

Dr. Deb Bennett PhD

Here is an article by Deb Bennett explaining what is happening to a horse that is ridden too early. This is from her website.

The first thing to note is that as a two and a half year-old, Ranger is a "teenager". He's not mature physically, nor will he be until he's at least six. Despite a nice development of chest and a fine long neck, there is that unmistakable lack of length and muscular fullness to the hindquarters and the little weakness or lack of arch at the base of the neck that smacks of the gawkiness of sub-adulthood. The withers are not as high as they will someday be, either. Right now though I want to return to the issue of maturity and deal with that concept thoroughly.

Ranger is not mature, as I said, as a 2 1/2 year old. This is NOT because Ranger is a "slow-maturing" individual or because he comes from a "slow maturing" breed. There is no such thing. Let me repeat that: no horse on earth, of any breed, at any time, is or has ever been mature before the age of six (plus or minus six months). This information comes, I know, as a shock to many people who think starting their colt or filly under saddle at age two is what they ought to be doing.

This begs discussion of (1) what I mean by "mature" and (2) what I mean by "starting".

Just about everybody has heard of the horse's "growth plates", and commonly when I ask 'em, people tell me that the "growth plates" are somewhere around, or in, the horse's knees (actually they're located at the bottom of the radius-ulna bone just above the knee). This is what gives rise to the saying that, before riding the horse, it's best to wait "until his knees close" (i.e., until the growth plates fuse to the bone shaft and cease to be separated from it by a layer of slippery, crushable cartilage). What people often don't realize is that there is a "growth plate" on either end of EVERY bone behind the skull, and in the case of some bones (like the pelvis, which has many "corners") there are multiple growth plates. So do you then have to wait until ALL these growth plates fuse? No. But the longer you wait, the safer you'll be.

Owners and trainers need to realize there's a definite, easy -to- remember schedule of fusion - and then make their decision as to when to ride the horse based on that rather than on the external appearance of the horse. For there are some breeds of horse - the Quarter Horse is the premier among these - which have been bred in such a manner as to LOOK mature long before they actually ARE mature. This puts these horses in jeopardy from people who are either ignorant of the closure schedule, or more interested in their own schedule (for futurities or other competitions) than they are in the welfare of the animal. The process of fusion goes from the bottom up. In other words, the lower down toward the hoofs you look, the earlier the growth plates will have fused; and the higher up toward the animal's back you look, the later. The growth plate at the top of the coffin bone (the most distal bone of the limb) is fused at birth. What this means is that the coffin bones get no TALLER after birth (they get much larger around, though, by another mechanism). That's the first one. In order after that: Short pastern - top & bottom between

birth and 6 mos. 3. Long pastern - top & bottom between 6 mos. And 1 yr. 4. Cannon bone - top & bottom between 8 mos. And 1.5 yrs. 5. Small bones of knee - top & bottom on each, between 1.5 and 2.5 yrs. 6. Bottom of radius-ulna - between 2 and 2.5 yrs. 7. Weight-bearing portion of glenoid notch at top of radius - between 2.5 and 3 yrs. 8. Humerus - top & bottom, between 3 and 3.5 yrs. 9. Scapula - glenoid or bottom (weight-bearing) portion - between 3.5 and 4 yrs. 10. Hindlimb - lower portions same as forelimb 11. Hock - this joint is "late" for as low down as it is; growth plates on the tibial & fibular tarsals don't fuse until the animal is four (so the hocks are a known "weak point" - even the 18th-century literature warns against driving young horses in plow or other deep or sticky footing, or jumping them up into a heavy load, for danger of spraining their hocks) 12. Tibia - top & bottom, between 2.5 and 3 yrs. 13. Femur - bottom, between 3 and 3.5 yrs.; neck, between 3.5 and 4 yrs.; major and 3rd trochanters, between 3 and 3.5 yrs. 14. Pelvis - growth plates on the points of hip, peak of croup (tubera sacrale), and points of buttock (tuber ischii), between 3 and 4 yrs. ...and what do you think is last? The vertebral column, of course. A normal horse has 32 vertebrae between the back of the skull and the root of the dock, and there are several growth plates on each one, the most important of which is the one capping the centrum. These do not fuse until the horse is at least 5 1/2 years old (and this figure applies to a small-sized, scrubby, range-raised mare. The taller your horse and the longer its neck, the later full fusion will occur. And for a male - is this a surprise? -- you add six months. So, for example, a 17-hand TB or Saddlebred or WB gelding may not be fully mature until his 8th year - something that owners of such individuals have often told me that they "suspected"). The lateness of vertebral "closure" is most significant for two reasons. One: in no limb are there 32 growth plates! Two: The growth plates in the limbs are (more or less) oriented perpendicular to the stress of the load passing through them, while those of the vertebral chain are oriented parallel to weight placed upon the horse's back. Bottom line: you can sprain a horse's back (i.e., displace the vertebral growth plates) a lot more easily than you can sprain those located in the limbs. And here's another little fact: within the chain of vertebrae, the last to fully "close" are those at the base of the animal's neck (that's why the long-necked individual may go past 6 yrs. to achieve full maturity). So you also have to be careful - very careful - not to yank the neck around on your young horse, or get him in any situation where he strains his neck (i.e., better learn how to get a horse broke to tie before you ever tie him up, so that there will be no likelihood of him ever pulling back hard. And readers, if you don't know how to do this, then please somebody write in and ask!). Now, the other "maturity" question I always get is this: "so how come if my colt is not skeletally mature at age 2 he can be used at stud and sire a foal?" My answer to that is this: sure, sweetie, if that's how you want to define maturity, then every 14 year old boy is mature. In other words, the ability to achieve an erection, penetrate a mare, and ejaculate some semen containing live sperm cells occurs before skeletal maturity, both in our species and in the horse. However, even if you only looked at sperm counts or other standard measures of sexual maturity that are used for livestock, you would know that considering a 2 year old a "stallion" is foolish. Male horses do not achieve the testicular width or weight, quality or quantity of total ejaculate, or high sperm counts until they're six. Period. And people used to know this; that's why it's incorrect to refer to any male horse younger than 4 as a "stallion", whether he's in service or not. Peoples' confusion on this question is also why we have such things as the Stallion Rehabilitation Program at Colorado State University

or the behaviour-modification clinic at Cornell - because a two year old colt is no more able to "take command" on a mental or psychological level of the whole process of mating - which involves everything from "properly" being able to ask the mare's permission, to actually knowing which end of her to jump on, to being able to do this while some excited and usually frightened humans are banging him on the nose with a chain - than is a 14 year old boy.

Now, let's turn to the second discussion, which is what I mean by "starting" and the whole history of that. Many people today - at least in our privileged country -- do not realize how hard you can actually work a horse - which is very, very hard. But before you can do that without significantly damaging the animal, you have to wait for him to mature, which means - waiting until he is four to six years old before asking him to carry you on his back. What bad will happen if you put him to work as a riding horse before that? Two important things - and probably not what you're thinking of. What is very UNlikely to happen is that you'll damage the growth plates in his legs. At the worst, there may be some crushing of the cartilages, but the number of cases of deformed limbs due to early use is tiny. The cutting-horse futurity people, who are big into riding horses as young as a year and a half, will tell you this and they are quite correct. Want to damage legs? There's a much better way - just overfeed your young-stock (see Forum postings on this. You ought to be able to see the animal's ribs - not skeletal, but see 'em - until he's two). More likely is that you'll cause structural damage to his back. There are some bloodlines (in Standardbreds, Arabians, and American Saddlebreds) known to inherit weak deep intervertebral ligament sheathing; these animals are especially prone to the early, sudden onset of "saddle back". However, individuals belonging to these bloodlines are by no means the only ones who may have their back "slip" and that's because, as mentioned above, the stress of weight-bearing on the back passes parallel to the growth plates as well as the intervertebral joints. However, I want to add that the frequency of slipped backs in horses under 6 years old is also very low. So, what's to worry about? Well...did you ever wish your horse would "round up" a little better? Collect a little better? Respond to your leg by raising his back, coiling his loins, and getting his hindquarter up underneath him a little better? The young horse knows, by feel and by "instinct" that having a weight on his back puts him in physical jeopardy. I'm sure that all of you start your young-stock in the most humane and considerate way that you know how, and just because of that, I assure you that after a little while, your horse knows exactly what that saddle is and what that situation where you go to mount him means. And he loves you, and he is wiser than you are, so he allows this. But he does not allow it foolishly, against his deepest nature, which amounts to a command from the Creator that he must survive; so when your foot goes in that stirrup, he takes measures to protect himself. The measures he takes are the same ones YOU would take in anticipation of a load coming onto your back: he stiffens or braces the muscles of his topline, and to help himself do that he may also brace his legs and hold his breath ("brace" his diaphragm). The earlier you choose to ride your horse, the more the animal will do this, and the more often you ride him young, the more you reinforce in his mind the necessity of responding to you in this way. So please - don't come crying to me when your 6 year old (that was started under saddle as a two year old) proves difficult to round up! (Not that I'm not gonna help you but GEEZ). If he does not know how to move with his back muscles in

release, he CANNOT round up!! So - bottom line - if you are one of those who equate "starting" with "riding", then I guess you better not start your horse until he's four. That would be the old, traditional, worldwide view: introduce the horse to equipment (all kinds of equipment and situations) when he's two, crawl on and off of him at three, saddle him to begin riding him and teaching him to guide at four, start teaching him manoeuvres or the basics of whatever job he's going to do - cavalletti or stops or something beyond trailing cattle - at five, and he's on the payroll at 6. The old Spanish way of biting reflected this also, because the horse's teeth aren't mature (i.e., the tushes haven't come in and all the permanent teeth) until he's six either. This is what I'd do if it were my own horse. Now I'm at liberty to do that because I'm not on anybody else's schedule except my horse's own schedule. I'm not a participant in futurities or planning to be. Are you? If you are, well, that's your business. But most horse owners aren't. Please ask yourself: "is there any reason that you have to be riding that particular horse before he's four?"