An Evolutionary view on

EQUINE OSTEOPATHY

Evolution of life demonstrates numerous of nature's and evolutionary principles which are essential to understand and try out the unique Evost Equine approach developed by Evost Fellows Peter Van Den Eynde D.O & Max Girardin D.O, (Part 1)

Evost: Evolutionary Medicine in the Osteopathic Field

Equine Osteopathy: Osteopathic Medicine applied in equine genus

Abstract

Combining human osteopathy and equine osteopathy with Evolutionary Osteopathy permits new perspectives in the equine osteopathic approach of diagnosis, treatment and education. We thus try in this article to offer a certain chronology and hierarchy in the diagnosis and treatment, instead of splitting up the horse into specialist visions of the musculoskeletal system, the visceral system, the cranio-sacral system and so on. Respecting life's chronology and hierarchy that is +/- 3.8 billion years old, and working hand in hand with it.

A .INTRODUCTION

Evost in a nutshell:

Health is as old as life, which means, at best present scientific guess: +/- 3.8 Billion years. The mechanism of evolution since then complexified and differentiated abundant life forms, generating as such an incredible biodiversity that dynamically adapts to each local environment, filling in the ecological niches, layer by layer and dimension by dimension.

This means that the observer of Nature should be constantly aware of two major gears of Life:

- **Hierarchy – Chronology** (which are the fundaments of the complexity level-layers of development observed and what is the emergent behaviour that sprouts out of it)

- **Dimension** (which dimension are we observing? Molecular, tissular, human, animal, biotope, etc…)

The aim of Equine Evolutionary Osteopathy is to focus on **Health** and not to find the dysfunction or disease. We try to work with the **health-potential** still present in the **mechanism**, to maintain the **system.** It's very important to integrate the basic osteopathic principles:

- **The body is a unity**
- **Relation structure and function (FORM)**
- **Self-maintenance**
- **Rational treatment (1+2+3)**

The puzzling fact is that humans, animals and most of nature we observe are in essence self-organized systems, each level is nested. This means that each single level layer of organization and complexity encloses all other levels within itself. (like the Russian Babushka dolls) Each jump in level-layer of complexity demonstrates in an emergent behaviour.

Example:

Horses based in Europe will show different health problems than for example horses based in the Emirates. The climate, flora and fauna will influence the horses health-system. The older level-layers of the list below **(1)** will depend on it, and influence the function.

For example if there is a problem with the absorption of inorganic minerals due to the climate, feeding or general stable management, the first spectacular symptoms will become obvious in the neural or/and vascular systems functions, (organ level) which most of the horseman won't observe in this stage. They'll recognise it as stiffness, difficult to bend, resistance to the bit, painful muscular system or lameness.

The mechanism behind this is where complexity theory comes into play; if we have a scientific-holistic tool, we don't have to focus on the separate facts or details, but on the Mechanism itself. And that is what the system-complexity theory does.

The first round of the mechanism in a shoebox (the beginning of our time +/- 20 Billion years ago…

1. **Polarity** (Just before the Big Bang)
2. **Space – Time** (Hierarchy – Chronology)
3. **Pattern** (Tension – or Force Field)
4. **Direction** (Position change – Vector)
5. **Form and emergence** (Behaviour or function creates structure, when structure is formed it governs function)

B. CHRONOLOGY OF COMPLEXITY LEVEL-LAYERS (1)

The increasing complexity of level layers:

- Original polarity (Big Bang)
- Energy
- Matter (sub nuclear particles)
- Atoms (all elements)
- Inorganic molecules (mainly: Na, C, Mg, P, S, C, H, O, N, K, Ca, Fe + oligo elements)
- Organic molecules (mainly Carbon related chemistry)
- Biomolecules (water + Protids 'CHONSP', Carbohydrates 'CHO', Lipids 'CH'
- **Complex systems jump to the emergence of life: Complex Adaptive Systems**
- Prokaryotic cells (mainly Bacteria and protozoa)
- Eukaryotic cells Flora & Fauna start (all cells that have a nucleus from unicellular to nested systems like mammals)
- Multicellular = Tissue
- Systems (digestive system, circulatory system, connective system, nervous system etc...)
- Organs (lungs, liver, kidneys etc…)
- Fauna up to mammals and humans
    - Sociology
    - Psychology
    - Memetics

C. SYSTEMS AND THE MECHANISM

Making the difference between system and mechanism is essential for a good comprehension, as occasionally the two terms can be inverted. System and mechanism's relation to health and its maintenance and potency are conclusive.

1. Definition used for a system:

Any system is composed by parts-agents or components which are related to one or another. It is this interrelationship or link that make out the difference between a system and a loose set of parts; this interrelationships represent the influence one component takes on the behaviour of the next. A system is usually delimited by a border, that is observable or definable but never hermetic 100% closed. The border will be effective for certain parts, but permeable for others. All systems are thus open or semi-permeable. A few explanatory examples:

- For the system blood vessel there is a clear border between inside and outside of the system, at least concerning the cells, but for the fluids there is no real border, it just perspires through the small cracks between the cells.
- For the system skin and mucus membrane are the borders, although certain molecules, atoms, rays, etc. just like go through as if there was no border.
- For a field with horses, the fences and gates are the effective border, but they're not for seeds, rodents, dogs, insects,…

The agents or parts that compose a system are directly dependable on the dimension at which we observe a system. Therefore it is important to include the dimension one is observing.

- For a system atom, its agents are the electromagnetically linked protons, neutrons and electrons.
- For the system molecule, its agents are the electromagnetically linked atoms.
- For the system tissue, its agents are the overall pervading liquids and linked cells (cell adhesion molecules)
- For the system house , its agents are the cemented bricks.
- For the system ecology, its agents are the interlinked flora, fauna, climate, soil, etc…

2. Definition used for Mechanism:

The mechanism is the set of resources that systems deploy in order to maintain themselves despite their continuous changing environment. The mechanism can thus be seen as a synonym for systemic form maintenance or systemic health maintenance.

3. Definition used for Form:

Structure and its behaviour is one. Form is the result of the mechanism at work (1,2,3,4,5) and as such forms the solution to the pattern, but in itself, it is a new polarity in a more complex level and higher dimension.

The consequence of the 'Mechanism' at work is complexity rising by jumps, and each increase in complexity convoys emergent behaviour. Natural selection will select out the fittest and when we look back it looks as if everything is perfectly adapted together, with all niches filled in. Adaptation or fitness increase does not always imply complexification within an organism, but is usually complexification of a metasystem - biosphere or ecological environment by mechanisms such as symbiosis, predation, co-evolution and self-organization (order or chaos).

4. Definition used for Environment:

The environment is what is outside the system (the system observed), and as such the stimuli that destabilize, or disrupt the system balance, always come from the environment – or always from the outside of the system observed!!!

5. Definition used for Polarity

Polarity **=** a difference, for instance a concentration or mass, different from the environment. Nature erases polarities because they form a force or tension field (increase in energy). **Force or tension fields** generate position changes or movement, within a certain time frame.

Example:

Splints caused by injury to the interosseous ligament or the periosteum (soft tissue covering bone) of the splint bone or adjacent bone. If the covering tissue of the bone is injured we see initially soft tissue swelling which progress to bony swellings. The splint is the consequence of the system trying to get rid of polarity. The splint is the **Form solution-consequence** of this polarity, and in the environment this new form forms a new polarity.

6. Definition used for Health:

Health is the possibility a system has, to maintain its form in a dynamic balance as close as possible to its original maximal inherent potential despite the continuous changing direct environment (its adaptability). Health of a system is expressed by its characteristics of congruency and stability. Health has no pattern.

The healthier a system is , the more coherent and dynamically stable.

Health and health-maintenance can thus be seen as parallel-evolved behaviours of complexity, or better, as behaviours emerging from this evolved complex adaptive system.

SYSTEM AND ENVIRONMENT, interact and react, whereby the balance disturber, the 'disruptive stimulus' always comes from the environment trying to erase the polarities, while complex and complex adaptive systems tend to maintain themselves in the environment. (once a system is formed, it tends to maintain itself = stickiness)

In nature's actual state of development and evolution the Mechanism can be shoe-boxed as follows:

1. **Polarity** generating a
2. **Force and tension field,** that generates position change or movement and as such
3. the **Environment impacting on the system** (= stimulus)
4. **Form** has **several reaction possibilities** which **modify the environment, and the system itself.**

D. What is complexity all about?

Complexity theory states that critical interacting components self-organize form potentially evolving structures, exhibiting a hierarchy of emergent system properties. In other words, as soon as there is more than one constituent part or agent, and there is an interaction between these agents, they form a complex system.

Complexity ≠ Complicated

Many interacting parts

Simple individual rules

Emergent properties

The whole is more than the sum of the part

This 'more 'can be described as 'emergence' or emergent properties coming out of the complexity. Emergent properties are characteristics of the whole which cannot be reduced back to the properties of the single parts.

Self-organisation typically demonstrates emergent behaviour

E. How does the system response when dealing with a disruptive stimuli?

- Complex systems (non-living)
    1. Absorption of the stimulus
    2. Reversible form change (tensegrity)
    3. Irreversible form change (decomplexification or destruction of a part or the whole system)

- Complex adaptive system (fundamentally living or living agents – cells)
    1. Absorption of the stimulus
    2. Metabolization of the stimulus (transform the stimulus and excrete a part of it)
    3. Reversible form change (tensegrity)
    4. Irreversible form change
    5. Replication
    6. Differentiation (loss of potential = specialization)
    7. Decomplexification (destruction of a part or the whole system)

F. “How do we apply the Evost Fellowships’ thoughts and Nature’s principles in equine practice?”

The answer is: Evost is a philosophic approach, where we develop a critical attitude, and learn “to see” instead of “gazing” . We can apply the insights of ‘the mechanism at work’ at just about every level and dimension, this means that the principles are applicable on virtually every theme. More about the Equine Evolutionary Osteopathy in part 2.

G. References and notes

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EQUINE OSTEOPATHY

Evolution of life demonstrates numerous of nature's and evolutionary principles which are essential to understand and try out the unique Evost Equine approach developed by Evost Fellow Peter Van Den Eynde D.O (Part 2)

"How do we apply the Evost Fellowships' thoughts and Nature's principles in equine practice?"

1. Introduction

Most of what we know about equine osteopathy has been borrowed from human osteopathic techniques, theories and research. Human osteopaths have often been asked to treat the animals of clients that have experienced the benefits of osteopathic treatment for their own problems.

It is very important to know why a horse displays a change in attitude. Animals do not speak our language, but they have their own way of expressing themselves ultimately telling us more than we think. It is up to us to learn an recognise their communication and react accordingly. Equine Evolutionary Osteopathy is a philosophical approach, with a critical attitude, to learn, see and feel. We can apply 'the mechanism at work' at just about every level and dimension, when for example a horse got:

- a decrease in performance
- a sprain, fall or other trauma
- a decrease in mobility or associated pain with movement
- pain and stiffness
- resistance to the bit
- refusal to perform
- viscera problems
- immunity problems
- Change in attitude

These are undoubtedly some familiar situations to horseman. The essential requirements to recognise this situations are:

- Your knowledge of facts in the particular domain involved
- Your knowledge and deeper understanding of the evolutionary-developmental chronology and inherent hierarchy of the system and environment involved
- Your aptitude to observe, 'see the mechanism,' and recognize its returning principles.
- Train the basic questions 'methodology' you apply systematically until it has become an unconscious mode of functioning.

These are in chronology the questions you should ask yourself when you observe "the mechanism at work" in a certain dimension and thus a certain level layer of complexity.

❖ **To know what the dimension is we're dealing with, we have 4 elementary questions:**

- What is the system?
- What is the environment?
- Where is the border?
- What is the stimulus from the environment?
-

❖ **To know what the level-layer or the complexity level is we're dealing with, we have to know:**

- What are, who are the agents?
- What are the interactions?
- How strong are the interactions?
- What is the state of these? (Potential Health, resilience or redundancy is as high as the absence of patterns)

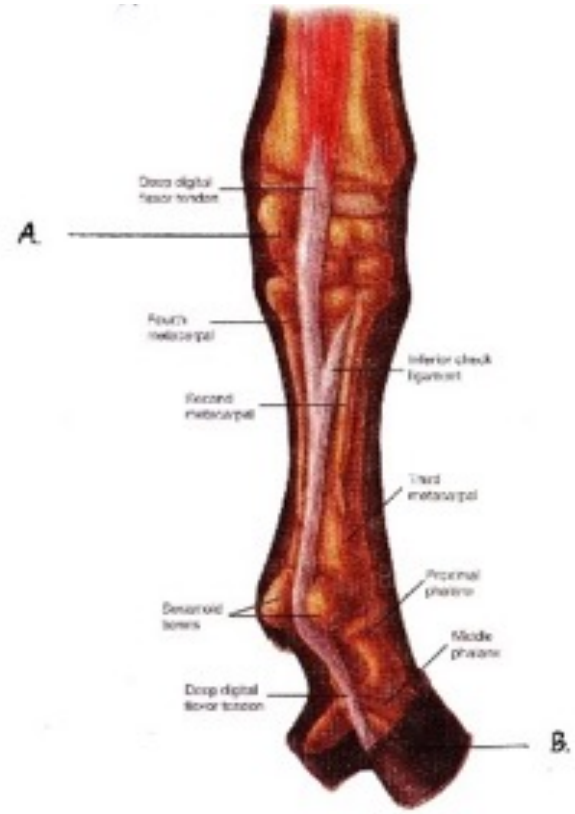
When these questions are answered, when dimension and level-layer of complexity are obvious, comes the next question: where does this fit in the entire chronology and hierarchy?

The answer of this question gives you the preceding steps or underlying level-layers and dimension to check for their form, because it is usually there that lays the cause of the pattern formation or health resilience deficiency.

2. Experiment

The affections of the biomechanical system are one of the first and most significant causes of lameness in sport horses (Seeherman 1992b). 60% of the dysfunctions are situated in the anterior leg, 95% of which are under the carpus , and which influence the osteo-articular structures (Stashak, 1987; Trotter, 1996). The os navicular problem for example is responsible for 35% of chronical lameness in the front leg (Colles, 1983: Turner, 1990), and creates a lot of others problems in the mechanism/system at work.

In 2004 we made a scientific work about: **The influence of an osteopathic manipulation of the os carpal accessorium (os pisiforme) bone (A) related to the mobility of the distal phalanx (B), using a force plate as measurement tool.**



With this work we proved out the functional importance of the os carpal accessorium bone in relation to the mobility of the distal phalanx, in order to obtain a better distribution of the vertical forces in the hoof (fig. 6.8). In literature the importance of equilibrium in the distal phalanx **(HOOF BALANCE)** is accepted, but no documentation on the interrelation between the os carpal accessorium bone and the distal phalanx can be found. In practice, orthopaedic shoeing is used to improve equilibrium in the hoof, usually without reference to the structures above. Can you imagine what the forces are in a horse foot, if a horse is landing after jumping fences from 1.50 – 1.60 m. in situation 1., if you know that a horse is carrying 65% of his weight in his front legs.

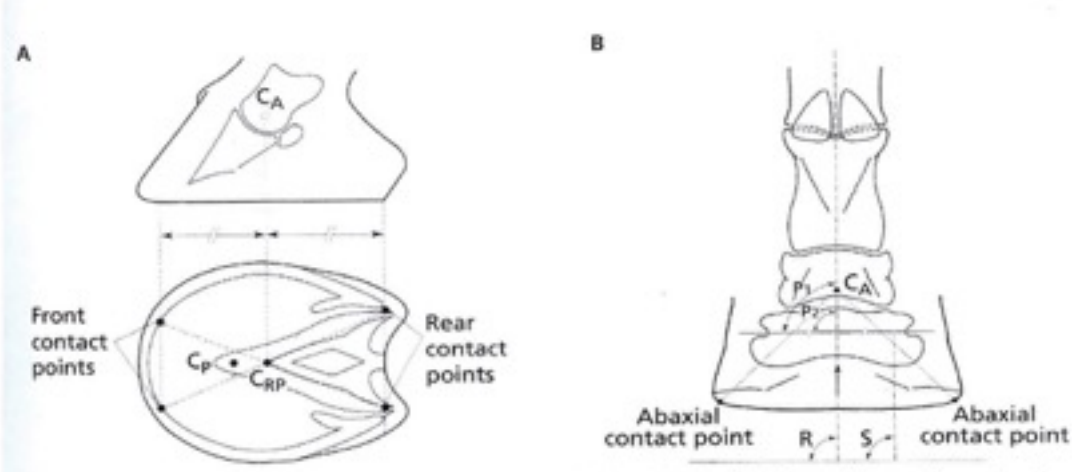


Fig. 6.8 Schematic representation of foot balance showing the ideal equilibrium of the foot relative to the center of articulation in the distal part of the second phalanx. (**A**) Craniocaudal balance: Lateral and solar view and (**B**) mediolateral balance: heel view. C_A; centre of articulation, C_P; centre of pressure, CRP; central reference point.

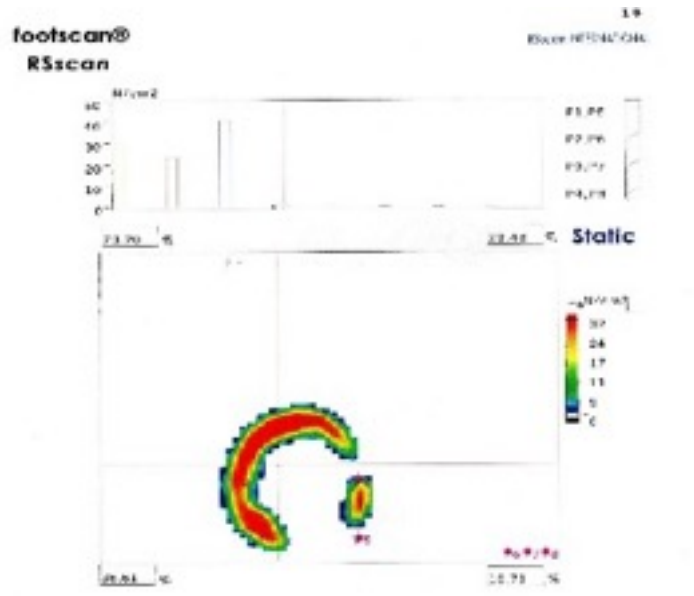


Fig. 1 Hoof print before manipulation of the os carpus accessorium

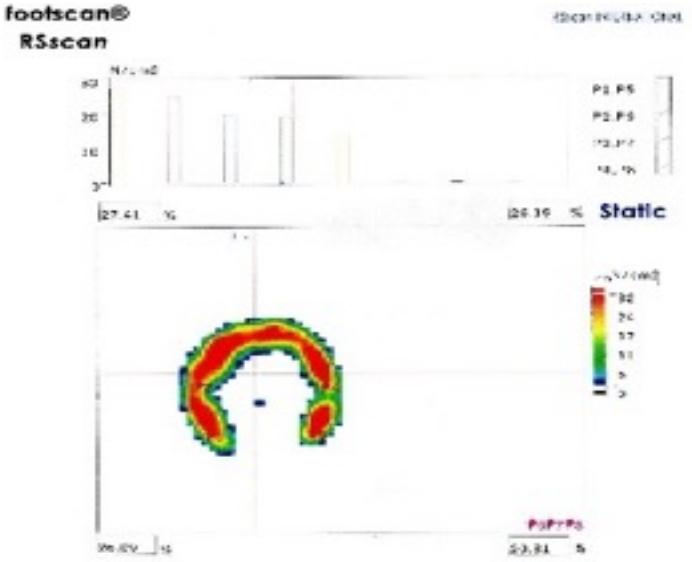


Fig. 2 Hoof print after manipulation of the os carpus accessorium

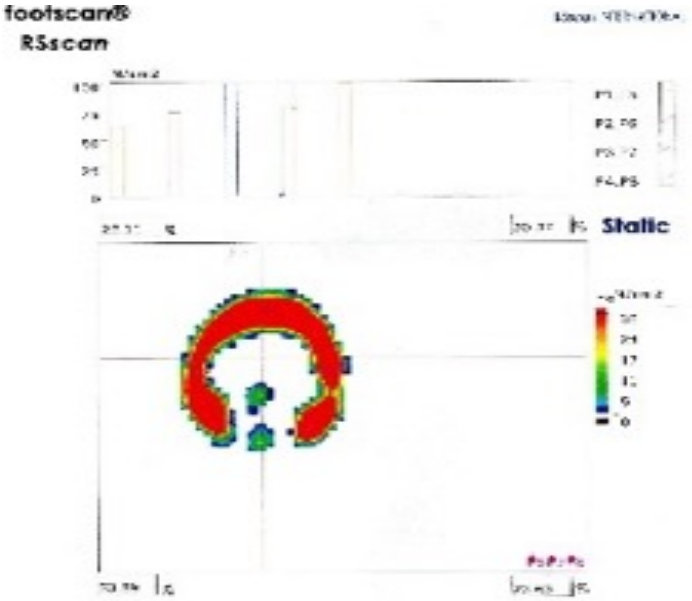


Fig. 3 Hoof print 2 weeks after manipulation of the os carpus accessorium

During 2004 and 2014 we observed a lot of horses with this problem, and this author can say by now that the relation os carpal accessorium bone and **the rest of the body** is quite relevant. What this author want to demonstrate is, that a simple dysfunction of the os carpal accessorium bone can cause a change in how that dimension works, and that a repeating structural dysfunction of the os carpal accessories bone is showing us often visceral problems (liver, stomach). So, if we find a structural dysfunction the first question we have to ask ourselves is why does the system functions this way? Is it due to the systems' environment, border or stimulus from the environment. What are the agents, interactions, how strong are the interactions and what is the state of the interactions. For example is the problem due to:

- a structural problem, for example a hyperflexion of the carpus
- an adaptive behaviour to find a new balance, with structural origin
- a compensation due to a visceral or physiological problem
- a shoeing or trimming problem
- a teeth problem (TMG)
- a rider or training problem
- a surface problem

The main goal as an Evolutionary Equine Osteopath is to look what the chronology of the problem is, and how we can try to help the horse to solve it, or why doesn't his own **health-maintenance** functions properly?

As a human and equine osteopath I'm convinced, that if we focus on **HEALTH = NO PATTERN,** we can maintain the system, and focus on structure and function as one, to create harmony in the whole system, at all levels. Whatever the horse body tells us about structural dysfunctions, the following systems are checked in chronological order, to try and understand why the horse **HEALTH-MAINTENANCE** is not functioning properly.

3. Practical Evaluation

- A general inspection of **the system** gives us a first idea about the condition, behaviour and eventually pattern of the horse mechanism. At the same time we observe **the environment/ border** where the horse is stabled. Is there enough space, light, social interaction with other horses, how often are the horses going out in the field, how often are they ridden, what's the training program, what's the feeding program, what's the vaccination program, surgery, was there a change in the stable management, etc…

- After this general observation, we take the horse out for a walk, trot and canter on a circle and straight line, looking for lameness, stiffness and irregular movement.

- Dentistery is checked, because of the important relation with the digestive tube (absorption-elimination) and the influence on the rest of the mechanism.

- A general inspection of the trajectory system, this means the intercellular system, intercellular fluid streams = fluid who is in the tissue and not in the vessels yet. This system tells us more about the quality of the connective tissue (H_2O, matrix, cells, fibres), and is important to know what's going on in the system. What is the texture, is it systemic, regional or local?

- Then we check the vessels (venous, arterial and lymphatic system)

  Looking for pulsation at the front and hind legs, which gives an indication if we got a local, regional or systemic problem.

  Example:

  & pulsation in one leg is often a local problem, like for instance a drop in the hoof.

  & pulsation in two or more legs is often a systemic problem, for example due to excessive proteins or sugar and/or viral infection.

- Visceral system (gastro-intestinal tube, liver & kidneys, uro-genital system,…) A lot of structural problems have their origin in this systems.

Example:

Difficulties or resistance by tighten the girth, often means a stomach, liver or first rib problem, or sore muscles in general due to a physiological disturbance. More and more we see visceral problems due to feeding problems, which are influencing the absorption-elimination function. A lot of horses' feeding program doesn't fit in relation with their work they do, and is influencing their health system in a negative way.

- Nervous system: do we have a communication problem due to a local, regional or systemic disturbance.

- The structural system is checked in consideration with the above parameters, and treated in relation with the **agents** and the **interaction of the agents,** finally to know what the stimuli is from the environment.

4. Conclusion

It is the author's sincere hope that this article has been of use and that the material has helped readers make sense of the Evolutionary Equine approach. There are options for improving **health** that do not require drugs, prescriptions or injections. Evolutionary Equine Osteopathy represents one such option.

Best of luck with your health!

5. References and notes

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