GAIT ASSESSMENT

**HOW IS THE GAIT ASSESSED?**

The gait is best evaluated on a hard-leveled surface.

Should be done in a safe, enclosed area free of distractions and dangers such as traffic and other horses.

NB: Some forms of lameness are best examined immediately after taking the patient out of its stable (i.e. cold lameness).

Chronic low-grade lameness may require a period of sustained exercise to become more obvious.

Horses should be stripped of all tack, rugs, and blankets and should be held by a loose rope that is fixed to a headcollar or bridle.

* Abnormalities of gait can be seen when the horse is moving at the walk or slow trot. Initial evaluation should be performed at the walk to identify those horses which are markedly lame where trotting may be hazardous.
* Variations in foot placement and limb movement for example when one phase of the stride on one limb is shortened. Mechanical and neurological causes of lameness is also seen at walk.
* Abnormalities in head and hindquarter movement resulting from pain during weight-bearing are usually most apparent at the slow trot.
* The horse should be observed moving in a straight line and at an even pace from in front, the side and behind.
* Forelimb lameness is best seen while the horse is trotted towards or past the examiner.
* Hind limb lameness is best seen while the horse is trotted away or past the examiner.
* Lunging the horse in tight circles is helpful in demonstrating more clearly lameness that is subtle or inapparent when the horse is moving in a straight line. If circumstances do not permit such an examination, trotting the horse around sharp corners may accumulate lameness in a similar, though more transient way.

**WHAT IS THE CRITERIA FOR CHOOSING TEST FOR GAIT EVALUATION?**

1. It depends on the severity of the lameness.
2. Horses that are severely lame need not be ridden or lunged.
3. Walking can be a sufficient evaluation in some cases.
4. When evaluating a mildly to moderately lame horse it can be evaluated by being lunged or ridden unless if lameness is unsafe or worsens significantly.
5. Where poor performance or lameness is concerned to ridden work the horse has to be evaluated by being ridden.

**WHAT IS REQUIRED TO PERFORM PROPER GAIT EVALUATION?**

Appropriate straight trot up area:

No obstacles, well lit, hard even surface which is non-slip

In order to access acceleration, deceleration and steady speed of a horse moving at a trot must be of adequate length.

Should not be roads with a camber.

Soft surface:

An arena ideally for lunging on a soft surface and ridden exercise.

Grass can be an alternative.

Ideal:

For lunging should be a firm non-slip surface eg. Graveled area.

**GAIT EVALUATION PROCEDURE**

**Step 1- Walk**

1. Assessment of the horse from the front, back and sides.
	* The slowness of stride makes assessment of foot placement easiest at walk: assess the way the foot lands, the point of breakover and height of foot flight.
2. Assess the degree of distal excursion of the fetlock (extension or drop):
	1. There may be reduced extension if the horse is reluctant to fully bear weight through the limb, including but not limited to fetlock region pain.
	2. Increased extension may indicate breakdown of the suspensory apparatus.
3. Horses may exhibit medial or lateral deviations in foot flight as a result of valgus or varus limb deformity, or move closely (narrow chest or base narrow stance). Medial deviation will increase the risk of interference and therefore trauma to the contralateral limb.
4. Assess the length of stride, which can be divided into the cranial phase (protraction), stance phase, and caudal phase (retraction):
	1. In a normal horse the hindfoot will be placed in the imprint of the ipsilateral front foot (track up), or cranial to it (over-track).
	2. Failure to track up normally indicated hindlimb lameness.
5. Watch the horse turning in small circles in both directions:
	1. This can exacerbate pain in the front feet - the horse may be reluctant to turn and transfer weight off of the painful limb quickly.
	2. Placement of the limbs should also be assessed.
	3. Horses with ataxia may circumduct (swing wide) the outside hindlimb and place the foot outside of the circle.
6. Back the horse up:
	1. This can highlight neurological deficits such as shivering, stringhalt or ataxia.
	2. When backed, ataxic horses may adopt a base wide stance, and have difficulty moving the hindlimb backwards, with the forelimbs sometimes ‘catching up’ on the hindlimbs and narrowing the distance between the forelimbs and the hindlimbs.
7. Listen and look for changes in rhythm and sound of hoof striking ground; lame limbs may strike the ground with less force and thus will sound quieter.

**Step 2 - Trot**

1. Trot should be a regular two-time rhythm:
	* The horse should be allowed to trot at a natural, steady and consistent speed.
	* In general the slower the trot, the easier it is to assess.
2. Assess the horse from the front, back and side.
3. Assess for the presence of pelvic displacement (hip hike) which usually indicated hindlimb lameness on the side that has greater displacement:
	* If asymmetry of the hindquarter muscles or pelvis is noted during the physical examination then this should be borne in mind when assessing for pelvic symmetry at the trot.
	* Horses with asymmetrical musculature of the hindquarter may give an untrue impression of asymmetrical pelvic displacement, particularly if movement of the hindquarters in general is assessed.
	* Assessing the relative movement of the left and right tubera coxae and/or left and right tubera sacrale is more accurate.
4. Assess for the presence of head nodding, which usually indicates forelimb lameness; the head goes up as the lame limb strikes the ground.
5. Referred lameness can be seen, eg:
	* A horse with unilateral hindlimb lameness, usually of at least moderate severity, may have a head nod in the absence of forelimb lameness. This is due to the transfer of weight off of the lame hindlimb to the contralateral forelimb, thereby mimicking ipsilateral forelimb lameness.
	* To determine the presence of referred lameness versus multilimb lameness the horse should be evaluated under different circumstances.
6. Low height of limb flight may be accompanied by toe drag, which can be consistent, intermittent, or sometimes only seen during deceleration from trot to walk:
	* This indicates reluctance to flex the limb, and not laziness.
	* Bilateral toe drag can be seen in horses with bilateral hindlimb lameness.
7. Increased height of limb flight may indicate hypermetria associated with ataxia.
8. Assess step length:
	* A short stepping horse may have bilateral lameness.
	* The hindlimbs should track up or over-track, no tracking up indicated a shortened step length which is likely to be a result of bilateral hindlimb lameness.
	* Note that with bilateral hindlimb lameness there may be no asymmetry of pelvic movement, unless one limb is more lame than the other.
9. Assess the straightness of movementL
	* Lame horses may trot crookedly and trot on three rather than two tracks, usually (but not always) with the hindquarters held away from the lame(r) limb.
10. Assess foot placement:
	* Erratic and inconsistent foot placement, particularly during deceleration from trot to walk may indicate ataxia.
	* Ataxic horses may also have increased truncal sway.
11. A normal horse should have consistent rhythm and good thoracolumbar (and tail) swing.

**Step 3 - Lunge**

1. Some lameness appears to be exacerbated when a horse is worked on a circle, and can vary depending on whether the lame limb is on the inside or the outside of the circle.
2. Many horses will adapt their gait to avoid pain and essentially reduce lameness, however these gait adaptations can be seen.
3. Lame horses may lean inwards with their bodies.
4. Lame horses may look out of the circle.
5. The thoracolumbar region may be held stiffly (this can indicate secondary as well as primary back pain).
6. Horses with hindlimb lameness may swing the lame hindlimb under the body (trunk) during protraction when the lame limb is on the inside of the circle. This is presumably and avoidance of limb flexion.
7. Assess hindlimb impulsion (push); poor impulsion may indicate bilateral hindlimb lameness.
8. Canter should be a fluid, three-time gait, with good rhythm, balance and movement of the thoracolumbar and lumbosacral regions.
9. Rushing into canter, poor hindlimb separation (temporally and spatially), ‘bunny hopping’, or a croup high canter with stilted hindlimb movement may be indicators of hindlimb lameness and/or sacroiliac joint region pain or thoracolumbar pain (primary or secondary).
10. If the facilities are available and it is safe to do so, evaluating the horse moving (walk and trot) on the lunge on a firm surface can provide additional useful information.

**Step 4 - Ridden**

1. Ridden evaluation is not indicated if the horse has marked lameness that does not warrant ridden evaluation, or is unbroken or unsafe to ride.
2. For all other cases of lameness or poor performance, evaluation of the ridden horse is crucial, especially if the complaint pertains to ridden work.
3. Many lameness problems are exacerbated by ridden exercise, and some are only seen when the horse is ridden.
4. It is important to assess the horse-tack-rider relationship, and it is important to do so with the usual rider:
	* An unskilled rider who has poor balance may create gait abnormalities.
	* A skilled rider may be able to improve the way of going of a lame horse compared to a less skilled rider by riding strongly, conversely a more skilled rider could also exacerbate lameness compared with a less skilled rider because more is being asked of them.
5. Poorly fitting tack can also create abnormalities of gait, eg a saddle causing pressure points may induce back pain and the horse may hold the back stiffly:
	* If the saddle impinges upon the caudal aspect of the scapulae then the horse may have a bilaterally shortened forelimb step.
	* Asymmetry of saddle flocking, asymmetrical back musculature or a crooked rider may induce saddle slip, however saddle slip has been shown to most commonly be seen as a result of hindlimb lameness. The saddle usually, but does not always slip to the side of the lame or lamer hindlimb.
6. The horse should be assessed at walk, trot and canter on both reins, performing 10 meter circles can exacerbate lameness or poor performance.
7. If problems have been noted when jumping the horse should be assessed over a fence. If the horse has had problems performing certain movements such as lateral work or flying changes then these should also be performed in both directions.
8. As well as looking for head nodding, pelvic displacement, stride length and toe drag, horses in pain may be not forward-going or resistant, display conflict behavior such as stopping, bucking, rearing, bolting or being spooky. Poor contact with the reins such as leaning on one rein or being above or below the bit are also indicators of pain.
9. Facial expressions may also indicate pain when ridden, such as an open mouth, ears being pinned back, scleral show or a tense or staring eye.
10. Sacroiliac joint region pain is often worse or only evident when ridden, and the quality of canter should be assessed. Thoracolumbar stiffness, poor hindlimb separation (spatially and temporally), bucking, bunny hopping, moving with the croup high (not ‘sitting down’ behind) and conflict behavior may reflect sacroiliac joint region pain, although are non-specific clinical signs.
11. It is also useful to assess whether the lameness improved or deteriorated with exercise, particularly prior to diagnostic analgesia, to avoid misinterpretation of results.