

# Chapter 1

## A HORSE'S TALENT FOR JUMPING

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We love horses for their beauty, their kindness, and their generous spirits. We also admire and perhaps envy them for their strength, their pure athleticism, and the joy they find in movement.

One of the most impressive athletic movements a horse can perform is the *jump*, an action that propels a half-ton horse over an obstacle in a smooth, gravity-defying trajectory.

At least, that's how it appears when everything goes well!

All horses are born knowing how to jump, just as all horses are born knowing how to run. Leaping over obstacles is part of the prey animal's defense system, the flight reflex that sends them rapidly forward and away from danger. Some horses, however, find it easier than others to become airborne.

### The Mechanics of Jumping

Ever since 1887, when photographer Eadweard Muybridge published his first stop-action photos of a horse and rider trotting, cantering, and jumping (*Animal Locomotion*), we've known exactly how horses propel themselves forward, up, and over an obstacle. Knowing how the horse moves is the first step to understanding why some horses are better jumpers than others, and why some riders find jumping fun and easy while others do not.

#### THE JUMPING STRIDE

A horse can be said to have four gaits: walk, trot, canter, and jump. The horse's jumping stride can be created from a trot, a canter, or a gallop. It's easiest for the horse to jump from a canter or gallop, because the jumping stride most closely resembles a canter or gallop stride, but the jumping motion is *not* just an "elevated canter stride." (See the sidebar, "For the Coach: Myths You Should Never Repeat," later in this chapter.)

The canter stride has three solid beats. The normal sequence of footfalls for a left-lead canter is (1) right hind; (2) the diagonal pair of left hind and right fore; and (3) left fore, followed by a moment of suspension when all four feet are off the ground.

The gallop stride has the same sequence of footfalls as the canter, but it's a four-beat gait. The diagonal pair (the second beat of the canter) is separated, so the pattern becomes: (1) right hind; (2) left hind; (3) right fore; and (4) left fore, followed by the moment of suspension.

To jump, the horse must create a powerful thrust with both hind feet simultaneously, so the pattern of the canter or gallop stride must be modified. The rhythm changes, also, as the jumping stride separates into two parts, half on the takeoff and half on the landing. And there are *two* moments of suspension in the jump stride: one long suspension as the horse is airborne over the jump, and a second shorter one *after* the front feet touch down and then pick up again on landing.

So the pattern of footfalls for a *jump stride* is: (1) both hind feet planting and pushing, followed by the long suspension over the jump; (2) touchdown by the non-leading fore foot; and (3) touchdown by the leading fore foot, followed by another, briefer, moment of suspension. Then the hind feet land and begin the next canter stride.

If the jump is small and the horse is a little lazy or not very talented, or is approaching from a trot, the two hind feet may not plant and push simultaneously on takeoff. Then we say that the horse is “just stepping” or “just cantering” over the jump.

A tremendous amount of stress is placed on the front legs and feet when the horse lands after a jump. For a brief but critical moment, all his weight and the force of his trajectory is supported on just one front leg. Then the front legs must push up again immediately into the next stride after landing, even before the hind legs have touched down. The importance of landing safely will be discussed under “Descent and Landing, a little later in the chapter.

### ***Length of the Jumping Stride***

The horse should cover approximately the same amount of ground in a jumping stride as he does in his canter stride. Any fence 3'6" or higher should have a takeoff and landing area of approximately 6' in front of and 6' beyond the jump, measured from the center of the obstacle. The lower the fence, the more leeway the horse has for a safe takeoff and landing, but the horse should always leave the ground and land at least 5' from the center of the fence. Small horses and ponies traveling in 10' or 11' canter strides can get closer on takeoff and landing, but should never be less than 4' from the fence.

Taking off closer than these distances can create an unsafe jump, in which the horse must *prop and pop*, *deer jump*, dangle a leg, or risk a front-leg knock-down. (See the sidebar, “For the Rider: Jumping Terms.”) Taking off more than 6' back from the jump can create a risky (unsafe) jump, unless the horse is very scopey (see the sidebar, “For the Rider: Jumping Terms”), because the horse starts to descend before he's cleared the jump with his hind feet.

When the height of the jump is raised to 5' or above, the horse's trajectory becomes steeper (the angles of ascent and descent are sharper) and the thrust becomes more powerful, but the optimal takeoff distance does *not* need to increase much beyond the stride length of the canter or gallop the horse is already in. A steeplechase racer traveling at 30 mph may produce a leap that stretches 25' from take-off to landing because he's already galloping in 25' strides; but an open jumper covering the ground in 13' strides will jump the same fence in a 13' leap. The open jumper may need to create a very long stride to jump a very wide and low obstacle, but he does not need to create a very long stride to jump a very high fence. In fact, taking off too far in front of a high fence creates a risky situation because the horse may not have the power to thrust both up and sufficiently forward.

## BALANCE IN JUMPING

Several rapid shifts in balance occur during a jump so the horse can lift his half-ton mass off the ground, become airborne, land safely, and resume a balanced canter.



*These photos show a jump from a canter. One stride away from takeoff, Emma's horse stretches and lowers his head and neck to "load" the front end, so he can then . . .*



*. . . swing the front end up as he leaves the ground. Notice that the front end must lift off the ground before both hind feet have been planted to push off.*



*A good jumper pushes off the ground with both hind legs together, and folds front and back legs evenly. This is much easier to do at a canter than at a trot. Compare this to the next series of pictures, which show a horse jumping from a trot.*



*On landing, the horse must raise his head and neck sharply upward to keep from somersaulting, even as his hindquarters must stay tightly tucked to clear the rail. This is the moment when a too-tight martingale will severely restrict a horse's ability to balance on landing. The stress of landing on the forelegs is clearly illustrated here.*



*As the horse shifts from a steep vertical descent to a horizontal forward canter in the recovery phase, he gives a powerful forward thrust into the first canter stride after the jump. Emma gets pushed sharply forward and up but maintains her balance, her focus, and her steady rein contact.*

### ***Approach and Lift-Off***

In jumping, the first major shift in balance occurs on the approach, when the horse lifts his head and neck. To get off the ground safely, the horse must:

1. Look at the fence, to judge where to take off and how high to jump.
2. Shift his weight back to the hindquarters so he can find the right takeoff spot. He needs to complete the final steps of his last canter stride (with

his front feet) about 6' in front of the fence, and then plant his hind feet 6' in front of the fence to begin the jumping stride—in almost the same spot as his front feet lifted off from. To get to that good takeoff spot, he may need to lengthen or shorten the last few canter strides, so he lifts his head and neck to bring his hind legs more deeply under his body.

3. *Lower and stretch* the head and neck in the last stride, and then *raise and swing* the head and neck up in a pendulum motion to get the front end off the ground. The front feet lift off the ground *before* the hind feet “plant and push,” and this can happen only when the neck and head are free to elevate.

Riders who move into jumping from dressage or other non-jumping disciplines are often surprised and sometimes distressed to discover that their horses can't stay in a round, on-the-bit frame when jumping. Good balance on the flat is very different from good balance over fences.

The horse's head *has* to come up on the approach to a jump, or he won't be able to see the fence, shift back onto his hindquarters, and lift his front end up and over. (I'm not talking about the horse that flings his head in the air, snatches at the bit, and rushes or runs out. That's a problem, not a natural part of the balancing motion.)

## ***Flight***

As soon as the hind feet have pushed off, the horse must stretch his head and neck forward and down to stretch his spine up, out, and over the jump. A good jumper creates a bascule in his back from poll to tail with his spine curving upward to follow the arc of flight. In flight, the horse must have the freedom to use his head and neck so he can remain straight and balanced. If he knocks a rail, his head and neck may have to swing up or to one side to help him recover his balance so he can still land safely.

Small jumps don't demand much of a bascule; all the horse has to do is fold his legs and push off a little. But over a large jump, an athletic horse will create such an extreme bascule that the head and neck may seem to disappear down and out of the rider's sight for a moment, especially if the rider is looking up and ahead like she's supposed to. This creates an unsettling feeling, especially if you're accustomed to relying on the horse's neck for visual and physical cues to help you know what your horse is doing and to maintain your balance.

The biggest challenge for the rider during flight is to *trust the horse and not interfere*. The rider must stay in balance, move with the horse, fold and release, stay off his back, stay off his mouth, and allow the horse to keep them both safe.

## ***Descent and Landing***

The descent, landing, and recovery of a jump are just as important as the approach and flight. And the landing often creates the greatest problems with balance, for both horse and rider.

## For the Rider: Jumping Terms

- **Bascule:** The convex “rounding up” (“roaching”) of the horse’s spine as he jumps. An athletic horse will create a noticeable bascule in his neck, back, loins, and hindquarters.
- **Cutting down:** When a horse takes off from a long spot, his trajectory peaks before he reaches the center of the fence, so he has to begin his descent before he’s cleared the jump. He has to unfold the front legs and begin reaching for the landing while he’s still over the obstacle. The landing is noticeably closer to the fence than the take-off. Also called *diving* or *reaching*.
- **Deer-jumping:** The horse appears to spring off the ground (and land) with all four feet together, like a deer. Not desirable, as it produces a very awkward jump that interrupts the forward rhythm and flow. Difficult for a rider to follow or control, and possibly dangerous.
- **Drifting:** The horse that takes off straight but lands to the right or left of the jump’s center line. Often seen in horses that strongly prefer one lead over the other. May indicate unsoundness or a sore back.
- **Flat:** A horse that doesn’t arch his neck and back into a bascule over the jump is a “flat” jumper. The flat trajectory is easier for beginning riders to learn on, because there’s less spring and thrust than with an athletic, scopey jumper.
- **Dwelling:** A lazy, sour horse may lose momentum at the moment of takeoff and “stall” right when he should be making a greater effort. A lazy horse can also appear to dwell in the air. A horse that “dwells” loses momentum with each jump. The opposite of getting quick and over-jumping.
- **Fifth leg:** Athletic horses that can get themselves out of trouble from an awkward takeoff spot are said to have a *fifth leg*.
- **Hanging a leg:** Front or rear legs dangle loosely, instead of folding neatly over the jump. Very dangerous, as the horse can easily catch a leg in the rails.
- **Hollow:** Goes over a jump with a reverse bascule, meaning his head and tail are up and his back is down, or hollow. This horse can provide a comfortable, non-athletic ride for a novice rider, but he’s limited in scope and will have to compensate for his lack of athleticism by folding his legs tightly to clear the rails.
- **Long spot:** The horse takes off farther back from the jump than is ideal, and may have to extend his forelegs as he reaches to clear the jump. Often results in cutting down or a hind-leg knockdown, and a very long spot results in an unsafe “risky fence.”
- **Loose form:** The joints of the front and back legs aren’t tucked as tightly as they should be. Not dangerous, but the horse must jump a

little higher to clear the fence. Commonly seen when a good, experienced jumper is asked to jump a small fence.

- **Lying on one side:** The horse that drops a shoulder and leans to one side in the air is unbalanced and dangerous. Open jumpers in a speed class, trying to turn in the air to save time, will sometimes exhibit this very unsafe jumping form.
- **Over-facing:** When a horse is pushed to jump higher than his level of training, confidence, or talent allows. The temptation is often to test a talented young horse "just to see what he can do," but over-facing a green horse can cause him to lose confidence and begin refusing to jump. It can also jeopardize the safety of horse and rider.
- **Over-jumping:** When the horse takes off at a correct distance but lands considerably farther away from the jump, then he's putting more effort into the jumping stride than is necessary. This is common in green horses that are overly careful; but in an experienced horse, consistent over-jumping is often a sign of anxiety and may also indicate a tendency to rush and bolt.
- **Propping:** When a horse appears to push back from the fence on the last stride in an effort to avoid hitting the rails with his front legs. This usually happens when a horse has gotten too close to a fence on takeoff and shortens the last stride abruptly. An athletic horse will manage the occasional deep spot by rocking back on his hind legs and creating a steep but safe trajectory.
- **Quick-off-the-ground:** The horse's front feet quickly pat the ground together just before takeoff. Often indicates anxiety or a high-strung temperament, and may occur with over-jumping.
- **Risky fence:** When the horse leaves the ground dangerously far in front of the jump, then he's making a major safety error. At best, if he's very athletic, the horse will pull a rail with his hind feet; at worst, he will be unable to clear the obstacle and crash. Also called a *space shot*, this is especially dangerous over a wide (spread) fence.
- **Scopey:** An agile, athletic horse that produces a good bascule by roaching his back over a jump and can easily lengthen stride for a big effort. He can manage high or wide fences easily; however, he's not the best horse for a novice rider to learn on.
- **Short spot:** Also known as a "tight" or "deep" spot, in which the horse gets too close to the fence on take-off. A short spot causes the horse to lose momentum and he may hang a leg or have a front-leg knockdown.
- **Twisting or Flailing:** A horse may twist or "flail" his front or hind legs to one side to avoid touching the rails. This can happen if the horse gets too deep on his takeoff, or if he hasn't jumped quite high enough and is making an effort to avoid touching the rails.

During the descent, as the horse's shoulders move downward and the forelegs unfold, the horse must *raise his head and neck* to counterbalance the pull of gravity, while contracting his back muscles to keep his hind legs folded up and out of the way. If he doesn't raise his neck (or *can't* raise it, because of leg or back soreness, a rider interfering, or a martingale that's too tight), he risks stumbling or somersaulting on landing.

The higher the jump, the steeper the downward trajectory, and the more difficult it is for the horse to land without pitching nose-first into the dirt. A balanced landing requires just as much forward momentum as a takeoff, so the horse must keep going *forward* after the jump.

One exception to this need for continued momentum is when landing in water, because the water creates significant drag on the front legs as they land. If the horse's speed is too great, the mass of his body will simply catapult him forward into a somersault over his stalled front feet. See chapter 9, "Jumping with a Rider," for more information about handling challenges presented by jumping into water.

RICHARD VALCOURT



*These photos show a jump from the trot. Two steps out from the jump, Lisa's hands and arms reach forward to allow the stretch of Nani's head and neck.*

RICHARD VALCOURT



*Jumping small fences from a trot is a good gymnastic exercise, especially for a green horse who might not have learned how to consistently judge take-off spots and make stride adjustments. When jumping from the trot, strides don't matter, only individual steps. The horse can take off from any trot step that brings him to a reasonable take-off spot.*





*The diagonal pattern of footfalls in the trot means that the two hind feet will not push off simultaneously from the same spot, as they do in the canter. A perfectly competent jumper may look as if she's hanging a front leg, because of the oppositional steps of the trot.*



*When the horse approaches at a trot, he should land in a canter. On the descent, Nani's front legs unfold as her head and neck stretch forward and down, allowing her hind legs to tuck up.*



*The landing of the right hind foot begins the first canter stride (on the left lead) after the jump. Lisa has stayed in balance throughout, shifting her center of gravity to stay over Nani's. Both have a lovely focus and balance as they move forward into a steady canter.*

## For the Coach: Myths You Should Never Repeat

Please don't believe or repeat either of these jumping myths! They're utterly false.

**Myth #1:** *A horse should take off and land as far out from the jump as the jump is high.*

I never questioned this "general rule" until a thoughtful 12-year-old student asked, "So when I'm jumping a 2' jump, my horse should take off 2' in front and land 2' beyond? But isn't his canter stride 12' long? How do I shorten him down to a 4' stride?"

The answer is, you can't. Please don't try!

The only time this "general rule" applies is when you're jumping 6' fences, because then the horse's 12' stride allows him to take off 6' in front of and land 6' beyond the fence. But most of us *aren't* jumping 6' fences, at least not yet.

Yet trainers are still teaching this myth. I recently saw some frightening consequences of this belief at a local horse show, where the young course designer—a graduate of a respected equestrian studies program!—created a low-hunter course with the fences for a one-stride in-and-out set only 17' apart. Her reasoning was that, since the fences were only 2'9", the horses would land less than 3' into the combination, canter one 12' stride, and take off slightly less than 3' before the "out" fence. Even the smallest, handiest horses found it a serious struggle, and one large thoroughbred decided that the only way to deal with that combination was to bounce it. Miraculously, no one crashed, but no one had a safe, smooth round, either.

## Recovery

In a normal landing, the non-leading front foot touches down first, followed by the leading foot, and then both front feet push off into the second suspension phase. The leading foot takes the most strain from the landing, carrying the entire weight of horse and rider while changing the downward trajectory into a forward one. Then the hind feet land—non-leading foot, followed by leading hind foot—and those hind-foot steps begin the first canter stride after the jump.

When the hind feet land, they have to push strongly to shift the direction of motion from *downward* to *forward* into the first canter stride. To help move his weight forward, his head and neck stretch out and slightly down, swinging

**So here's a better rule:** *The horse should take off and land equidistant from the center of the jump, so that the jump 'fits under' the length of a regular canter stride.*

There are exceptions to this general rule, of course, especially when you're tackling cross-country jumps such as banks and drops, or big spreads like triple bars and water jumps. See chapter 6 for a more detailed explanation of how the unique nature of an obstacle (height, width, terrain, combination with other obstacles) can affect a horse's takeoff, landing, and trajectory.

**Myth #2:** *A jump is just a big canter stride, with the horse staying up in the air a little longer during the suspension phase.*

Not true. The leap over an obstacle does *not* happen during the normal suspension phase of the canter stride. If it did, your horse wouldn't be able to jump very high at all, because the last step before the suspension phase in a canter stride is taken by a front foot, and the front feet have little or no thrusting power. The *push* has to come from the hindquarters.

What does this mean to the rider learning to jump? The motion of jumping is very different from merely *cantering a big stride*. The rhythm is different, the thrust is greater, there are *two* suspension phases, and the shifts in balance are different as the horse uses his head, neck, and back to negotiate the takeoff, trajectory, and landing. Jumping places a much greater demand on the rider's ability to balance and control his body.

**So we can rewrite this rule to say:** *Jumping produces a unique motion, similar to a canter stride but with two moments of suspension.*

out like a pendulum to reach forward into the canter stride. To allow the horse to use his back, head, and neck fully, the rider should be slightly out of the saddle (in a light or three-point seat) all the way through the landing and recovery.

Horses that find it hard to recover their balance on landing—because of poor conformation, interference from the rider, or lack of skills and experience—may show their unhappiness by bucking or bolting on landing, at the very moment that the rider is also most vulnerable to loss of balance. A horse that consistently lands on the same lead—no matter which lead he was on during the approach—may have a weakness or unsoundness in the nonleading front leg.

