# Assessing the potential of Osteopathy in the treatment of African Horse Sickness Virus

Author: Sonet Raath

Institution: London College of Animal Osteopathy

Program: International Diploma in Equine Osteopathy

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## I. Abstract:

**Background:** The aim of this thesis is to determine whether osteopathy can play a role in the successful recovery of horses infected with AHSV (African Horse Sickness Virus).

**Methods:** Research regarding the treatment of viruses using osteopathy, in humans and other animals, will be evaluated to discover if the principles can be applied directly to horses. Common symptoms shown by horses suffering with AHSV will be evaluated from an osteopathic perspective. More specifically, the use of osteopathic lymphatic pump techniques to enhance the body's innate immune response will be researched. Osteopathic philosophy will be prevalent throughout this text and emphasis will be placed on the belief that the body has an innate ability to heal itself, provided it is placed in it's optimal environment.

**Results:** Osteopathy shows great potential as a component in the AHSV treatment protocol for equines. Further research is required to determine the degree of influence OMT and LPT can have on the innate immune response of equines infected with AHSV.

**Keywords:** osteopathy, immune system, virus, African horse sickness, lymphatic pump techniques.

**II. Index:**

**I.**
**Abstract.……..……...……..2**
**II. Index.……2**
**III. List of**
**Abbreviations.…….……3**
**IIII. Inspiration.……...……3**

**1. Introduction to Osteopathy.…….……...…3**
**1.1 Origin/ History of Osteopathy.…….…….……3**
**1.2 Introduction to Osteopathic LPT's.……..……4**
**1.3 Osteopathy as Immune System Support during Active**
**Infection…….....……6**

**2. African Horse Sickness Virus.….……...…7**
**2.1 Introduction to AHSV..…….…….…….....…7**
**2.2 Traditional Treatment and Prevention Measures used against AHSV.……...……8**
**2.3 Osteopathic LPT for Equines and Potential AHSV Treatment Mechanisms:……...10**

**3. Discussion……..……...……...….13**

**4. References ……..……..……...……...….14**

**III. List of Abbreviations:**

- African Horse Sickness (AHS)
- African Horse Sickness Virus (AHSV)
- Osteopathic Manual Therapy (OMT)
- Osteopathic Lymphatic Pump Techniques (LPT)
- Somatic Dysfunction (SD)
- Doctor of Osteopathic Medicine(DO)
- Mucosa-associated Lymphoid Tissue (MALT)

**IIII. Inspiration:** "I have discovered that Nature is never without necessary remedies. I am better prepared today to say that God or Nature is the only doctor whom man should respect. Man should study and use the drugs of his drug store". Dr. Andrew Taylor Still founder of osteopathy.[1]

# 1. Introduction to Osteopathy

## 1.1 Origin/ History of Osteopathy:

In order to determine whether osteopathy can play a valuable role in the treatment of AHS, one can study the origins of osteopathy. Osteopathy was developed from 1874 by Dr. Andrew Taylor Still, who was a traditionally trained medical doctor. Dr. Still believed that the medical practices of his day were inadequate to treat disease, and that there had to be a better alternative. Dr. Still proved to be correct. Other notable physicians who questioned patient care prevalent in their respective times include Hippocrates (c. 460- c. 377 B.C.E), Galen (c. 130- c. 200), and Sydenham (1624-1689). Dr. Still's vision for osteopathy was for it to replace the majority of the traditional medical care patients were receiving for a wide variety of diseases and aliments. Dr. Still was an advocate for the idea that the body could heal itself, and that the musculoskeletal system greatly influenced this innate ability of self-healing. Dr. Still also gathered religious philosophies and concepts from various Methodist, Spiritualist and Universalist advocates of the 19th century. Dr. Still famously quoted that "there is a God of truth. All his works, spiritual and material, are harmonious. His law of animal life is absolute. So wise a God had certainly placed the remedy within the material house in which the spirit of life dwells. These remedies can be accessed by adjusting the body in such a manner that the remedies may naturally associate themselves together, hear the cries, and relieve the afflicted".[2] The basis of Dr. Still's ideas came from his in-depth and continuous study of human anatomy and physiology,[2] combined with his working knowledge of physics, biology and chemistry. Dr. Still named his newfound philosophy "Osteopathy", the "osteo" part originated from the Greek name for bone, and the word "pathos" is Greek for disease. Dr. Still believed that the musculoskeletal system is paramount in the formation and treatment of disease, and that osteopathic manual therapy could remove SD, reducing restrictions in blood, nerve and cerebrospinal fluid flow. And further, that the removal of these restrictions

by osteopathy would free the body's innate self-healing mechanisms, enabling the body to rid itself of disease and infection. After several years of experimentally integrating osteopathy into his practice, and using it in conjunction with allopathic medicines, Dr. Still virtually ceased the use of medicines. He concluded that he consistently achieved similar, and in some cases better, results when using osteopathy as a standalone treatment in comparison to using medicine to treat disease. Dr. Still wrote the following in regards to 19th century medicine "Having been familiar myself for years with all their methods and having experimented with them I became disheartened and dropped them".[3]

**1.2 Introduction to Osteopathic LPT:**

Dr. Still originally used OMT to relieve somatic dysfunction, increase the flow of blood and lymph, and ultimately to enhance the innate self-healing capacity of his patients. Decades later, scientific proof supporting Dr. Still's theories are available. Lymphatic pump techniques (LPT) have been developed by osteopaths with a similar goal in mind, to enhance the flow of lymph throughout the body, and to enhance the body's innate immune response to infection. LPT consist of repetitive rhythmic oscillations that uses that body's levers to pump lymph. These LPT consist of a pressure/ traction phase which is useful to engage the fascia, followed by a relaxation phase which enables the movement of fluid, specifically targeted at lymph. Sufficient blood and lymph flow is paramount to enable the body to rid itself of pathogens. Lymphocytes, which are a type of lymphatic cell, and found in lymph fluid rid the body of foreign microorganisms through a highly coordinated immune response. Lymphoid organs include the following: lymph nodes, spleen, liver, thymus, MALT, tonsils, red bone marrow and the appendix.[26] Immune surveillance is the process by which immune cells are circulated throughout the bloodstream, through lymphoid organs, before they're returned to the bloodstream via lymphatic vessels.[27] Hence it is of great importance that the flow of lymph is

unobstructed and occurring at maximum efficiency, which is prohibited by the presence of somatic dysfunction (SD). (SD) can be explained as “impaired or altered function of related components of the somatic (body framework) system: skeletal, arthrodial, and myofascial structures, and their related vascular, lymphatic and neural elements”.[28] The Osteopathic Health model of the Respiratory-Circulatory system states that “Health is the efficiency of blood flow through arteries and veins, efficient lymphatic drainage and effective respiration”. (London College of Animal Osteopathy). Dr. Andrew Still quoted “We lay much stress on the uses of blood and the powers of the nerves, but have we any evidence that they are of more vital importance than the lymphatics?...the system of the lymphatics is complete and universal in the whole body …as they are undoubtedly the life-giving centres of the body”.[4]

Several studies have shown that LPT’s successfully increase volume of lymph flowing through the body.[5, 6, 7, 8, 9, 10] It has been found that when the circulation of lymph is inhibited, there may be a delay in the immune response to a pathogen.[11, 12] LPT when used in humans are effective when applied to the abdomen (splenic and liver pumps), feet and legs (pedal pumps), and thoracic cage. LPT have been used to improve oedema, and aid the body in ridding itself of infection.[12, 13] Animal studies suggest that LPT increase the output of leukocytes[14] as well as the uptake of lymph.[7, 8, 10] It is highly possible, though not yet proven by research, that LPT may enhance immune-mediated response to infectious disease by enhancing the release of immune cells into lymph and the flow of lymph. In dogs LPT have been proven to improve both the flow of lymph and the concentration of immune cells contained within lymph.[8] This study shows that 4 minutes of LPT application to dogs led to a net increase of 6 X $10^8$ leukocytes into lymphatic circulation. These leukocytes included cells of both the innate and adaptive immune system. Interestingly neutrophils, monocytes, total lymphocytes, CD4+ T cells, CD8+ T cells, IgA+ and IgB+ cell numbers were similarly

increased. A study in rats has shown that the presence of *S. pneumoniae* can be significantly reduced by abdominal and thoracic LPT.[25] Groundbreaking studies in humans prove that LPT have the ability to enhance innate immunity in healthy individuals as well as those with acute infectious disease. Further studies are necessary to solidify the hypothesis that LPT enhances the innate immune response, and to which degree.

**1.3 Osteopathy as Immune System Support during Active Infection:**

Osteopathy played a crucial role during the widespread 1918 outbreak of Spanish Influenza. OMT in addition to standard medical care was provided to those infected.[15] A recent study was conducted by DO Eva B. Shay to "identify the historical impact of Osteopathy on the 1918 influenza pandemic". It was determined that OMT led to a reduced number of fatalities in individuals infected with Spanish flu. Records suggest that patients of DOs infected with Spanish flu had a 0.25% mortality rate, and patients with secondary pneumonia had a 10% mortality rate. In contrast patients receiving standard medical care, infected with Spanish flu, had a 5-6% mortality rate, and those with secondary pneumonia had a roughly 33% mortality rate (with a 68-78% mortality rate reported in larger cities). These figures were gathered from a study published on pubmed by Hruby RJ, Hoffman KN titled "Avian influence: an Osteopathic Component to Treatment".[16] It is important to note that the accuracy of data in relation to the 1918 outbreak of Spanish flu is questionable. Factors to consider include the lack of modern scientific methods, inconsistent data collection practices and lack of universal standardized reporting measures. Figures supporting the low mortality rate of patients from DOs were obtained from self-reported questionnaires sent out by the American Osteopathic Association. Diagnosis was based upon representation of symptoms, as there were no laboratory tests. For these reasons diagnostic uncertainty is likely. Another import aspect to consider is that there were no specific OMT techniques used universally to treat Spanish flu.

Although, there is significant similarity reported across literature related to the treatment of Spanish flu using OMT. Treatment was focused on the paraspinal muscles of the cervical, thoracic and lumbar spine; the thoracic inlet and more specifically the scalene muscles, ribs and clavicle. In addition somatic dysfunctions unrelated in origin to Spanish flu were also treated when discovered, in adherence to the osteopathic approach of viewing the patient as a whole and ensuring unobstructed flow of all bodily fluids. Although OLPT were yet to be named and acknowledged during the Spanish flu pandemic, some reports mention that the chest area of patients was vibrated using the fingertips, which may have had a similar effect as modern OLPT. Treatment of influenza using OLPT was widely reported from 1928 onwards.

## 2. African Horse Sickness Virus

### 2.1 Introduction to AHSV:

AHS is a viral disease spread mostly by midges of genus *Culicoides*, endemic to sub-Saharan Africa. Midges act as biological vectors by feeding on the blood of infected horses, after which the virus replicates in their salivary glands, and is then transferred to uninfected horses when they are bitten. Other insects may also spread the virus, including mosquitoes, ticks and possibly biting flies.[17] AHS contains double stranded RNA, and belongs to the family *Reoviridae* and genus *Orbivirus*. There are 9 distinct serotypes of AHS, and 4 clinical forms which arise from distinct combinations of serotypes. The clinical forms include pulmonary, cardiac, a combination of pulmonary and cardiac, and horse sickness fever.

1. Horses infected with the pulmonary form have a 95% mortality rate and often suffer a relentless death form lung oedema. They also present with a fever >40 degrees Celsius and depression. Coughing and dilated nostrils with frothy discharge is noted. Death commonly occurs from anoxia within 7 days from the start of clinical signs.

2. The cardiac form is considered subacute and horses have a 50% or higher mortality rate.

They present with a fever of 39-41 degrees Celsius and subcutaneous oedema of the supraorbital fossa, neck, chest and shoulder. Fatalities commonly occur within 7 days from initial onset of symptoms.

3. Horses are most commonly infected with a combination of the cardiac and pulmonary forms, and these horses have a 70-80% mortality rate. Symptoms include depression, fever, and oedema of the supraorbital fossa and dyspnoea.

4. The horse sickness fever form is considered the least severe and the survival rate is high. A fever of 40-42 degrees Celsius lasting 2 to 3 days is noted. This form is most often seen in horses that have immunity to some serotypes of the virus, or in naturally resistant equines like donkeys or zebras of African origin. Mortalities are very rare.

Horses that recover may develop immunity in the form of memory antibodies to the specific serotype that infected them, but they have only partial or no immunity to other serotypes.[18] The degree of immunity possessed by horses whom survived infection is unknown. Viraemia commonly lasts 4-8 days in horses, 4 weeks in donkeys and up to 6 weeks in donkeys. It's important to note that zebras and donkeys undergo extended viraemia, while remaining asymptomatic, or showing only minor signs of disease (similar to that seen in horse with the horse sickness fever form). Thus they act as highly successful maintenance hosts of AHSV.

**2.2 Traditional treatment and prevention measures used against AHSV:**

There is no recognised anti-viral medication for the treatment of AHSV and treatment is supportive and often palliative. Treatment protocols aim to keep the patient comfortable, hydrated, fed, maintain optimal body temperature and to support the immune system. Measures are also taken to prevent/ minimize secondary infections and to limit stress and exertion of the patient. During AHS season (late summer to fall) horses are commonly stabled from dawn to dusk, which is when midges are most active, in the hope of reducing midge bites. Horses are also sprayed with insecticides commonly containing pyrethroid or

cypermethrin, which kills insects. Horse owners are encouraged to take their horses rectal temperatures at least twice daily, and to be familiar with the normal range of temperature fluctuation for each individual horse. An elevated temperature is often the first sign of AHSV, and part of the body's defence mechanism. Other early symptoms include sweating, increased respiration and pulse rates, lethargy and decreased appetite, and reddening of gums caused by dilation of blood vessels. It has been shown that a fever is an important part of the body's defence against disease and hence no efforts are made to break the fever of a horse infected with AHSV, unless the fever surpasses 40.5 degrees Celsius, at which adverse effects within the body start to occur.[19] Treatments for infected horses, administered by owners, include herbal teas and remedies, which are administered with the aim to assist the horse's immune system in it's response to the disease, and to increase appetite and hydration of lethargic horses. Research into the effectiveness of these remedies does not exist as of yet. Treatments administered by veterinarians include: antibiotics to treat secondary bacterial infections, oxygen support to aid breathing in severe respiratory cases, and intravenous fluid therapy in dehydrated patients. This chapter has been written from knowledge that is widespread throughout the equestrian community of South Africa, as there exists limited studies or research into the efficacy of treatments commonly used to combat AHSV.

Onderstepoort Biological Products currently produce the only registered vaccine against AHSV. The formula of the vaccine has been unchanged since December 1994. South African law requires all horses to be vaccinated against AHS (Animal Diseases Act 35 of 1984). The vaccine contains live attenuated strains from 7 of the 9 serotypes, and is split into two doses. Horses older than 6 months have to receive both doses yearly between 1 June and 31 October, with at least 21 days between doses. Dose 1 contains serotypes 1, 3 & 4. Dose 2 contains serotypes 2, 6, 7, & 8. Serotypes 5 and 9 have been removed from the vaccine. There is limited research into the effectiveness of the vaccine. Question polls and owner reports on the

Facebook groups named “AHS African Horse Sickness – the equine challenge”[20] and “African horse sickness alerts in sa and surrounding”[21] suggest that the vaccine does not provide complete protection against AHS. Numerous owner reports of fatalities in vaccinated horses are seen. New research needs to be conducted in relation to the Onderstepoort Biological Products vaccine for AHS.

**2.3 Osteopathic LPT for Equines and Potential AHSV Treatment Mechnanisms:**

The effect of LPT has been widely studied in humans, dogs, and rats.[23, 24] No evidence has been found of LPT to being applied to equines. Osteopathic LPT can be adapted for use in equine patients by considering their unique anatomy. The basic principles of using LPT in humans and other animals can be followed in the treatment of equines. It is likely that lymphatic techniques can produce more favourable results in horses than in humans. This is due to the fact that horses have a thinner subcutaneous layer than humans, which would make engagement of superficial lymph nodes and vessels more effective.[22] In proportion to humans, horses also have a higher number of lymph nodes. Horses have roughly 8000 lymph nodes, in comparison humans have roughly 600. This means that horses present with a vast number of potential LPT sites of engagement. Specific LPT that are prevalent in the treatment of pneumonia, influenza, and oedema in humans will need to be adapted to be suitable for use in equines. Clinical trials and research into the topic of treating horses for various AHS symptoms using OMT is necessary to form a conclusion regarding its efficacy. Horses infected with AHS commonly die from organ failure and oedema. As determined by a clinical trial conducted by the J Am Osteopath Association, OMT may reduce oedema and speed up healing in patients with lower-extremity ulcers.[29] Further studies are required but visceral osteopathy may be helpful to alleviate pain, enhance function of organs and improve circulation in horses infected with AHS. Another promising way in which OMT may aid in

the horse's recovery from AHS is by enhancing the immune response to vaccination. Anecdotal reports suggest that OMT can enhance peripheral immune augmentation to vaccines.[30] Furthermore, significant evidence exists to confirm that the presence of SD limit the body in its response to pathogens, and that the removal of SD can enable the body's innate immune response to occur at the necessary level to reduce the prevalence and duration of disease. Based on the data collected and analysed in this dissertation, OMT shows promise as a component of the treatment protocol of AHSV in horses. Further research is needed, but OMT and LPT may be beneficial to remove SD, improve lymph flow and circulation, and enhance the vaccine and immune responses to AHS in horses.

## 3. Discussion

This thesis aimed to determine whether osteopathy, more specifically LPT, can play a role in the treatment of AHSV in horses. There are no studies available at the time of horses being treated with osteopathic LPT, therefore studies researching the effect of LPT in diseased humans, rats and dogs were considered. Between the months of October 2025 and January 2026 studies were gathered from databases PubMed, Research Gate, Google Scholar, Science Direct and NIH (National Institutes of Health). Studies researching AHS, LPT, osteopathy to treat viruses, origin of osteopathy and LPT's effect on immune response were considered. Furthermore data was gathered from osteopathic books, AHS facebook groups, articles on AHS and course contents from LCAO's Diploma in Equine Osteopathy. Since there is limited research regarding the treatment of horses with osteopathy, and the treatment of AHSV, a considerable percentage of this paper was written from personal experience in the equine industry.

Furthermore, it was assumed that equines would show a similar immune response to osteopathic treatment than humans and other animals. Based on this assumption the future of

using osteopathy as a valuable component in the AHS treatment protocol looks promising. However, clinical trials and structured further research is required to determine the degree of influence osteopathy can have on the innate immune response of the equine to AHSV.

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