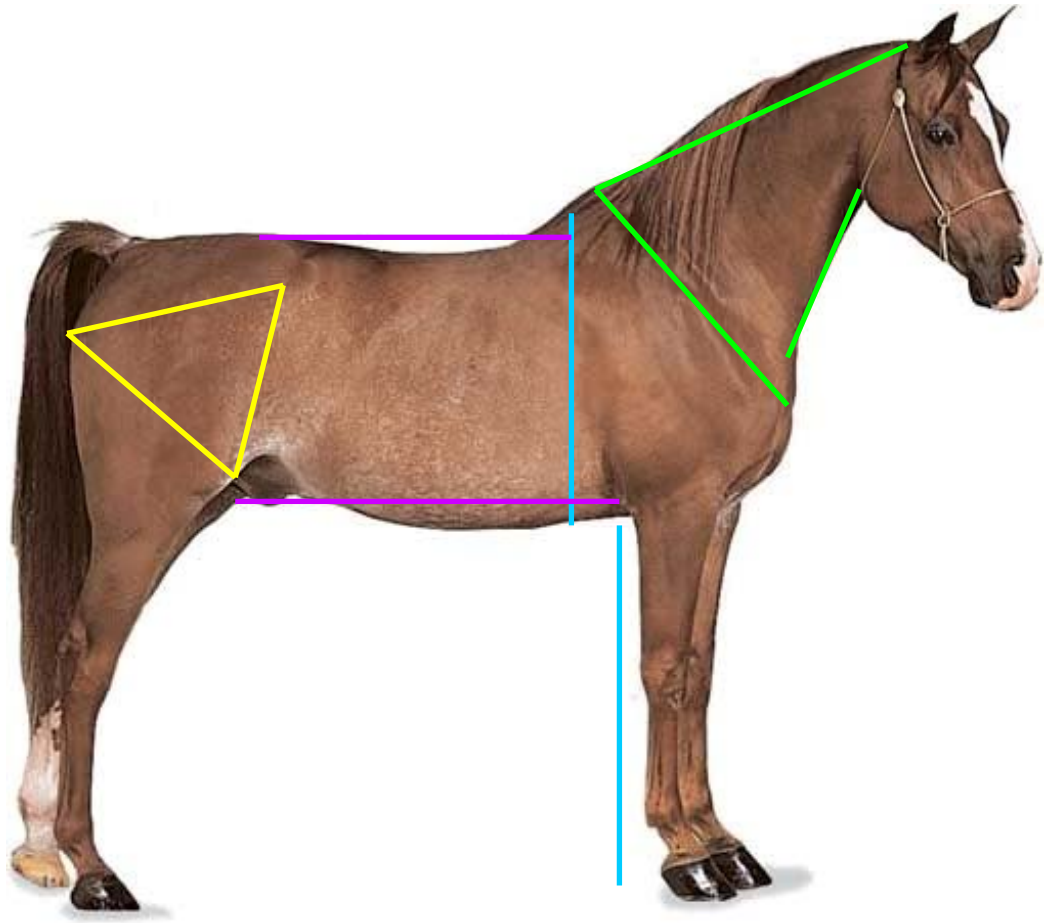
Arabian Training

A Lucan Lodge Rider Guide

Arabians and their derivatives are on of the most popular all-round horse breeds, successful competitors in pleasure disciplines, dressage, jumping and of course endurance, as well as bright, companionable and beautiful. Their versatility is very broad, but there are some particular aspects of their conformation, gaits, medical predispositions and behaviour that should be considered when working with Arabians, to help get the best out of them and keep them happy and healthy.

Understanding Conformation

Photo Report:



Green lines: The length of rein and shoulder are important to athleticism and ride quality. The top line of the neck should be about twice the length of the bottom line, with a shoulder slope of about 45 degrees. A laid back shoulder is preferred to a more upright structure. The angle at which the under-neck meets the jaw (the *mitbah*) should be quite arched and long, and the face dished.

Blue lines: The vertical balance is important, with the heart depth ideally the same as the length of the legs. This ensures the horse has sufficient respiratory capacity for performance. Bone density is important in Arabians, and they should have very hard, clean legs with well defined tendons. Arabians should have fairly long forearms (radii) to help increase their range of motion, coupled with short cannons to encourage active strides. They range from about 14.1 to 15.1 hands high at the wither on average, and are all classified as 'horses' even if they fall just short of 14.2. The wither should be higher than the croup, and well defined.

Yellow lines: The hindquarter is essential for forward and active movement. The lines from point of hip to point of buttock and stifle should show a deep, level hindquarter. Arabians should have a long, level croup, a deep, angled hip and low flanks. The croup (formed by the sacral vertebra) can be flat while the hip is actually well angled – the line from point of hip to point of buttock should be sloping, although the top of the hindquarter looks much more level. The croup and the hip should both be long. This aids the free floating action of the hind legs. The tail is often set and carried high, and there should be a good upward curve from the level of the back to the sacrum.

Arabians can have fairly narrow hips, which helps them attain greater length of stride but can compromise hindquarter strength, and sometimes contribute to brushing injuries. Another common issue is mule feet – long, narrow hooves, which may cause some soundness problems. The breed standard dictates balanced, rounded hooves, so this undesirable trait is actively discouraged.

Purple lines: The horizontal balance is important for athletic ability. The topline should again be shorter than the underline, producing a strong back and long stride length. Arabians have shorter backs than many other breeds, ideally slightly concave, and may even have one less lumbar vertebra, one less pair of ribs and two less tail vertebrae than usual. Arabians sometimes have narrower ribcages that widen towards the flank, and need careful attention to saddle fit to prevent slippage. Arabian ribcages should be well sprung, however, and their chests deep, to maximise lung capacity and heart room.

Overall, Arabian conformation is engineered for distance work – they cover a lot of ground with maximum efficiency due to their pelvic and forelimb ratios and angles. They are saddle bred, with a short strong back and long underline, and strong for their size. However, the efficiency they gain for endurance they lose somewhat for more gymnastic work like dressage and jumping – their more sloping shoulders and flatter croups reduce their capacity for high lift of the legs, and deep joint flexion and power work. This needs to be considered when training for these disciplines.

Movement-wise, Arabians are bred for extravagant but correct action, and selected for their floating, springy paces. The hind feet track well forward under the body, achieving a lot of thrust, and it is important for Arabians to be agile and sure-footed.

Interestingly, mares and stallions do not differ greatly in neck girth, cannon bone circumference or pastern girth, although they are usually different in body thickness and general size, with stallions larger than mares. Stallions may have smaller ears and feet, and should be more muscled through the head.

Arabians are almost always solid coloured, with black skin. They may have sabino or rabicano coat patterns, but purebreds do not carry standard dilution genes so cannot be born buckskin, palomino or true roan. There are a very few pink-skinned Arabians, although these trace to a mutation in a single stallion born in 1996. Arabians do not carry the Overo gene, so are not at risk of Lethal White Syndrome unless crossed with a carrier.

Understanding Genetics

Breeding

Arabians have probably developed from the Oriental subtype, a prehistoric classification of light, fine horses which evolved around the Middle East. They have been domesticated for around 4,500 years, in harsh climates requiring them to be resilient to heat, sun, long distance travel other hardships.

Breeding is traced through maternal lines, and various subtypes developed historically by the Bedouin people (*Abeyan*, *Hadban, Hamdani, Keheilan* and *Seglawi*). Written pedigree records date from 1330AD, but more recent DNA sequencing techniques have shown that the purity of strains represented in the records may not actually represent reality, with many supposedly related horses not sharing a common genetic ancestry.

Arabians have been crossed with other types systematically by various cultures, including European nations involving them in the development of their light cavalries. Arabians were introduced to Australia early on in its history, and extensively crossed with other breeds, including racing Thoroughbreds (there are around 100 Arabian stallions in the Australian Thoroughbred Stud Book). The Australian Arabian Horse Registry is second largest in the world, after the United States.

Management

Feeding

Arabian horses usually have a high proportion of slow-twitch (Type I) muscle fibres, which are used by the body for low speed exercise and activity. This makes Arabians very effective for endurance work, but these muscle types have specific energy requirements that need to be met if they are going to be utilised efficiently.

- Type I fibres use relatively small amounts of ATP, the muscle contraction chemical used in exercise.
- In low-speed exercise with Type I fibres, energy generation is mainly aerobic (as opposed to anaerobic). This type of activity uses fat stores as fuel, which are plentiful and accessible enough to replace the small amount of ATP used.

- When speed increases, more type II fibres are used, and energy is generated anaerobically as well as aerobically. This kind of energy supply uses glycogen as well as fat.
- Most endurance activity is undertaken at a speed and difficulty level that can be fuelled by fat alone, and use only Type I fibres. This is the most metabolically efficient system for Arabians, as they are geared to use these muscle types. As such, Arabians should be fed sufficient fat to supply their preferred mode of energy generation.
- Because Arabians do not naturally gravitate towards anaerobic modes of energy generation, using Type II fibres, their maintenance requirement for starches and sugars will be lower than some other breeds. If they are doing fast or explosive work, like jumping, they will need a good supply of glycogen, but for normal activity Arabians may operate better on diets higher on fat and fibre and lower in sugar and starch.
- Fatty Acids and fat carrier supplements may also increase trot stride length in Arabian horses, compared to feeding standard corn oil as a fat source.

Arabians are overrepresented in cases of enterolithiasis (accounting for 30 to 40% of all cases), which is a condition where deposits of calculi build up and block the intestine, and can lead to colic. Enterolithiasis is also exacerbated by feeding a lot of lucerne and limiting pasture access. As such, Arabians may need more grass access and less lucerne hay than other breeds.

Health Issues

Some genetic conditions are more common in Arabians, and may present at various stages during the horses' life.

- Occipitoatlantoaxial Malformation (OAAM) is a congenital disease found only in Arabians. In is worst form, it presents as fusion or malformation of the joints of the poll, which eventually causes compression on the spinal cord and subsequent loss of coordination or paralysis. It runs in families, and is reasonably rare, but should be investigated as a potential cause of any head carriage or neurological problems in young stock. There is no genetic test for OAAM.

- Guttural Pouch Tympany (GPT) is another heritable disease found in Arabians, affecting more fillies than colts. The pharyngeal opening of the Eustachian tube has a malformed valve, that lets air in but not out. The guttural pouch fills with air and swells, making the breathing noisy, but otherwise not causing pain or discomfort. It can be surgically resolved, and treated animals are not prone to long term effects.

- Severe Combined Immunodeficiency (SCID) is another problem passed through Arabian genetics, affecting slightly more fillies than colts. Foals are

born with a critically compromised immune system, and usually succumb to infections very early on. Horses can be genetically tested for the gene responsible for SCID, so this disease is avoidable if carriers are not bred on. Equine SCID affects about 8% of Arabian horses.

- Lavender Foal Syndrome, or Coat Color Dilution Lethal (CCDL), is a genetic mutation affecting Arabians which causes weakness, rigid joints, convulsions and poor coordination at birth. Affected foals often have a diluted coat colour, which is otherwise not presented in the Arabian breed at all. It affects mainly the Egyptian lines. There is no cure, and no genetic test, and there is some evidence to suggest it may be linked to another Egyptian problem, juvenile epilespy. Most lavender foals are euthanized.

- Equine Juvenile Epilepsy (also known as benign or idiopathic epilepsy) presents in some Egyptian foals, and is characterized by seizures which they usually grow out of by 12 to 18 months of age, with no apparent long term effects. The disease can be controlled to an extent by epilepsy medication. There is no genetic test for this condition.

- Cerebellar Abiotrophy (CA) is caused by the gradual death of the purkinje cells in the cerebellum of the brain. It leads to loss of coordination which can cause horses to become extremely 'accident prone'. Many affected horses are euthanased because of the risk of handling them. CA is hard to diagnose in living horses, and can usually only be confirmed post mortem, but there is an indirect prediction analysis available to test for some genetic markers. Symptoms can be mild, and sometimes are only apparent in older horses, so CA should be considered in any Arabian or derivative that is frequently tripping or running into objects, under saddle or at liberty.

- Dermatitis is fairly common in Arabians grazing on alsike clover (*trifolium hybridium*), which causes photosensitivity on white socks and stockings and on muzzles, and pastern dermatitis also seems to affect Arabians in sandy environmental conditions rather than on other kinds of soils. Non-Arabians on sandy soils are usually less prone to the condition.

- Colic is a contentious issue with Arabians – some studies have suggested that they have lower breed-specific incidences of colic than Thoroughbreds for example, but the majority of research has found that Arabians are overrepresented in colic cases, more than twice as likely to need treatment as the Thoroughbreds in one 812-horse research group.

- Although polysaccharide storage myopathy (PSSM) is mainly found in Quarter Horses, warmbloods and draft breeds, the muscle characteristics that predispose horses to bouts of PSSM exertional rhabdomyolysis (or tying-up) have also been found in Arabs and Anglo Arabs. As such, Arabian QH/WB or draft crosses may be at higher risk of PSSM than some other crosses.

- Arabians (and Standardbreds) were overrepresented in one study of heart defects in horses compared to other breeds (with Thoroughbreds showing the lowest incidence). The particular problem studied was ventricular septal defects (VSDs), which can cause stunting of growth at a low level, and congestive heart failure in bad cases.

- Arabians had a 4.5 times higher incidence of intestinal cancer than other breeds according to one study conducted by the University of California.

- Cutaneous and ocular habronemiasis (lesions caused by the larvae of gastrointestinal *spirurid* worms) affects more Arabian horses than any other breed, especially greys. It is especially important to drench Arabians with an appropriate anthelmintic, and treat any suspicious lesions as possible cases. Ocular habronemiasis is often mistaken for corneal ulcers.

- Arabians seem to be more likely to develop rectal tears than many other breeds, with a higher incidence in mares and horses over 9 years of age.

Understanding Training

Arabian physiology is slightly different to many other breeds, and they can have different gaits and locomotion to other types of horses. Their conformation and biomechanics has some impacts on their performance of various activities, and can both be a help and a hindrance.

Some of the traits that help Arabians and derivatives with their performance are listed below:

- A comparison of Arabian and Anglo-Arabian horses with Andalusians found significant differences between them in the way they responded to exercise demands. At 15, 20 and 25km/h on a treadmill, Arabs and Anglos had much lower lactate concentrations in their bloodstreams, and higher heart rates, although they levelled off with the Andalusians at 30km/h.

- Another Arabian/Anglo/Andalusian comparative study found that the Anglo-Arabians had the longest stride duration and length in fast paces, as they had the most efficiency due to their balance between forward and upward movement. Purebred Arabians had longer trot strides but their reach was

compromised at speed. Anglos also had a lower range of joint motion.

- Arabians usually have a higher proportion of slow twitch (Type I) muscle fibres to fast-twitch (IIA and IIB) than other breeds. Slow twitch fibres contract slowly, at low tension, and have a high fat content, oxygen carrying capacity and capillary density. These fibres also have an intermediate glycogen content, and very low fatigability. The high ratio of Type I fibres helps make Arabians and their derivatives very effective athletes over sustained periods at slower speeds. This is one reason they have traditionally been very popular endurance mounts.

Some hindrances to their athleticism are also known:

- Arabians had higher plasma proteins, glycerol, free fatty acids and creatinine levels in their blood after exercise than Thoroughbreds in a Polish study, which is evidence that Thoroughbreds may adapt better to moderate intensity exercise than Arabians.

- Extended trot is actually very biomechanically demanding, and even though Arabians are usually conformed and often trained for this behaviour, it still has profound energy requirements and may cause damage to the joints due to the increased force of landing as speed increases. Extended trot uses 25% -30% more energy than a medium speed trot, and causes more joint impact.

As discussed, Arabian conformation has not been developed for dressage, jumping, sporting or other disciplines as much as for endurance. Arabians may need more work on their hindquarter carrying power through exercises such as transitions, voltes and changes of direction, and less on their impulsion, which often comes quite naturally. For dressage, relaxation and rhythm are important to attain, and some Arabians may take longer to train for calmness and steadiness than individuals from the cold blooded breed families.

The Arabian temperament is described in the breed standard as being people-focused, alert and keen to please, with an aversion to abuse and maltreatment. Arabians may certainly be more acute in their interactions with people, as their hot-blooded genetics increase their potential for anxiety and reactivity. However they have been bred selectively for many centuries to live in close proximity with people, and tend not to become overly stressed by their surroundings. Anecdotally, most Arabians are likely to become excitable and hyper-alert more in response to exercise and activity than to novel environments and objects.

The Arabian exercise-induced ‘stress’ response, which serves to increase the available fuel to their muscles as required in strenuous activity, is well developed, and as such can quite trigger easily, and not just in response to hard work. Metabolic adaptation training by progressive eustress desensitisation is an important strategy for training Arabians to manage their adrenaline and cortisol levels, and stay calm. This is done by systematically applying a mild stress trigger such as another horse passing at speed, causing the Arab to become tense and over-excited, then

bringing it back to a calm state as quickly as possible by lowering the head, slowing the strides and relaxing the back muscles. Repetition improves the resolution times.

Special Note: 'Higher Intelligence'

There is no evidence to show that Arabians are any more intelligent than other breeds. The only type of equine that has been shown to have higher comparative cognitive ability is mules, who consistently demonstrate better scores on learning tasks than horses or donkeys. However, 'personality' does seem to differ in a breed-specific way, according to a study published in Applied Animal Behaviour Science. Arabians may have higher scores generally for *Anxiousness* and *Excitability.* However, another Netherlands study has found no correlation between emotionality and learning ability – more and less anxious or excitable horses had the same ability to learn and retain responses to stimuli in their recent research.

The Last Word

Arabians are arguably the world's most recognisable and emotive breed, with a long and illustrious history in art, culture and recreation. And they are also proven performers, with some of the world's greatest ridden horses carrying full or part Arabian genetics. The famous 2004 Olympic Three Day Event horse ridden by William Fox-Pitt, 'Tamarillo', was an Anglo-Arabian, and he competed against a purebred Brazilian Arab in the same competition. Another purebred, 'Beaufort Legend', won Champion Hack at a Sydney Royal in side-saddle. Arabians also race, and there are an increasing number of Arabian gallop races in Australia year to year.

George Washington and Napoleon both owned Arabian horses. Today, there are several hundred thousand registered Arabians in Australia, and countless other unregistered horses, owned by everyone from competitive endurance riders to pony clubbers to event riders. They are a very popular breed, not just because of their appearance and 'mystique', but because of their versatility. Despite being bred for endurance, they excel at other ridden sports, and usually make exceptional 'friends'.

With a good understanding of how you Arabian or derivative is put together conformation-wise, and how he has evolved over the centuries, you can take the best approach to training and handling your horse. Being aware of some of the health and management issues affecting the breed is very important too, as they do have some specific requirements and risk factors that you should keep an eye on. And one look at all the top-level competitors out there can't help but motivate us all to see just how far our Arab can go! With the correct, breed-specific knowledge, we can expect great things, and be a big step closer to achieving them.

References

Claes, A et al (2008). **Evaluation of risk factors, management, and outcome associated with rectal tears in horses: 99 cases (1985–2006).** *Journal of the American Veterinary Medical Association*, 233, 10:1605-1609**.**

Cohen, N.D. et al (2000). Risk factors for enterolithiasis among horses in Texas. *Journal of the American Veterinary Medical Association*, 216:1787–1794.

Ding, Q et al (2002). **DNA–PKcs mutation in dogs and horses: allele frequency and association with neoplasia**. *Genetics* 283, 263–269.

Duren, S. **Feeding the Endurance Horse**. *Kentucky Equine Research*, Versailles.

Gustås, P. et al (2006). **A field study on hoof deceleration at impact in Standardbred trotters at various speeds**. *Equine and Comparative Exercise Physiology*, 3:161-168.

Lerner, A and Cage, G (1973). **Melanomas in Horses**. *Yale Journal of Biology and Medicine*, 46:646-649.

Lloyd, A et al (2007). **Horse personality: Variation between breeds**. *Applied Animal Behaviour Science*. 112, (3 -4) 369-383.

Nation, Nicholas P (1989). **Alsike clover poisoning: a review**. *Canadian Veterinary Journal*, 30 (5): 410-415.

Proops, L et al (2008). **Mule cognition: a case of hybrid vigour?** *Animal Cognition*, 1435-9448.

Pusterla, N et al (2003). **Cutaneous and ocular habronemiasis in horses: 63 cases (1988–2002).** *Journal of the American Veterinary Medical Association*, 222, 7:978-982.

Taylor, S.D et al (2008). **Intestinal Neoplasia in Horses.** *Journal of the American Veterinary Medical Association*, 20, 6:1429-1436.

Visser, E. K. et al (2003). **Learning performances in young horses using two different learning tests**. *Applied Animal Behaviour Science*, 311-326.

Woodward, A. D et al (2007). **Supplementation of dietary long-chain polyunsaturated omega-3 fatty acids high in docosahexaenoic acid (DHA) increases plasma DHA concentration and may increase trot stride lengths in horses**. *Equine and Comparative Exercise Physiology*, 4:71-78.

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