

Topical Review

Small Animal Massage Therapy: A Brief Review and Relevant Observations

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Massage therapy is becoming increasingly popular in human and animal physiotherapy and rehabilitation. Wider application of the technique led to research efforts aimed at providing scientific support to anecdotal beneficial effects, particularly pain relief. Recent studies have shown that massage therapy alters dopamine and serotonin levels, decreases noradrenaline levels, and modulates the immune system. Psychological effects such as reduction of stress and anxiety, with improvement of depressive patients, have been reported in humans. This article set out to review the major aspects of massage therapy based on recent publications on the topic, and to extrapolate concepts and practical aspects described in human physiotherapy to the veterinary patient, particularly the applicability of different techniques in Small Animal Medicine. Indications of massage therapy in small animals include pain relief, orthopedic rehabilitation, Canine Sports Medicine, intensive care, and management of nonspecific edema. Techniques described in this article were originally intended for use in humans and scientific data supporting anecdotal, beneficial effects in domestic animals are still lacking; this fruitful area for research is therefore open to veterinary professionals.

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Introduction

In a broader sense, massage therapy can be defined as the systematic manipulation of soft tissues using rhythmic pressure and strokes to prevent injuries, develop, maintain and rehabilitate function, and to promote pain relief.¹

Massage therapy is among the first treatment modalities ever described, with the oldest references to the technique dating from 2500 BC. Although first described in China, ancient Greeks, Indians and Romans have adopted massage therapy. Defined by Hippocrates as “the art of rubbing,” the therapy was specifically indicated for treatment of sports and war injuries, gaining great popularity in the Roman Empire.^{2,3} Following a decadence period during the Middle Ages, the publication of the “*Du Massage*” treatise in 1863 gave rise to the modern massage therapy era; this treatise introduced the categorization and standardization of the technique that are the basis of the terminology and methodology employed to this day.⁴

Massage therapy is enjoying increasing popularity in Veterinary Medicine as a valuable ancillary treatment, particularly in Equine Sports Medicine, and is thought to improve performance in athletic horses.^{5,6} Increased target tissue blood flow and lactate clearance have been demonstrated in recent studies, suggesting improved postexercise recovery.⁷ The benefits of massage therapy are not limited to Sports Medicine and include reduction of muscle tension and soreness, relief of postexercise muscle spasms, increased flexibility and range of motion, and improved general well-being; beneficial effects on myofascial pain relief and trigger point treatment have been highlighted.^{6,8}

Literature concerning small animals is scarce. However, techniques originally described for humans and horses can easily be extrapolated to these patients and are thought to induce similar physiological responses.⁹ Major indications in dogs and cats include control of postoperative swelling and edema, support to intensive care patients, osteoarthritis and orthopedic rehabilitation, chronic pain, palliative care of geriatric and cancer patients, treatment of secondary muscle injuries, and Canine Sports Medicine.⁹⁻¹¹ Massage therapy plays an important role in treatment of musculoskeletal conditions in humans.¹² The technique is thought to be safe in the hands of expert professionals and has few contraindications.

Massage therapy should be avoided in areas of skin lesions, during the acute stage of viral and other infectious diseases, and in cases presenting with shock and fever; also, it should be employed with caution in cancer patients and in patients suffering from acute inflammatory conditions (Table 1).¹¹ Despite the well-explored calming effects of massage therapy, animals manifesting excessive reaction to touch or aggressive, particularly aggressive cats, are not amenable to treatment with this therapeutic modality; rather, alternative therapies should be employed, at least initially, and massage therapy reintroduced following adaptation and improvement of antisocial behavior.

Massage therapy is a widely used ancillary treatment modality in Small Animals Medicine; still, scientific evidence of anecdotal benefits observed in clinical practice is lacking, which should encourage research efforts in the field (RAMEY; TIIDUS, 2002).¹³ This article reviews the fundamentals and benefits of massage therapy, with special focus on small animal applicability. It is

Table 1
Indications and Contraindications of Massage Therapy in Dogs and Cats

Indications
Pain relief
Swelling and edema
Intensive and palliative care
Osteoarthritis
Secondary musculoskeletal injuries
Sports Medicine
Contraindications
Skin Conditions (ringworms, infections)
Infectious diseases
Fever
Shock
Acute Inflammation*
Local neoplastic lesions*
Aggressive patients†
Local neoplastic lesions†
Aggressive patients†

* Should not be used locally; can be used remotely (i.e., away from lesions).

† Should not be enforced if animal is noncompliant.

intended to provide the reader with a general panorama of massage therapy and current related techniques.

Why Does Massage Therapy Work?

Massage therapy clearly promotes clinical benefits; however, despite strong evidence of close correlation between human and animal therapy, animal-specific mechanisms of action and physiologic responses have not been described. Massage therapy is thought to induce systemic effects via different biochemical, mechanical, physiological, and even psychological pathways,¹⁴ with effects potentially resulting from a combination of mechanisms, rather than a single, isolated mechanism.¹⁵ Increased lymph flow and blood lactate clearance, fibrosis prevention, changes in sympathetic and parasympathetic responses, immune system improvement and pain cognition, and modulation are among the mechanisms involved in massage therapy.¹⁶ Massage therapy also induces local biochemical changes, with increased neural activity at the spinal and subcortical levels, potentially leading to psychological effects and impacts on pain perception.¹⁷

Serotonin and endorphin release in response to tissue manipulation leads to reduced pain, stress, depression, and anxiety levels. A study in pregnant women¹⁸ reported increased serum serotonin and dopamine and decreased serum cortisol and norepinephrine levels, with reduction of lower back pain, stress and anxiety in patients submitted to massage therapy compared to non-treated controls.

Other studies^{19,20} have correlated serotonin (5HIAA) release and reduced serum cortisol levels with massage therapy-induced pain relief. Serotonin plays an important role in pain modulation by decreasing the activity of substance P and other chronic pain-related neurotransmitters. It is also known to stimulate dopamine release, promoting sedative effects and well-being. Serotonin acts via dopamine release to modulate norepinephrine levels, with resulting decrease in patient anxiety (Fig 1).¹⁹

The role of cortisol has received special attention in studies investigating physiological responses to massage therapy, due to hypothalamic-pituitary-adrenal axis regulation and related physiological, psychological, and health effects. However, the impact of massage therapy on cortisol levels is debatable. Although several studies have shown reduced cortisol levels following massage therapy,^{19,21} evidences are thought to be weak.¹ Inconsistent, poor methodology in studies assessing cortisol levels, with few, well-conducted trials describing statistically significant differences in

cortisol levels following massage therapy, has been reported. Others mechanisms seem therefore to be involved.

Other mediators currently under investigation are thought to be involved in massage therapy-induced analgesia and sedation. A clinical trial²² comparing oxytocin, ACTH, nitric oxide and beta-endorphin levels in human patients submitted to massage therapy or to rest in the sitting position revealed significantly increased serum oxytocin and decreased serum ACTH, nitric oxide, and beta-endorphin levels in the treated group.

Mechanical responses are among the several effects of massage therapy. Stimuli of mechano and baroreceptors in skin induce vagal stimulation and relaxation. Depending on the amount of pressure applied, changes in muscular activity are observed, which may be directly related to the stretch reflex. Moderate pressure is thought to decrease the myotatic reflex, with decreased motor neuron excitability and muscular spasticity in chronic pain conditions.²³

Different tissues, such as muscle fibers, connective tissue, tendons, and ligaments may respond to mechanical effects. Massage therapy has no direct effect on joints or specific orthopedic conditions (e.g., arthritis); however, contracture and spasticity of related muscles may lead to decreased range of motion and articular functional compromise. Therefore, along with adhesion manipulation and mechanical disruption, treatment of adjacent tissues may have indirect impacts on primary articular conditions, contributing to patient improvement and return to function.⁸ A systematic review of studies comparing human patients suffering from musculoskeletal conditions and submitted to massage therapy or other techniques suggested that treatment with massage therapy alone promotes pain relief and functional recovery; however, comparison with other techniques yielded inconclusive results.¹⁵

Mechanical effects of massage therapy play a particularly important role in myofascial release techniques, often applied in Veterinary Medicine.⁶ Fascial mechanical properties and tissue reaction to external forces must be taken into account for proper understanding of this manual therapy modality. The gel-like interstitial fluid surrounding fasciae is a thixotropic fluid (i.e., tends to become more fluid and soluble in response to pressure or heat). In the presence of trigger points, adhesions, and contractures, thixotropy enables connective tissues to return to the original fluid state, with recovery of normal gliding between fasciae and adjacent tissues. Improved gliding then promotes return to function and pain relief in chronic inflammatory conditions resulting from fascial adhesions.^{24,25} Trigger points may cause pain and dysfunction of affected systems in small animals; a combination of myofascial release techniques, laser therapy,

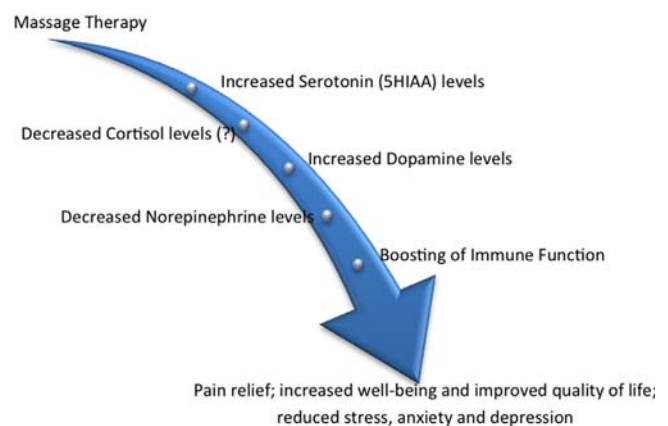


Fig 1. Physiological effects often attributed to massage therapy.

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