The Effect of Massage on the Biological Systems of the Horse

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Introduction

Massage therapy is the manipulation of the soft tissue of the body in order to achieve specific goals of drainage, relaxation, stimulation or releasing muscle-related problems such as trigger and stress points. (Hourdebaigt 1997)

The horse contains many biological systems which work together to maintain life. (Maloney 2000) Through the use of the skin as a medium, massage directly affects the nervous, circulatory, lymphatic, muscular, respiratory, endocrine and skeletal systems. Massage assists with the circulation of fluids (blood and lymph) allowing more nutrients and oxygen to reach the associated tissues and can also relax the central nervous system. Due to the interconnectedness of all systems, massage can also indirectly affect the digestive, urinary and reproductive systems by contributing to their improved overall functioning. (Hourdebaigt 1997) Let's look at the directly impacted systems in more detail.

The Nervous System

The nervous system acts as a control mechanism for the body. It is made up of nerve cells, which transmit electrical messages from one part of the cell body to another. When these structures are combined, they form an electrical network known as the nervous system. Sensory cells respond to impulses by emitting electrical signals, for example free nerve ending in the skin. (Parker 1998)

Maloney (2002) describes the nervous system as comprising; the brain, spinal cord, nerves, nerve fibres and nerve cells. Messages from the outside environment are received by sensory receptors or neurons which sense changes, such as pressure on the skin and send a message along a nerve fibre to cells in the spinal cord. These cells then relay the message through relay neurons along more nerve fibres to the area of the body that can react to such a stimulus, for example, a muscle to release a trigger point.

The nervous system comprises the peripheral nervous system and the central nervous system and amongst other things, can affect the function of the muscle tissue. The peripheral nervous system is made up of two parts the sympathetic and the parasympathetic.

How does massage affect the Nervous System?

The hands of the masseur stimulate sensory receptors situated in the skin and can either invigorate or soothe nerves depending on the technique used, for example cupping will stimulate and stroking will soothe. Massage can also stimulate the parasympathetic nervous system helping relaxation and the reduction of stress. Hourdebaigt (1997) states, that horses suffer from stress which originates in the brain

but shows in the body as tension. The purpose of a relaxation massage routine is to relieve the stress by utilising the horse's nervous system. In addition, the stimulation of nerves can help rejuvenate an injured part of the body and is therefore very useful in rehabilitation. Linda Tellington-Jones (1998) claims that bodywork including her TTouch method increases awareness a horse has about its body. Mary Bromiley (2002) says that massage improves balance, co-ordination and trust.

The Muscular System

The muscular system provides movement both internally and externally. Muscles are the active organs of motion, each muscle supplied by one or more nerves. (Parker 1998) There are three types of muscles; smooth (involuntary), cardiac (involuntary striated) and skeletal (voluntary striated) muscle. Massage directly impacts skeletal muscle which equates to over 60% of the horses total weight.

How does massage affect the Muscular System?

Massage relieves muscular tightness, stiffness, spasms and restrictions in muscle tissue. It increases blood circulation bringing oxygen and nutrients to the muscle thereby reducing muscle fatigue and soreness. Massage promotes the rapid removal of toxins and waste products from muscle tissue. According to Hourdebaigt (1997), muscle tension from overuse, nervous stress and sometimes poor circulation can cause trigger points within the muscle. Trigger points result from toxin build-up in the belly of the muscle. In this instance, massage using trigger point technique, followed by drainage would release this tension in the muscle and assist in the removal of toxins or prevent the build up of toxins in the first place.

The Circulatory System

This system, distributes blood around the body through the use of the heart, veins and arteries. Blood picks up oxygen from the lungs by way of inhalation into the arteries, which then delivers it to the rest of the body. Oxygen is necessary for all cells of the body. As the blood deliver oxygen, it picks up carbon dioxide, a waste product, which is carried in the blood back through the veins to the heart and lungs. (Parker 1998) Carbon dioxide is expelled from the body by means of the exhalation process from the lungs. Blood plays an important role in the healing process of wounds and other injuries in that it transports nutrients (gained through digestion) to the body tissue, it also transports oxygen to the tissues and removes waste. Furthermore, these nutrients are required for normal muscle function.

How does massage affect the Circulatory System?

The pressure of massage movements has an effect on the circulation blood throughout the body. (Hourdebaigt 1997) Massage affects the

circulatory system by improving circulation via mechanically assisting the venous flow back to the heart, therefore increasing the effectiveness of expelling waste products from the body. It also dilates blood vessels to help the work more efficiently and allowing a greater volume blood to be transported. This enhanced blood flow improves the delivery of fresh oxygen and nutrients to the tissues via the arterial system. As an example, the massage technique of compression temporarily takes the blood out of an area. Toxins are removed with the initial blood as it is "pumped out" with the compression. Then and when the compression is released the fresh blood rushes back into the area bringing nutrients and oxygen. The stale blood is prevented from re-entering the massage site through by the valves situated in the veins.

The Lymphatic System

The lymphatic system consists of the connecting lymph vessels and lymph nodes which exist as well defined group. The vessels all converge to form one large duct that lies parallel to the aorta and empties into one of the large veins near the heart. (Parker 1998) The lymphatic system assists in the transportation of the nutrients from the digestive tracts to tissue and the removal of waste back into the blood stream and is concerned with the defence of infections.

How does massage affect the Lymphatic system?

The lymphatic system does not have a pump like the heart and massaging acts as a mechanical "pump". It affects the lymphatic system by increasing drainage therefore reducing excess fluid in the tissue. It assists with the removal of waste from the system using the lymphatic system (combined with the circulatory system) as transporters. Massage influences the flow of lymph when fluid contained within the vessels of the system, but is ineffective if the fluid had migrated to the intra-cellular spaces. (Bromiley 2002) Infection is a contraindication of massage because massage assists the flow of lymph so effectively, it can spread and infection around the body.

The Skeletal System

The skeletal system is the rigid framework giving the body shape and protecting the organs. It is composed of 205 bones and cartilage. (Parker 1998)

How does massage affect the Skeletal System?

Massage can help increase joint mobility by reducing any thickening of the connective tissue and helping to help release restrictions in the fascia. It can improve muscle tone and balance, thereby reducing the physical stress placed on bones and joints. Injuries to the periosteum often result in exostosis at the point of injury. Massage can help minimise the growth of exostosis or speed up recovery by breaking down the tissue.

The Endocrine System

The endocrine system is similar to the nervous system in that it transmits message throughout the body, the difference lies in the method of transmission. (Maloney 2000) The endocrine system uses hormones to transmit chemical messages via the circulatory or lymphatic systems. It is therefore a much slower method of transmission than the nervous system. The effects of the endocrine system influence every system of the horse. (Scully 2002)

How does massage affect the Endocrine System?

Since the endocrine system utilises the circulatory and lymphatic systems to transport chemical messages, and massage affects both of these systems as described above, it stands to reason that massage also affects this system. By enhancing the effectiveness of the circulatory and lymphatic systems these messages are more quickly circulated throughout the body and can have an impact well away from the massage site. Massage also releases histamines into the body. (Scully 2002)

The Respiratory System

The respiratory system is responsible for transporting oxygen from the air into the body and removes waste gas in the form of carbon dioxide. The system also has a function in regulating temperature and eliminating water. (Tortora & Grabowski 2000)

How does massage affect the respiratory system?

Hourdebaigt (1997) outlines that muscular tension, lactic acid build up, stress and trigger points can restrict the muscle action required to expand the ribcage. He says that massage indirectly impacts the respiratory system by releasing tension and relieving stress and trigger points around the ribcage, thereby allowing proper function of the muscles and promoting deeper breathing. Furthermore, after strenuous exercise, the cool down period is critical for the lungs to exchange gases, release toxins and take in fresh oxygen. (Hourdebaigt 1997) Massage can assist in the process by affecting circulation as outlined previously. In addition, massage can either stimulate or relax a horse and the respiratory rate if often impacted, for example, in relaxation massage; breathing can slow and become deeper.

The Concept of Cause and Effect

All the biological systems within the horse's body work together in an interrelated whole and therefore breakdown within any one system will affect the other systems in some way. It is possible to reason therefore, that massage can affect all systems of the body either directly or indirectly.

As we have seen, all systems are affected in some way due to the interconnectedness of their nature; examples of indirectly affected biological systems are digestive, urinary and reproductive systems.

Psychological Benefits

Finally you cannot ignore the psychological benefits gained by massage and their affect on the biological systems of the whole horse, A happy, relaxed, pain free horse is likely to work better and have less tension thereby impacting the biological systems in obvious ways.

Contraindications

Massage provides many benefits however if contraindications, for example pyrexia, inflammation, arthritis and acute injury are ignored, it can also negatively impact the biological system and exacerbate problems.

Conclusion

When massage is applied with knowledge and skill, it not only treats specific health problems in a horse but can also improve general health. Massage has a positive influence on the physical and psychological well-being of horses. Massage is incredibly versatile and can affect every biological system in the horses body due to the nature of inter-connectedness and the principles of cause and affect, by influencing a system, the effect will to a great or lesser degree affect and benefit the whole.

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