals have recently been moved into a new pasture.
c. Animals have been released into a new pasture when hungry.
d. Herbicides have been used to control weeds.
e. Pasture has recently been fertilized with nitrogen.
f. A new forage source has been fed.

Most poisonings occur in the early spring or during a drought when feed is short. Plants that an animal normally would not touch become a potential source of food and a potential source for poisoning, just because the animal is hungry and in search of food.

Also, some herbicides may increase the palatability of some weeds. Therefore, it is important to read the herbicide label and follow all grazing restrictions. Also, if there are poisonous plants in the pasture, it is best to keep all livestock out until the plants have died.

In Minnesota, the number one cause of poisoning in cattle is nitrate poisoning. Nitrates accumulate in certain plants when grown under drought stress and/or have been fertilized with nitrogen. The crops sorghum-sudangrass and corn and the weeds redroot pigweed and common lamb's-quarters cause much of the nitrate poisoning. Sorghum-sudangrass hybrids have been the number one cause of nitrate poisoning in Minnesota.

The other main causes for cattle poisoning in Minnesota rank as follows:

1. Gallotannins in Oak species, mainly in southeastern Minnesota.
2. Cyanide poisoning caused by sorghum species and by chokecherry plants.
3. Glycoside poisoning from nightshades and cocklebur.
4. Photosensitive skin reactions from St. John's wort and buckwheat.
5. Cicutoxin poisoning from water hemlock.
6. Alkaloid poisoning from poison hemlock.

The top two causes of plant poisonings in sheep in Minnesota have been nitrates poisoning and photosensitive reactions.

In horses, the number one poisoning problem has been from maple tree leaves. During 1988-1989, 12 to 15 cases of horse poisoning occurred in Minnesota. The plants which rank next in poisoning of horses are hoary alyssum and white snakeroot. Hoary alyssum, when greater than 30% of the feed source has been linked to stocking up (swelling of the lower legs) and other problems in horses. White snakeroot has caused death.

Other less common plants causing livestock poisonings are water hemlock, poison hemlock, bracken fern and the nightshades.

The key to avoiding problems with poisonous plants is proper identification and avoidance of these plants. Become familiar with the plants that can cause problems. Examine pastures, hay fields, roadsides and fence rows for poisonous plants. In a drought year or a year when feed is short, take extra precautions to look over new areas planned for grazing or haying such as roadsides, wooded areas or sloughs. Animals, under conditions of adequate feed, will avoid most poisonous plants. However, when feed is short, or animals are hungry, plants normally avoided become a tempting source of feed, thus a potential poisoning problem.

This bulletin identifies and describes many of the poisonous plants in Minnesota. It describes their appearance, where they grow, and the parts of the plant that are poisonous and when they are most poisonous. It also describes poisoning symptoms and names some of the toxic compounds present in the plant. Knowing how to correctly identify poisonous plants will help prevent potential problems and perhaps death of an animal. Other management tips to avoid problems include:

- Avoid overgrazing pastures.
- Avoid turning hungry animals into new pastures.
- Learn to identify poisonous plants.
- Fence off areas in pastures where poisonous plants occur.
- Control and/or manage plants to avoid poisoning problems.
- Follow herbicide grazing restrictions.
- Rotate pastures to prevent overgrazing.
- Supply adequate supplies of clean, fresh water for livestock.
- Consult your veterinarian to correctly identify a suspected poisoning from plants, in order to prevent it from happening in the future.

Glossary

Alternate (leaf arrangement): One leaf attached at each stem node.
Annual: A plant that completes its life cycle in one year or less, and reproduces only by seed.
Biennial: A plant that completes its life cycle in two years, and reproduces only be seed.
Compound (leaf type): A leaf divided into two or more distinct leaflets.
Cotyledons: Seed leaves; the first leaflike structures appearing above the ground in broadleaf plants.
Opposite (leaf arrangement): Leaves attached in pairs at each stem node.
Perennial: A plant that may live for more than two years, and reproduces by seeds, rhizomes or other underground plant parts.
Photosensitization: An increase in sensitivity to sunlight, resulting in sunburned skin when exposed to ultraviolet light.
Rhizome: An underground stem; found on perennial plants.
Rosette: A basal cluster of leaves, like a dandelion. The first year's growth of biennial plants.
Stocking Up: Swelling of any of the lower legs because of interference with circulation or bruising of the tissues.
Whorled (leaf arrangement): A leaf arrangement in which three or more leaves are attached at each stem node.

Brackenfern

(Pteridium acquilinum)

Brackenfern is a perennial reproducing by spores and thick, scaly underground rhizomes. It usually is found growing in colonies. On established plants, leaves (fronds) arise directly from the rhizomes and reach a height of one to four feet. The leaf is three-parted or branched, and each leaf is composed of many tiny leaflets. The three-parted leaf is a characteristic of this plant which distinguishes it from other ferns. Spores are borne on the underside of each leaflet in a narrow band on the leaf margins.

Butterfly Milkweed

(Asclepias tuberosa)

Butterfly milkweed is the most poisonous of the plants in the milkweed family. It is a perennial reproducing by rootstalks and seeds. Stems are stout and terminally branched. They are generally clumped and may reach to two feet tall. Stems contain a watery juice rather than a milky juice found in other milkweed. Leaves are lance-shaped with pointed tips, six inches long and alternate along the stem. Flowering occurs from June to September. Flowers are brilliant orange, red or yellow and are arranged in rounded bunches at the top of the plant. One to two spindle-shaped pods, three to five inches long are produced per plant, each contains many seeds. Pods split open in the fall to release the seeds. A silky plume on the top of each seed provides for easy wind distribution.

Cocklebur

(Xanthium strumarium)

Cocklebur is an annual plant reproducing only by seeds. The root is a taproot, woody and stout. Stems are hairy, rough to the touch, erect and reach two to four feet tall. Stems are branched and frequently spotted with red. Leaves are alternate and attached to stems by long stems, are simple and vary from heart-shaped to kidney-shaped. The leaf surface is hairy and rough to the touch. Flowers are small and green, borne together in clusters in the axils of the upper leaves. Fruit is a two-seeded bur which is hard, woody and covered with hooked spines. Cocklebur seedlings have long, narrow cotyledons which taper to a point at the tip. Seedlings tend to be triple-veined at the base, reach a length of about three inches, are sessile and covered with rough hairs. The first leaves are opposite, triple veined at the base, with prominent veins and are covered with rough hairs. Later emerging leaves are alternate.

Hoary Alyssum

(Berteroa incana)

Hoary alyssum can grow as an annual, biennial or short-lived perennial, reproducing by seeds. Stems are gray-green, hairy, one to three feet tall, with many branches near the top. Leaves are alternate, oblong, gray-green and covered with rough hairs, and are one half to three inches long with smooth edges. Flowers are white with four deeply divided petals. Seed pods are hairy, oblong and swollen with a short beak on the end.

Plants Poisonous to Livestock

Horsetail

(Equisetum arvense)

Horsetail is a perennial reproducing by spores and creeping rhizomes. The rhizomes are attached to tiny underground tubers. The plant has two forms; vegetative and reproductive. The vegetative form produces shoots which can reach up to two feet tall. The shoots are jointed, and have whorled branches at each joint. Branches are jointed and look somewhat like a coarse elongated pine needle. The plant resembles a small evergreen tree. The reproductive form is a rush-like plant. Shoots are hollow, jointed, branchless and leafless with a toothed sheath at each node. The fruiting heads contain masses of tiny pale greenish spores in a pine cone-like structure.

Nightshade family

(Solanum species)

Nightshades are mostly annuals, reproducing by seed. Stems are erect or spreading, becoming widely branched, growing one to two feet tall. Leaves are egg-shaped, one to three inches long, alternate, with wavy edges. Flowers occur in small clusters, white, five-lobed and about one fourth inch across. The plants produce berry-like fruit. Berries are smooth, three eighths inch in diameter, green in color, turning black at maturity, and contain numerous seeds.

Nitrate accumulators

Pigweeds and lamb's-quarters are annual weeds common throughout the United States. They will accumulate nitrates when grown under drought stress and high nitrogen fertility. Grasses, such as corn, sorghum and sorghum-sudans will also accumulate nitrates when grown under similar conditions.

Oaks

(Quercus sp.)

Oak are perennial shrubs to large deciduous trees. Leaves grow in clusters of two to four leaves at the tips of all twigs. Most species can cause livestock poisonings. Gamble and shinnery oak are responsible for most livestock poisonings. Bur oak has deeply furrowed bark with deeply lobed leaves, ten inches long. Upper surface of the leaves are dark green, undersides are silver and hairy. Pin oak, red oak and white oak are also common oak species found in the upper Midwest region of the United States.

Poison Hemlock

(Conium maculatum)

Poison hemlock is a biennial reproducing only by seeds. A basal rosette forms the first year followed by an erect, flowering stalk the second year. Taproot is fleshy, parsnip-like and the biennial roots resemble small white carrots. Stems are erect, hollow between the node, hairless and reach a height of two to seven feet. The stem is much branched, slightly grooved and is often spotted with purple. Leaves are alternate, large, four to five times compound, finely divided and toothed with lacey appearance and are smooth and dark green in color. When crushed, leaves give off a parsnip odor. Flowers are borne in large, terminal, flat-topped to slightly convex umbels. Petals are white and appear from mid-summer through mid-autumn.

Smallflower Buttercup

(Ranunculus abortivus)

Smallflower buttercup grows as an annual or biennial reproducing by seed. Stems are slender, slightly hairy, branched from the base, reaching six to twenty inches tall. Lower leaves are round, palmately veined, bright green, with round-toothed margins and are borne on long stems arising from the base of the plant. Upper leaves are borne on shorter stems, alternate, and divided into three to five leaflets with somewhat toothed margins. Flowers are small, yellow, with five to seven oblong petals.

Spotted Water Hemlock

(Cicuta maculata)

Spotted water hemlock is a perennial reproducing by seeds and tuberous roots. Fleshy roots arise from a chambered rootstalk. Perennial roots consist of a bundle of several fingerlike, white tubers that are easily pulled from the soil. Stems are erect, two to six feet tall, branched at the top, hollow inside except at the nodes. Stems are smooth and often mottled with purple, especially at the base. Roots and stems may produce a yellowish oil when cut that is fragrant and poisonous. Leaves are alternate, eight to twelve inches long, compound and smooth with toothed edges. Veins on the leaflets end in the notches. Leaves are divided into three groups of leaflets per leaf. Leaf stalk grasps the stem like a celery bunch. Crushed leaves and stalks smell like parsnips or parsley, sometimes unpleasant. Flowers have five small white petals and are borne in compound terminal umbels with stalks of unequal length.

Tall Buttercup

(Ranunculus acris)

Tall buttercup is a perennial reproducing by seeds. Stems are erect, hairy, one to three and one half feet tall, branching at the top. Leaves are alternate, and divided into narrow segments and usually three-cleft. Leaves are covered with hairs. Flowers have five to seven shiny, oblong petals that are bright yellow, but may sometimes be cream-colored. Flower size varies from one eighth to one inch in diameter.

White Snakeroot

(Eupatorium rugosum)

White snakeroot is a perennial reproducing by seeds and short rhizomes. The roots are much branched and fibrous. Stems grow from one to three feet tall and are smooth and erect, branching at the top. Leaves are opposite, three-veined with toothed edges and taper to a pointed end. Flowers are small and white and generally appear in late August.

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Poisonous Plants Found in Minnesota

Plant	Conditions/Symptoms of Poisoning	Habitat	Animals
Brackenfern	All season and when dried in hay. Horses, loss of appetite, "star-gazing," vitamin B_1 deficiency. Cattle, accumulative poisoning over at least one month. Clots of blood in feces, swelling of throat region in young animals. Causes aplastic anemia, unthriftiness, weight loss and weakness.	Dry, poor soil, open woods, pastures and sandy ridges. Found in northern half of Minnesota.	All grazing animals
Buttercups Smallflower buttercup, Tall buttercup	Early spring and summer. Not toxic when dried in hay. Leaves cause skin blistering minutes to a few hours after eating. Burning irritation in mouth and throat, followed by increased salivation, redness and blistering of the mouth and throat. Swallowing causes abdominal pain, vomiting and diarrhea. Large amounts cause dizziness, delirium, tremors and convulsions. May also cause kidney damage, excessive urine production, blood in urine followed by a decrease in urine flow. Lactating cattle suffer a drop in milk production and milk is bitter and red tinted. Sheep may collapse suddenly. Pigs may show paralysis. Toxin is an acrid yellow oil, protoanemonin, which can be driven off with drying, such as when cured for hay.	Pastures, meadows, streams, and wastelands. Mostly found in the northern half of Minnesota.	All animals, especially cattle
Butterfly Milkweed	Spring Loss of muscle control, spasms, bloating, increased pulse rate, weak rapid breathing, fever, coma, and death. Symptoms occur within one to two days after eating. Toxin is a resinoid, galitoxin. Also contains glucosides and alkaloids.	Dry open areas, waste places, prairies, abandoned roads and streambeds. Found throughout Minnesota.	All grazing animals
Chokecherry	All season leaves, bark and seeds. Slobbering, muscle tremors, increased respiration rate, rapid and weak, pulse, convulsions, labored breathing, abdominal pain, depression, paralysis, coma and death. Symptoms noticed in 30 minutes to 1 hour. Caused by glycoside amygdalin which upon hydrolysis yields HCN.	Along streams and open forests, waste areas, fence rows, woods, prairies, orchards and dry slopes. Found throughout Minnesota.	All grazing animals

Plant	Conditions/Symptoms of Poisoning	Habitat	Animals
Cocklebur	Spring as seedlings, especially 2-leaf (cotyledon) stage. Loss of appetite, depression, incoordination, twitching, paralysis. Seedlings have caused death in pigs. Caused by hydroquinone. Symptoms noticed a few hours to 2 days after eating. Death may occur in 3 days.	Lowlands, barnyards, fields, roadsides, poor pastures, wastelands, exposed shores of lakes, ponds and rivers. Found throughout Minnesota.	All animals, especially hogs and cattle
Hoary Alyssum	All season and when dried in hay. Horses experience depression and "stocking up" or swelling of the lower legs, 12 to 24 hours after eating. A fever and occasional short term diarrhea may also occur. Symptoms normally subside 2 to 4 days after feed removal. Potential for problems increase when hay or feed contains more than 30% hoary alyssum. Cattle and sheep may reject eating feed containing hoary alyssum.	Meadows, pastures, hay fields, waste places, particularly on sandy soils. Found throughout Minnesota.	Horses
Horsetail	Spring, summer and when abundant in hay. Loss of condition, excitability, unthriftiness, staggering gait, rapid pulse, difficult breathing, diarrhea and emaciation. Death preceded by convulsions and coma. Deceased milk production in cows. Trembling in sheep. Poisoning cumulative over one month.	Damp, wet places, roadsides, fields, waste places. Sandy, gravelly soils. Found throughout Minnesota.	Sheep, cattle, horses
Nightshade family	Summer and fall. Unripe berries especially poisonous. Weakness, trembling, labored breathing, nausea, constipation or diarrhea, death. First symptoms may be paralysis of tongue and dilated pupils. Symptoms occur within a few hours or up to 1 to 2 days after eating. Toxin is glycoalkaloids.	Crop fields, waste places, fence rows, yards, gardens and open woods. Grows well on loamy or gravelly soils. Found throughout Minnesota.	All animals
Nitrate accumulators	Especially a problem when plants are grown under drought stress and high nitrogen fertility. Increased salivation, labored breathing, incoordination, weak pulse, muscle tremors, vomiting, diarrhea, suffocation, death. Symptoms 2 to 6 hours after eating.	Pigweeds, lambs quarters, corn, sorghums, and other grasses.	All grazing animals

Plant	Conditions/Symptoms of Poisoning	Habitat	Animals
Oaks	Summer and fall. Unripe berries especially poisonous. Bud and leafing out stage. Young oak and sprouts. Declines as leaves mature. Acorns. Loss of appetite, constipation, dry muzzle, black, pelleted feces followed by diarrhea with blood and mucus. Frequent urination, weak, rapid pulse. Death may occur a few days to 2 weeks after symptoms start. Caused by gallotannins.	In most deciduous woods. Found throughout Minnesota.	All grazing animals
Poison Hemlock	All parts, all season and when dried in hay. Seeds especially poisonous. Loss of appetite, salivation, bloating, feeble pulse, paralysis, birth defects. Temporary stimulation of nervous system, followed by general depression of the nervous system. Similar symptoms as spotted water hemlock, no convulsions. Death painful because victim remains conscious. Symptoms occur in minutes to a few hours after eating. Death occurs as soon as 15 minutes up to 8 hours after eating. Toxin is a group of nicotine-like alkaloids; most important is coline.	Wet, disturbed ground like ditches and field edges. Warm sites, stream edges and gardens. Found throughout Minnesota.	All animals
Spotted Water Hemlock	All parts poisonous, especially roots. Roots can poison drinking water. All season and when dried in hay. Burning sensation in mouth a few minutes to a few hours after eating. Difficulty in swallowing, foaming at the mouth, excessive salivation, dilation of the pupils. Internal symptoms—nausea, diaphragm contractions, vomiting, diarrhea, violent convulsions. Affects nervous system, resulting in nervousness, muscle twitching, violent teeth clenching, slowing of the heart, weak pulse, visual disturbances, heart failure, loss of consciousness and death. Occurs in 15 minutes to one hour. Poison is an unsaturated alcohol, cicutoxin. A piece the size of a walnut can kill a cow.	Damp, open habitats, ditches, wet meadows, swamps, lowlands and streams. Found throughout Minnesota.	All animals, especially swine
White Snakeroot	All season and when dried in hay. Plant contains tremetone, which causes depression, labored breathing, tremors, nausea and death. Milk sickness in cattle. Tremetone may be transmitted through the milk and butterfat to humans and other animals, causing milk sickness in them. Causes trembles in sheep. Onset of symptoms noticed 2 to 3 days after eating.	Shaded areas, woods, clearings, hardwood pastures and waste places. Moist and fertile soils. Found throughout Minnesota.	All grazing animals

How do you Present Yourself?

First Impressions – How to Make Them Count
Kathy Kelly Clinic, February 12-13, 1999

RATING DAY! After all the work and preparation, it is time to "show what you know!
Okay, so here you go, yours palms are wet, your mouth is dry, and it is time for your formal presentation to the examiner. Your first impression of him or her AND his/her first impression of you. What to do? What to say?

There are three important areas to remember when first meeting someone for whom you want to make a good first impression:

Attitude: What is your emotional reaction to a testing situation? To authority figures? Most importantly, to examiners?? Scared? Hostile? Intimidated? Friendly? Open? One's attitude comes through NON-VERBALLY, through your facial expression tone of voice, and eye contact. Are you smiling or tense and frowning? Is your tone upbeat or low and soft? Do you make eye contact or avoid it? Often, feelings of nervousness and shyness can be mistaken for a 'negative attitude.' A big smile, a confident and assured hello and direct eye contact go a long way to creating a good first impression. Looking the examiner fully in the eye when greeting him is a wonderful start!

Appearance: Neat, clean AND correct. Take the extra time to be "spiffy." It is tempting to say to yourself, "my horse is perfect, and I'm okay, so I'll be alright for a rating." YOU are the first one the examiner looks at, talks to, YOU are the one going for the rating. YOU are the one the examiner develops a relationship with and makes a decision to pass or fail YOU on your rating. Therefore, YOU can only benefit from taking the extra time to be "perfect" in your presentation. This is especially true for your hair. USE hairnets and get hair away from your face. This also goes for your boots. POLISH them. They don't have to be new; just show loving care.

Ability to communicate: This is the hardest area to work on, but one of the most important; not just for Pony Club, but for life! Knowledge is no good to anyone unless you have the ability to communicate to others what you know. Pony Club really helps you learn how to demonstrate your knowledge, so that when you go for college and job interviews, talking to folks in authority will be easier. Remember, speak CLEARLY and speak UP when spoken to. Take a deep breath if you need to before answering, but speak loud enough to be heard. Examiners don't like having to ask you to repeat what you have said. Also, stay focused on the questions. Try to limit your "this happened to me" stories and resist the urge to go on and on about unrelated information. One of the toughest parts of being an examiner is re-focusing a candidate back onto the topic at hand. The examiner has many candidates to talk to, so practice providing clear answers quickly to the basic questions.

For example: Q = "Tell me about your tack." A = "Oh, well, I don't know what kind of saddle it is, but I bought it at such and such tack shop, a friend of mine has one, too! I really like it, it is really comfortable, and it was on sale! Blah, blah, blah . . ." Better Answer = "Well, the saddle is such and such, a close contact/dressage/all-purpose saddle. It fits the horse well because it is not sitting on his withers and is level on his back. The bridle is . . . . " and so on.

Example: Q = "Tell me about your warm-up." A = "Well, at first he was being a jerk, and spooking all over. I don't know why he does that , but I tried getting his attention, and he wasn't really listening. Last week at a horse show he did the same thing and my instructor said that I should . . . " Better Answer = "At first, I began by trotting in large circles, letting her muscles slowly warm-up. I asked her to move forward, and then began asking her to move away from my leg. I then started doing small leg-yields, and the smaller circles . . ."

Example: Q = "Tell me about your horses' conformation. A = "Well, her legs are good, sort of straight, no blemishes or unsoundnesses. Her head is pretty, nice long neck, good hindquarters, her hocks are kind of sickle-hocked, her back is long, too . . ." Better Answer = "Well, he is pretty well-proportioned although his hind-end is not quite as deep as I'd like. He has a fine-boned head, smaller ears that match well with his fine head, a long elegant neck that connect to his body about average, not high or low. His shoulder is fairly sloping, a bit straighter than the ideal of 45°. His back . . ." and so on. Go in some kind of ORDER, not all over the place.

Remember: We examiners tend to recognize BS when we hear it . . . after all, we listen to hundreds of candidates over our careers. If you really know your stuff, say it and resist the urge to embellish. If you don't know, say so.

Good luck in your testing! Smile, be confident. After all, no one can be as great and terrific as you are. You are truly one of a kind!!