Is it possible to reduce damage to pasture by providing horses with specific areas for rolling? The question was addressed by scientists in Japan.

Often one of the first things a horse will do after being turned out on pasture is to roll. Damage to pasture caused by rolling may be an unwelcome consequence – especially if grazing is in short supply.

Kanji Matsui and colleagues investigated the benefits of providing specific rolling areas for grazing horses.

The study “Do horses prefer certain substrates for rolling in grazing pasture?” was published in the Journal of Equine Veterinary Science. The work was carried out at the Education and Research Center of Alpine Field Science, Faculty of Agriculture, at Shinshu University.

Four native Japanese Kiso horses were included in the study. The researchers observed the horses’ behaviour in paddocks with and without rolling areas made of different substrates.

Two experimental paddocks were available for grazing, each 120 x 60 metres. One paddock, (the control) contained pasture only; the other contained three rolling areas – each 5 x 5 metres - made of dry soil, sand or straw.

The researchers found that horses tended to roll more often, but for less time overall, in the rolling paddock compared with the control paddock. The difference, however, was not significant.

The researchers concluded that offering a rolling area encourages horses to roll in these areas and keeps the pasture in good condition. They point out that it also allows an increase in grazing time, which reduces the need for supplementary feed.

They recommend that rolling areas be provided in pasture for horses and that these rolling areas be constructed of soil.

For more details see:
Do horses prefer certain substrates for rolling in grazing pasture?
K Matsui, AM Khalil, K-i Takeda
Many horses still too fat after winter

In the past, horses would lose condition over the winter, start the year in lean condition and gradually recover over the grazing season.

A recent survey of groups of horses spending at least six hours out at pasture has shown that more than a quarter were obese at the end of the winter months. This alarming trend may suggest that well-meaning winter management strategies such as rugging and a reduction in exercise could be having a detrimental impact on the welfare of horses in the United Kingdom.

The research was conducted by Sarah Giles, Dr Sean Rands and Professor Christine Nicol of the University of Bristol's Animal Welfare and Behaviour Research Group, in collaboration with the WALTHAM® Equine Studies Group, headed by Professor Pat Harris. They examined the variations in body condition in small groups of horses during the month of February 2011.

A cross sectional study of 127 horses and ponies was carried out in Somerset. Horses were kept in herds of three or more, and were at grass for at least six hours a day. Their condition was assessed using the nine point body condition score (BCS) system and the five point cresty neck score (CNS). The prevalence of obesity (BCS of 7 or above) was 27.6% with a slightly higher incidence in horses, while the prevalence of cresty neck (CNS of 3 or above) was 48.8% with a higher number of ponies affected.

Clare Barfoot, research and development manager at SPILLERS®, said: “That such a high percentage of horses and ponies were obese as they came out of winter is concerning, while the fact that a higher number of horses than ponies were classified as obese challenges the myth that only ponies can get too fat. As horses and ponies tend to put on more weight in the spring and summer months, owners need to act now to help restore the more natural seasonal fluctuation in body condition, this can be achieved by increasing exercise intensity and feeding a more appropriate diet such as a low calorie forage with SPILLERS® Lite Balancer.”

Future studies will investigate other factors potentially affecting body condition such as differences in spontaneous activity, behavioural interactions, socially mediated interference and social position within the herd.

Equine hospitals may be an important source of antimicrobial-resistant bacteria, according to recent research.

The study, by Dr Mohamed O Ahmed and co-workers from the University of Liverpool, is published in the journal, Microbial Drug Resistance.

There is growing concern about micro-organisms developing resistance to antimicrobial drugs that are used to control them. This is a particular problem in individuals whose immune system is compromised by many factors, leaving them defenceless against potentially life threatening infections.

The work was carried out in the north-west of England. The research team examined faeces from 138 horses. They collected samples from horses at the University of Liverpool Equine hospital and from nearby livery yards and riding schools.

Important differences (risk factors) were identified between faeces samples from hospitalised and non-hospitalised horses.

Analysis of the data showed that the equine hospital was a major source of resistant- and multiple-drug-resistant (MDR) *E. coli*. Antimicrobial-resistant *E. coli* was more likely to be found in faeces from hospitalised horses, to minimise the risk of antimicrobial resistance.

The researchers conclude that equine hospitals appear to be an important source of both antibiotic-resistant and multiple-drug-resistant *E. coli*. They emphasise that it is important to control the use of antimicrobial treatment in hospitalised horses, to minimise the risk of antimicrobial resistance.


See also:
http://www.annclinmicrob.com/content/9/1/12

Cushing's disease (equine pituitary pars intermedia dysfunction - PPID) appears to be becoming more common as horses live longer. While the true incidence of this disease is unknown, a recent survey of horse owners showed that signs of Cushings's disease were reported in 20 to 30 per cent of horses.

Researchers at the Western College of Veterinary Medicine (WCVM), University of Saskatchewan, are starting to explore a possible new treatment for the condition. To learn more about the incidence and prevalence of Cushing's disease, WCVM equine specialist Dr. James Carmalt has designed an online survey that will be distributed to equine practitioners around the world. Dr. Carmalt and his colleagues at the western Canadian veterinary college will use practitioners' responses from this short, 16-question survey to:

- determine the incidence of disease
- determine the most common treatment protocols being used by practitioners
- evaluate the need for developing new treatment methodologies.

Owners whose horses have been diagnosed with Cushing's disease are urged to bring the survey to the attention of their veterinarian.

http://www.usask.ca/wcvm/veterinarians/cushings_survey.php

A final year student, Lisa Dunne, studying Equine Science at University College Dublin is carrying out a study into the risks of antibiotic-associated colitis. The study, under the supervision of Dr. Emmeline Hill and Dr. Vivienne Duggan, aims to determine the level of awareness amongst horse owners about risks associated with using antibiotics.

You can take part in the study by completing this short survey: http://www.surveymonkey.com/s/HQBLYB7
Welfare implications of restrictive nosebands

Horse welfare at the Olympic Games is threatened if current trends are allowed to continue, according to the International Society for Equitation Science (ISES). The Society maintains that the practice of over-tightening nosebands to avoid penalties in competition is covering up poor training at the expense of horse welfare.

ISES notes that, in the last few decades, there has been a steady increase in the design of nosebands that effectively mask evidence of a horse’s discomfort.

The incentives for athletes to over-tighten nosebands arise from the rules of dressage that penalize displays of discomfort such as open mouths and lolling tongues. These rules were written by the sport’s governing bodies to promote excellent training and the demonstration of qualities such as freedom, harmony, lightness and acceptance of the bit without tension. Restrictive tight nosebands can prevent the horse from displaying unwanted behaviours such as opening, gaping or crossing the jaw, and are enabling competitors to mask signs of tension which judges should penalise as evidence of inferior training. Thus nosebands may hinder effective judging.

Recent research*, by Professor Paul McGreevy and others, suggests that horses wearing tight nosebands undergo a physiological stress response, are sensitised to bit pressure and may have reduced blood flow with potential to cause injuries and tissue damage including nasal bone deformities, even when padding accompanies the noseband such as in the case of so-called crank nosebands.

ISES recommends:

- a return to the established practice of placing “two fingers” under the noseband to demonstrate that it has not been over-tightened. This amount of space under the noseband allows horses to express tension or seek relief from the pressure of the bit and so aligns with the principles of ethical equitation.

- that, for fairness and objectivity, a standard taper gauge should be used by stewards at competition. The taper gauge should be placed without force at the nasal midline and be clearly marked to show the desired stop, which, in alignment with established industry guidance, should be the dimensions of two average adult fingers.

The ISES position statement on restrictive nosebands is available at:

[http://www.equitationscience.com/position_statements_nosebands.html](http://www.equitationscience.com/position_statements_nosebands.html)

Researchers in China have unearthed the skull of an extinct ancestor of the present day horse.

In a study published in the latest issue of Vertebrata PalAsiatic 2012(1), Dr. DENG Tao, of the Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences (IVPP) in Beijing, reported a skull of *Hipparion* (*Proboscidipparion*) *sinense* from the Longdan locality in Dongxiang, Gansu Province, north-western China.

Previously, the only known relic of this species from the Early Pleistocene period in this part of China was a third metacarpal (cannon) bone. This find not only confirms that Hipparion was indeed present in this area, but also increases the understanding of the cranial and dental characters of this species.

*Proboscidipparion* was a large-to giant-sized form of the three-toed horse. It had a special muzzle structure, not unlike current day tapirs. Its nasal notch reached deeply above the middle part of the cheek tooth row. The species was thought to be restricted to northern China, but recent studies suggest it may have been found as far west as England.

The new specimen was unearthed from the lower part of the Early Pleistocene Wucheng Loess at Shitougu of Nalesi Town, Dongxiang County, Gansu Province. It is a juvenile male individual with an erupted large-sized canine. Its age is approximately 2.5 years, determined by the eruption of its cheek teeth.

The holotype specimen of *Hipparion sinense* belongs to a senile individual, and no other complete skull of this species has been found. Therefore, the new material from Longdan provides some key information for the diagnoses of *Hipparion sinense*, and reveals the structure of the nasal notch of this species. The lower part of the nasal bone is a tenuous strip that extends forward, comprises the posterior part of the lower margin of the nasal notch, and has a sharp anterior end reaching the level of the P2/P3 boundary, at a 30 mm distance from the posterior end of the nasal process of the premaxillary bone. “The recognition of these characters is greatly important in determining the phylogenetic relationship of Proboscidipparion”, said Deng.

Proboscidipparion might prefer living in an area with abundant water, in the same way as tapirs, which have a similar nasal structure. The discovery of Proboscidipparion at Longdan further supports the environmental implications of fossil beavers and other members of the Longdan fauna, indicating streams and small lakes for the Linxia Basin during the Early Pleistocene.

This work was supported by the National Program on Key Basic Research Project of China, Main Direction Program of Knowledge Innovation of Chinese Academy of Sciences, National Natural Science Foundation of China, and National Committee on Stratigraphy.
Excavation of a burial site in southern Israel, has unearthed what is believed to be the earliest known metal bit.

Archaeologists led by Professor Eliezer Oren from Ben Gurion University excavated an equid burial at Tel-Haror, an archaeological site located in the Levant with strata dating to the Middle Bronze IIB Period (1,750-1,650 B.C.). Here, archaeologists retrieved the earliest metal equestrian bit.

Dr. Joel Klenck, a Harvard University educated archaeologist and president of the Paleontological Research Corporation, who presided over the analysis of the equid remains, states the burial is at the base of a dome-shaped structure. The south-eastern wall of the burial edifice is overlaid by a thick mudbrick partition that surrounds a nearby temple complex.

An archaeologist specializing in the analysis of animal remains, Klenck identifies the equid as a donkey by the shape and size of its pedal bones and traits on the grinding surfaces of its teeth.

Archaeologists are increasingly finding remains of horses and donkeys in ancient Near Eastern contexts. The Vulture Stele, dating to the Early Dynastic III period (2,600-2,350 B.C.) in Mesopotamia, portrays an equid pulling a chariot-like vehicle. Various Mesopotamian manuscripts dating to this period mention the horse, donkey, hemione and hybrids such as the mule.

From Sumeria, terracotta relics from the early second millennium B.C. show equids pulling a chariot and a human riding horseback. Hittite relics from the thirteenth century B.C. in modern Turkey show a larger species of equid, perhaps a horse, pulling a chariot with three soldiers. In contrast, Egyptian murals depict smaller equids, presumably donkeys, pulling chariots with only two men.

Horse bones were found at Tell el-'Ajjul in Israel in contexts dated to around 3,400 B.C. and in Turkey at Bogazkoy from the seventeenth century B.C.

Archaeologists excavated donkey remains at Tell Brak in Mesopotamia in contexts dating between 2,580 and 2,455 B.C. Egyptian donkey burials dating to Middle Bronze II periods (2,000-1,550 B.C.) include those found at Inshas, Tell el-Farasha, Tell el-Maskhuta, and Tell el-Dab’a. From similar time periods in the Levant, archaeologists excavated donkeys at Tell el-'Ajjul and Jericho.

Klenck notes the donkey burial at Tel Haror is special since this site provides the earliest direct evidence of a metal equestrian bit. He states, "Until the excavation at Tel Haror, archaeologists had only indirect evidence for the use of bits. An example of this indirect evidence is wear marks on equid teeth at the fortress of Buhen in contexts dating to the twentieth century B.C. At Tel Haror, we retrieved the actual metal device."

The archaeologist notes the ancient bit caused equids to turn due to the force of the device. Also, round plates on either end of the ancient bit exhibit triangular spikes that pressured the lips of the equid if the reins were pulled from one direction.

Klenck concludes, "The excavation of the earliest reported metal bit at Tel Haror provides important data concerning ancient equestrian practices and methods of transportation in the Levant."

For more details see: The Canaanite Cultic Milieu: The Zooarchaeological Evidence from Tel Haror
How the zebra got its stripes

Why does the zebra have stripes? Perhaps they provide camouflage in the African savannah; perhaps they break up the animal’s outline making it more difficult for predators such as lions.

However, research published recently in the Journal of Experimental Biology suggests that the stripes may confer protection against a different sort of predator.

An international team of scientists, led by Gábor Horváth of the Eötvös University, Hungary, found that the zebra’s stripes help ward off biting flies.

Such flies are widespread in Africa, and, as well as spreading disease, they cause annoyance and disrupt grazing.

According to Horváth, these insects are guided to a wet habitat suitable for breeding by homing in on horizontally polarized light, which results when light is reflected off water. However, blood-sucking female flies also locate their victims by following polarized light reflected from their skin.

The research, carried out in Hungary, showed that a horse model with zebra stripes attracted far fewer horseflies (tabanids) than did homogeneous black, brown, grey or white equivalents.

The research team found that as the width of the stripes decreased the horseflies were less attracted. They also found that the width of the stripes on zebras coats fell within the range that was most disruptive to these biting flies.

“Tabanids have been shown to respond strongly to linearly polarized light,” they explain “and we demonstrate here that the light and dark stripes of a zebra’s coat reflect very different polarizations of light in a way that disrupts the attractiveness to tabanids.”

It appears to be the polarisation of the reflected light, rather than the colour, that is significant. The research team found that even on homogeneous grey surfaces the attractiveness to tabanids was reduced if the surface had bands of alternating polarization.

“We conclude that zebras have evolved a coat pattern in which the stripes are narrow enough to ensure minimum attractiveness to tabanid flies”, says the team. They add, “The selection pressure for striped coat patterns as a response to blood-sucking dipteran parasites is probably high in this region [Africa]”.

For more details see: Egri, Á., Blahó, M., Kriska, G., Farkas, R., Gyurkovszky, M., Åkesson, S. and Horváth, G.

Polarotactic tabanids find striped patterns with brightness and/or polarization modulation least attractive: an advantage of zebra stripes.


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Arrhythmias found in post-op horses

Most horses that undergo surgery under general anaesthesia have an abnormal heart rhythm afterwards, new research from the University of Liverpool shows.

Sixty seven horses undergoing colic surgery and 37 requiring orthopaedic surgery, with no evidence of gastrointestinal disease, were recruited to the study between September 2009 and January 2011.

A heart monitor (telemetric electrocardiogram) (ECG) was fitted to each horse following recovery from anaesthesia and left in place for 24 hours. Selected electrolytes were measured before, during and after surgery.

The study, funded by the Horse Trust, found that the abnormal rhythms (arrhythmias) occurred in more than 80% of horses and that there was no significant difference in results between the two groups. It seems that the presence or absence of gastrointestinal disease is not as important as the act of general anaesthesia and surgery in the development of arrhythmias. This was unexpected, as factors such as endotoxaemia, and electrolyte disturbance associated with severe gastrointestinal disease might have been expected to be more likely to cause arrhythmias.

Supra-ventricular and bradyarrhythmias, such as sinus arrhythmia, AV block and sinus block predominated in both groups.

The project was led by Ruth Morgan, currently working as The Horse Trust's senior clinical scholar in Equine Internal Medicine at the University of Liverpool.

She said: "We had thought that horses undergoing emergency colic surgery would be more at risk of developing arrhythmias as they are very unwell before the surgery. However, we found that almost all the horses had arrhythmias after surgery, so maybe it is the anaesthesia or surgery itself causing the arrhythmia.

“This research has given us a better understanding of what is going on with the horse's heart following surgery.” She suggests that arrhythmias occurring in horses during the post-anaesthetic period require further investigation.

The work has been published in Acta Veterinaria Scandinavica, and the full free access report is available online.

For more details see:
The prevalence and nature of cardiac arrhythmias in horses following general anaesthesia and surgery. RA Morgan, AG Raftery, PC Cripps, JM Senior, CM McGowan
Acta Veterinaria Scandinavica 2011, 53:62

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Coffee husk poisoning

Coffee husks should not be used as bedding for horses, because of the risk of poisoning, researchers warn.

In Brazil, coffee husks are abundant as a by-product of the coffee industry. The husks are often recycled for use as animal bedding.

Now research carried out by Diego José Delfiol and colleagues has found that coffee husks pose a risk of poisoning when used as bedding or as feed for horses.

The work, carried out at the of Veterinary Medicine and Animal Science - Univ Estadual Paulista (UNESP), Botucatu, São Paulo, Brazil, was prompted by reports that horses had become intoxicated after eating coffee husks used as bedding.

Six clinically-normal quarter horse mares were recruited to the study. They were observed continually, and examined clinically every 12 hours. They were kept in individual stalls and fed a diet of free access hay. Each horse was offered 2kg coffee husks. Every 12 hours any remaining husks were taken away and weighed and fresh husks were given. This continued until the horses started to show signs of toxicity, at which stage no further husks were given.

The researchers noted that the horses were not very interested in eating coffee husks during the first hours after they were supplied. However, after ingesting the husks for the first time, the animals generally preferred them to hay.

The study, published in BMC Veterinary Research, lists the most evident toxic signs as excitability, restlessness, involuntary muscle tremors, chewing movements and constant tremors of the lips and tongue, excessive sweating and increased respiration and heart rates.

The authors report that, on average, toxic signs appeared 56 hours after exposure to the coffee husks. However, heart rates and respiratory rates rose 36 hours after access to husks, and only returned to normal 60 hours after removal of the husks.

All six horses showed signs of toxicity. The signs resolved once the coffee husks were removed, taking between 12-40 hours to wear off. No treatment was necessary.

The researchers excluded other possible causes of toxicity by checking there were no insecticides or fungal toxins in the husks. Analysis of samples of coffee husk found the concentration of caffeine concentration to be 0.9%.

They compared blood and urine taken from the horses before, and 56 hours after, exposure to the husks. They found significant differences between the before and after samples in the concentrations of caffeine in both urine and blood. To the pre-exposure caffeine levels, those found 56 hours later, when clinical signs appeared, were, on average, 3,966 times greater in the plasma and 1,300 times greater in the urine.

The researchers conclude that the high concentration of caffeine in the coffee husks make them toxic to horses. They warn that coffee husks should not be used as food or bedding material for horses.

For more details see: Equine poisoning by coffee husk (Coffea arabica L.)
Diego José Z Delfiol, JP Oliveira-Filho, FL Casalecchi, T Kievitsbosch, C Alberto Hussni, F Riet-Correa, JP Araujo Jr and AS Borges
BMC Veterinary Research 2012, 8:4
doi:10.1186/1746-6148-8-4

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BMC Veterinary Research 2012, 8:4
doi:10.1186/1746-6148-8-4
Value of hydrogen peroxide cream for wound healing

Recent research shows that hydrogen peroxide cream (LHP®)* appears to be a safe and effective treatment option for open wounds in horses.

It is not always possible to bandage wounds to protect them from further damage - especially when the wounds involve the upper limbs and body of the horse.

A study, led by Tamás Tóth, compared the rate of healing of standardised skin wounds treated with hydrogen peroxide cream, or petrolatum jelly (vaseline). It was performed at the Swedish University of Agriculture, Uppsala, Sweden with funding from the Swedish Farmers’ Foundation for Agricultural Research.

Ten adult, healthy, non-pregnant standardbred mares were recruited to the study. Three full thickness skin wounds, each 2cm diameter, were created on the side of the neck of each horse.

All wounds were cleaned twice daily with sterile saline. On each horse, one wound was treated with LHP and one with petrolatum. The third wound was left untreated as a control.

Wounds treated with hydrogen peroxide cream healed more quickly than those treated with petrolatum or left untreated other than daily cleaning with saline. On average, wounds treated with hydrogen peroxide cream took 32 days to heal, compared with 42 days for the petrolatum treated group and 44 days for the controls.

From 16 days onwards, peroxide treated wounds had significantly lower bacterial counts than both other groups. No adverse effects of LHP® cream were noticed. In this study petrolatum was less beneficial for wound healing and was associated with increased bacterial colonization. Staphylococcus aureus and Streptococcus zooepidemicus were only found in cultures from petrolatum treated wounds and untreated controls.

A full report of the research has been published in Acta Veterinaria Scandinavica.

The authors note that treatment with LHP® cream was associated with earlier complete wound healing and with reduced bacterial colonization compared to untreated or petrolatum treated wounds. They conclude that the use of LHP® cream appears to be safe and effective for topical wound treatment and/or protection.

*LHP®(LHP®, Bioglan Pharma AB, Malmö, Sweden

For more details see: Evaluation of LHP® (1% hydrogen peroxide) cream versus petrolatum and untreated controls in open wounds in healthy horses: a randomized, blinded control study T Tóth, H Broström, V Båverud, U Emanuelson, E Bagge, T Karlsson, K Bergvall Acta Veterinaria Scandinavica 2011, 53:45
http://www.actavetscand.com/content/53/1/45

Improving foot health of the domestic horse

A detailed study of feral horse feet conducted at the Australian Brumby Research Unit has shown that the feral cousins of the modern domestic horse are also vulnerable to foot pathology despite being free from the confines and influence of human intervention.

The report can be downloaded free from Australia’s Rural Industries Research and Development Corporation website:

The report concludes: “Best practice in hoof care should evolve from passed on knowledge, new research, clinical practice and practice review. Knowledge of wild horse and feral horse feet provides useful supportive information but a feral horse foot model should not form the basis for the footcare of the domestic horse.”

For more details see: Evaluation of LHP® (1% hydrogen peroxide) cream versus petrolatum and untreated controls in open wounds in healthy horses: a randomized, blinded control study T Tóth, H Broström, V Båverud, U Emanuelson, E Bagge, T Karlsson, K Bergvall Acta Veterinaria Scandinavica 2011, 53:45
http://www.actavetscand.com/content/53/1/45
Professor Knottenbelt also gave a practical update on sarcoids commencing his presentation by emphasising that the sarcoid should be regarded as a form of skin cancer and not a wart. He explained that researchers are still some way off finding a definitive cause for the disease but what is known is that horses of all ages can be affected and that it has a genetic basis. It is also clear that the fewer lesions present at any one time, the fewer the horse will get and that this may link to the feeding habits of flies. There is also some suggestion of an increased prevalence in thin-skinned horses. Prognosis is guarded and early treatment is important as success is more likely if the lesions are small and the horse is under 4-5 years old. The correct choice of treatment is critical, taking into account each individual lesion. “Resorting to homeopathic rubbish or other witch-doctoring is not what cancer deserves. We are in desperate need of more effective treatments and some form of prophylaxis if we are to rid the horse of this distressing and expensive disease,” he said.

The full paper on sarcoids is available at:
http://www.bef.co.uk/downloads/SARCOID%20UPDATE%20for%20equine%20forum%20compress%20pics.pdf

Lisa Randle kept to the theme of equine healthcare with her revealing paper *Equine obesity – helping horse owners to help themselves*. She raised the serious problem of owner perception of equine obesity, stating that her own research indicates that owners appear to be accepting the obese phenotype as representative of normality. Unless perceptions can be altered then owner behaviour will continue to perpetuate the problem of between 30 and 54% of horses and ponies in the UK being either overweight or obese. Lisa suggested that a potential solution could be the introduction of ‘well horse’ clinics. She explained: “Equine vets, nutritionists, physiotherapists and dentists could work together to educate and motivate horse owners in cases where action is required. Owners need the support of equine professionals to healthily manage the horses and ponies in their care.”

The National Equine Forum Proceedings are available for free download:
http://www.bef.co.uk/downloads/Proceedings%202012%202.pdf
Racing in the slipstream

Sitting in the slipstream of frontrunners is a winning strategy for jockeys, new research reveals.

A detailed study of almost 45,000 racehorses has proved that horses that tuck in closely behind frontrunners during races are most likely to come out on top.

New research from Dr Andrew Spence at the Royal Veterinary College, London, published in the Royal Society journal Biology Letters, demonstrates that just as an F1 driver might sit in the slipstream of the car in front, jockeys who deploy this tactic are most likely to have an advantage on competitors when it comes to winning a race.

Dr Spence, working with Professor Alan Wilson and colleagues at the Structure and Motion Laboratory, used a unique data set from thoroughbred horse racing to find out just what tactics work. They determined the position and speed of 44,803 racehorses, once per second, in 3,357 races ranging in length from 1006 to 4225m (50.9–292.9 seconds duration) using a validated radio tracking system. They discovered that aerodynamic drafting had a marked effect on horse performance, and hence racing outcome.

Dr Spence said: “Athletes and pundits the world over speculate as to the best tactics to win races, in a range of sports and species. Our research found that horse racing competitors, just like those in cycling and car racing, gain a significant advantage from what jockeys refer to as "covering up," or "drafting," which means they move tucked in close behind other competitors, reducing aerodynamic drag.

We found that spending time tucked in behind other horses is correlated with fast race times. On average, spending three-quarters of the race behind other competitors lead to a speed increase worth three to four finish places. Whilst jockeys are taught that “covering up” is beneficial, this study is the first to demonstrate the concrete benefits of doing so. And clever race-goers who pay attention to tactics throughout the race may also reap the benefits.

What is more, the researchers found that racehorses may perform best when they pace themselves according to their personality type; very different pacing strategies led to equally fast times, supporting anecdotal notions of distinct “front-runner” and “chaser” horse personalities.

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