

The Bowker Lectures 2015



Lecture summary

Professor Robert Bowker, PhD, Neurobiology, University of Pennsylvania, 1979
VMD, Veterinary Medicine, University of Pennsylvania, 1973 BS, Biology/Chemistry, Springfield College, 1969.

Lecture 1: The "Good Foot": The formation of chambers and microvessels and the effects of vibrations

In young horses the cuneate frog can be seen to develop compartments and smaller chambers enclosing a dense microvasculature. The chambers and enclosed microvessels represent a unique functional system that can support the horse and dissipate energy simultaneously. Interestingly this complex system appears to develop and grow within the cuneate frog depending upon the environmental influences and stimulation. Unfortunately, during loading of the foot the center of pressure is concentrated at this zone of confluence of microvessels and connective tissues depending upon the shoeing or trimming condition of the foot. Such vibratory forces may result in deterioration of these tissue elements to produce clinical signs and pathologies related to navicular syndrome. These early degenerative changes can be detected with ultrasound methods several years prior to secondary bone and DDFT changes normally associated with navicular syndrome (NS). This proposed sequence of degenerative changes occurring during NS suggest that the earliest signs are occurring within the cuneate frog rather than in the navicular apparatus.

Lecture 2: The relation of the hoof wall and the coffin: Which one has the leading role in supporting the horse?

Much evidence suggests that the hoof wall is the primary support structure while others suggest that the coffin bone represents the primary support structure. One would hope that detailed examination of either the hoof wall or the coffin bone would provide evidence to support either of these two contentions. Evidence will be presented each that supports one of these hypotheses.

Lecture 3: The foot's sensory nerves mediate interactions between the back and head of the horse.

The distal limb of the horse has a robust sensory innervation which can detect and respond to

Know Hoof.....Know Horse

the many different stimuli within the environment and then mediate these sensations to the spinal cord and brain. During movements these sensations feed into the central spinal cord generator and can affect the movements and gait patterns of the horse for better or worse. Within the brain another neural generator exists dealing with mastication or chewing movements of the mouth. Sensory stimuli from the mouth including the teeth are known to have sensory feed-back inputs to this neural generator and other parts of the brain and upper cervical spinal cord. As a result, teeth issues can have inputs into the cervical spinal cord to affect the spinal cord generator and locomotion of the horse. Understanding the underlying physiological mechanisms of these relationships are only beginning to be examined in our laboratory.

Dr Kerry Ridgway DVM

Lecture1: The Role of Laterality and Straightness Training for the Equine Athlete
Since the time of Xenophon, every riding master, expert trainer, and thinking rider recognizes that essentially every horse starts with a more difficult side; one side more concave and the other more convex. Most remain this way for their entire lives. They exist within the context of what was referred to as the "Crooked Horse Syndrome." We now know the syndrome is actually the genetic pattern of laterality. It is laterality that governs the biomechanics of the "natural horse." Laterality serves the horse well in its natural wild/feral state, but is antagonistic to the biomechanics required of a ridden horse. This presentation will explore the biomechanics of the "natural horse" vs. the ridden horse and how to achieve ambidexterity.

Lecture2: The role of fascia in the biomechanics of the natural horse, versus the ridden horse.

Fascia is the material that covers every component of muscles from the overall muscle to the individual fibers and even smaller fascicles of the muscle. Moreover, every muscle and its fascia are connected to many more muscles and fascial tracts that extend from one end of the body to the other. Movement by the simple lever concepts of muscle function can only provide "robotic-like" movements. It is fascia that allows and governs all the "functional movement" that we take for granted in our everyday life's activities from walking to even standing upright. Fascial control extends to enabling the micro-movement and muscle control exhibited by a concert violinist or an Olympic level horse. This presentation will explore the role of fascia in functional movement.

Lecture3: Understanding the role of connective tissue in the healing of soft tissue injuries.

Soft tissue injuries to tendons, ligaments, joint capsules often create very problematic lameness issues. To heal them properly, one must understand the principles required for rehabilitation in order to achieve complete healing. In terms of healing time, soft tissue injuries must be considered in the same light as fractures. All of these structures are, in fact, fascia. This presentation will explore the means and techniques of rehabilitating soft tissue injuries. If properly done, 90 percent of animals can return to their previous level of training and performance.

Dr Andrew McLean, PhD (Equine cognition and learning), BSc (Zoology), Dip Ed

Dinner Guest Speaker - Ethology and Learning Theory in Horse Training

Dr Andrew McLean brings together his academic and equestrian achievements to talk about evidence based horse training. Understanding Learning Theory, Biomechanics and Ethology is vital for horse trainers and handlers alike. So much of the horse world relies on traditional methods and misconceptions on how horses learn, move and behave, yet there is so much evidence based knowledge on animal behaviour in the world. Andrew will talk about the horse's natural learning processes, and how to use these to improve horse welfare and training.

Dr Ann Nyland Phd

Lecture1: Myth and mania: Some fondly held misconceptions about horse nutrition. The need for correct information has never been more important than it is now. The rise of social media has allowed horse owners to access instant advice from many sources. This advice is often wrong and even dangerous.

There is no substitute for scholarly research. Everyone has opinions, but science-based evidence is quite another matter.

It is also a general belief that there is no scientific evidence for supplements or nutraceuticals. Nothing could be further from the truth. There is in fact a large body of scientific evidence for the effectiveness of many herbs.

To be addressed: the myths concerning soy; garlic; apple cider vinegar; linseed (flax); diatomaceous earth, nutritional iron; rose hips; calcium and magnesium in relation to 'Big Head' Disease; arthritis supplements.

Lecture2: The Worm has Turned. Worms: They're not what they used to be. The whole worming scene has changed dramatically in the last two decades.

Worming treatment in the 1980s and 1990s targeted the large strongyle (*Strongylus vulgaris*). Today, the current dangerous worm is the small strongyle (cyathostome). However, the majority of advice given today for worming horses is still aimed at the old regimens suited for eradicating the large strongyle (which by the way is no longer the problem). Today, the worming program should be aimed at the cyathostome.

Most equine health care professionals and worming companies continue to recommend worming treatment programs for horses based on knowledge and concepts that are 30-40 years old.

Mariette van den Berg BAppSc. (Hons), MSc. (Equine Nutrition), RANutr.

Lecture 1: Understanding horse foraging behaviour to improve feeding management and well-being

In this seminar Mariette will present a summary of her latest research work and it will also touch on a research program from the US named BEHAVE. BEHAVE (behavioural education for human, animal, vegetation and ecosystem management) is a research and outreach program that explores the principles of animal behaviour. The primary focus is on diet and habitat selection of grazing animals. Understanding how animals learn will enable us to train animals to fit our landscapes rather than having to modify our landscapes to fit our animals. Using grazing as a tool will reduce our use of expensive machinery, fossil fuels and toxic herbicides. By understanding how animals learn we can use their natural behaviours to manage weeds, enhance biodiversity, improve feeding systems, minimize use of riparian areas and much more.

Lecture 2: Integrated Pasture Management for Horse Properties; why biodiversity is important!

Learning about grasses may seem a bit daunting and possibly boring unless you already have an interest in botanical matters. Nevertheless, when you manage horses on pastures you technically become a grass farmer, so getting to know the plants that grow in your paddocks can empower you to manage your grazing system better. After all, the better your pastures, the healthier your horses will be. Even if you agist and don't directly have much to do with grazing and pasture management, get involved and get to know what's best for your horses! This seminar will discuss different types of grasses, growth and development and will particular focus on the importance of biodiversity.

Sharon May-Davis - B.App.Sc. (Equine), M.App.Sc. (4 Equine Theses), ACHM, EBW, EMR.

And **Dr Janeen Kleine (Osteopath) B.Clin.Sci., S.Ost.Sci., M.Ost.Sci(Paed.)**

Lecture 1: The Dilemma of the Absent Lamellae. Janeen Kleine and Sharon May-Davis will be together presenting the results and discussion of their findings as co-authored in their article 'Variations and Implications of the Gross Anatomy in the Equine Nuchal Ligament Lamellae.' Janeen will provide a brief overview of normal equine lower cervical motion, followed by discussion that an altered view of the structure and function of the nuchal ligament will change our understanding of caudal cervical biomechanics. This will then be expanded upon to present the impact that this different knowledge may have in our comprehension of the development of common pathology in the lower neck of horses as they age.

Janeen will present an overview as to how the horse's neck moves, particularly with reference to the nuchal ligament. A new and different understanding of the nuchal ligament will be discussed, to be followed by presentation of how this may impact upon the development of degenerative joint disease in the lower neck of horses as they age.

Sharon May-Davis - B.App.Sc. (Equine), M.App.Sc. (4 Equine Theses), ACHM, EBW, EMR.

Lecture 2: The Equine Elbow: A Joint in Trouble!

The equine elbow is a joint often overlooked as being a limiting factor in equine performance. However, when you compare the articulating cartilage within the elbow joint of horses that have been ridden or driven in harness, to those of horses that have done neither, then you begin to wonder why there is such a severe wear pattern in comparison of the 3 bones involved (humerus, radius and ulna). These patterns are not apparent in newborns and begin to appear post riding within 3 months. It therefore raises the question as to why we see such dramatic changes in these 3 bones when a horse is ridden or driven in harness and what we can do to limit this severe degradation of the articulating cartilage.

This talk will focus on the potential precursors to this condition and how to hopefully manage the condition once it has begun.

Lecture 3: Where have we gone since the 2012 Bowker Lectures?

In 2012, I presented a talk relating to the congenital malformation of C6 and C7 in Thoroughbred and Thoroughbred derivative horses. At the point when the information was submitted to the Journal of Equine Veterinary Science there were 19/50 Thoroughbreds presenting with either a bilateral or unilateral absence of the caudal ventral tubercle (CVT) from C6 and 3/3 for Thoroughbred derivatives. Of the 22 horses expressing this congenital malformation in C6, 11 transposed the CVT onto the ventral surface of C7. This greatly altered the dynamics of the cervicothoracic junction and we now have a clearer understanding of how and why these horses have an altered postural stance and locomotive action. This talk will focus on understanding the postural and locomotive ramifications of horses with this condition and the potential outcomes.

Jean Koek Dip EPT(student)

Lecture: Can Thermography be a Useful Tool in showing the Interdependency Between Hooves and Body?

I'd like to think that nowadays most people realise that if their foot hurts, there'll be a flow-on effect through their body - and vice versa - a sore back will change the way they move. Sadly this is not always the case in the human field and recognition is even less in the equine world.

However, more and more "body workers" are realising that if the feet aren't right, their best endeavours on the body won't last. And most in the hoof industry are accepting that body issues affect the way a horse places its feet.

In showing the overall thermal patterns of the body, thermography has the potential to give a clear picture of how the various areas of the body interact allowing treatment to be specifically targeted .

David LeMesurier

Lecture: Alternative methods to rebuild the Club Foot

Alternative methods to rebuild the Club Foot.

By thinking outside the square, can we facilitate changes in the club foot to overcome or at least improve movement in a high foot / low foot situation. By trying to change the long term habits of a horses in Resting Stance and Grazing position, can we in conjunction with traditional forms of dealing with the club foot make a positive improvement in horses.

Mariette van den Berg

Lecture 1: Understanding horse foraging behaviour to improve feeding management and well-being

In this seminar Mariette will present a summary of her latest research work and it will also touch on a research program from the US named BEHAVE. BEHAVE (behavioural education for human, animal, vegetation and ecosystem management) is a research and outreach program that explores the principles of animal behaviour. The primary focus is on diet and habitat selection of grazing animals. Understanding how animals learn will enable us to train animals to fit our landscapes rather than having to modify our landscapes to fit our animals. Using grazing as a tool will reduce our use of expensive machinery, fossil fuels and toxic herbicides. By understanding how animals learn we can use their natural behaviours to manage weeds, enhance biodiversity, improve feeding systems, minimize use of riparian areas and much more.

Lecture 2: Integrated Pasture Management for Horse Properties; why biodiversity is important!

Learning about grasses may seem a bit daunting and possibly boring unless you already have an interest in botanical matters. Nevertheless, when you manage horses on pastures you technically become a grass farmer, so getting to know the plants that grow in your paddocks can empower you to manage your grazing system better. After all, the better your pastures, the healthier your horses will be. Even if you agist and don't directly have much to do with grazing and pasture management, get involved and get to know what's best for your horses! This seminar will discuss different types of grasses, growth and development and will particular focus on the importance of biodiversity.

Suzan Parker - Founder – Equine Body Therapy Pty Ltd; EMRT Practitioner 12/2001, Diploma Sports Massage 5/2004, Cranio Sacral Therapist 11/2007, Diploma HEC (Human Equine Canine) 3/2009, Diploma Equine Stud Management 11/2011

Lecture: An introduction to EBT Soft Tissue Assessment and Response Testing (S.T.A.R.T)

Soft Tissue Assessment and Remedial Therapy (S.T.A.R.T) is a unique system of carrying out systematic and sequential assessment checks that provide specific indicators to soft tissue injuries. The best part of the S.T.A.R.T program is that it enables early detection before a general soreness becomes a long term injury. It utilises a specific set of assessment tests and indicators to establish a detailed insight into the soft tissue health of the horse.

This system of assessment checking is unique to the industry. It has been developed and structured in a way that is easy to learn and apply every day. It allows all horse people from the pleasure horse owner to the professional trainer to easily develop skills which will aid in the preventative maintenance of their horses. The S.T.A.R.T Program is simple to follow and apply and is supplemented with a Remedial Therapy that can be applied in the treatment of soft tissue problems. I have had remarkable results using the S.T.A.R.T Program and will have great pleasure in introducing it to the visitors to the 2015 conference.

Sarah Kuyken BAniSciMngt (Bachelor of Animal Science and Management, The University of Melbourne), DipEPT, MFR2 (Cert 2 in Myofascial Release), ECS1 (Cert 1 In Equine Craniosacral Therapy) and currently MAniSci (student, The University of Melbourne).

A review of stressors affecting cribbing horses.

“Cribbing, also known as windsucking or aerophagia, is a common stereotypy which is unique to horses. Whilst the problem is well known by horse owners (and cribbing horses are often avoided as potential purchases), not many horse owners really understand the causes of cribbing. For example – did you know that dressage horses are more likely to crib than endurance horses? Who gets more sleep – cribbers or non cribbers? Are cribbing horses slower learners than non cribbers? And is cribbing really linked to gastric ulcers? This lecture will explore some of the lesser known factors which affect cribbing including exercise stress, heritability and brain anatomy based on the research available in peer-reviewed journal articles.”

Dr Penelope Thompson – B.Sc, B.VSc Hons

Lecture details currently unavailable, will be updated as soon as received

Lecture: Pharmaceutical options in treating and managing foot pain.

Her experiences in the performance horse industry with respect to feet issues has been a major focus in the way she views foot treatments. In the last four years she has been assisting Andrew Bowe and his team in providing veterinary advice in treatment and pain relief.

She hopes to convey some of the more successful management strategies she has found useful in the daily management of acute and chronic foot issues and pain.

Andrew Bowe – B.App.Sc, Trade Accredited Farrier.

Lecture: The role of MSM in healthy hooves

MSM (Methylsulfonylmethane) has long been used as an equine joint supplement. It is thought to deliver a useable form of sulphur that fortifies joint cartilage.

During routine use for joint supplementation on a number of horses in Tasmania, their hooves were observed to be relatively and significantly free from seasonal pathogens. Since then, MSM has been widely supplemented specifically as an aid to equine hooves.

This lecture will investigate possible pathways of MSM involvement in the promotion of healthy hooves, including increased tissue resilience against pathogenic incursions due to bio-accumulation of sulphur or greater tensile strength via increased cross-linking between keratin fibres.