Complementary therapies for OA

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The use of complementary therapies in animals has been the subject of heated debate in the veterinary press, with strong opinions both for and against their use.

Today’s clients rightly demand the same care and facilities for their pets that they would expect for themselves, and this also applies to complementary therapies. Every practitioner will have encountered a client who is convinced about the efficacy of his or her pet’s magnetic collar, or has sought advice about the use of devil’s claw.

With a physiotherapist mother, my family’s aches and pains are often eased by a transcutaneous nerve stimulation (TENS) machine or acupuncture needle, usually with surprising results – despite my marked scepticism. Even for the cynics, given that some of our most potent, widespread and ancient drugs originate naturally (such as morphine from the opium poppy and aspirin from willow bark), is it justified for the profession to ignore alternative approaches and the evidence-based justification for their use?

However lively the debate, whatever your personal opinion and despite the paucity of reliable, objective studies for or against a treatment, veterinary surgeons still owe it to their clients and patients to maintain an active interest, and to engage in educated discussion and provide a successful evidence-based multimodal approach to the common problem of osteoarthritic pain.

Pain is the major concern in humans suffering from osteoarthritis and, thus, the alleviation of pain is the primary goal in veterinary medicine (alongside the maintenance of joint function and health). Effective analgesia in small animal patients will often resolve clinical signs such as lameness and a reluctance to jump or exercise.

Conventional methods of pain management will be discussed in a forthcoming article, and the addition of complementary therapies is proposed, by some, to minimise the dosage of all drugs required.

The list of complementary treatments available is vast. In this article I have concentrated only on the most common (including exercise and physiotherapy). The clinician should be cognisant of the fluctuating, dynamic nature of osteoarthritic pain when evaluating the efficacy of any treatment – whether conventional or complementary.
Exercise

Obesity management is an extremely useful treatment for any overweight arthritic animal (see VT 39:29); exercise should be an adjunct to this. In a meta-analysis of human patients with osteoarthritis (Jamtvedt et al, 2008), there was high-quality evidence that exercise and weight loss improved physical function and reduced pain, and these findings have been mirrored in veterinary studies (Mlacnic et al, 2006).

New lifestyle regimes are often challenging to implement and require dedicated and continual owner input, so it is important that clients are provided with regular and supportive nursing clinics.

The arthritic animal is unique in that the exercise must be controlled and gentle, with an emphasis on an appropriate warm up. Exercise must be uniform and regular, preferably on a soft surface (to develop muscle mass), facilitate joint health and encourage weight loss. Clients should understand that their animals will often be stiff after sessions of infrequent strenuous exercise, which should be discouraged.

Swimming will strengthen and develop muscles, improve the joints’range of motion, provide cardiovascular exercise, offer palliation and spare the degenerate joint from excessive forces.

Hydrotherapy should be strictly supervised, especially if the animal is hesitant at first (Figure 1), and an indoor heated pool with a structured exercise plan is the ideal. Underwater treadmills (Figure 2) or whirlpools can be used, and hydrotherapy is also an option for keen cats (Figure 3).

Obviously, where fresh surgery has been performed, swimming should be avoided until the sutures are removed or open wounds are completely healed. To the author’s knowledge, there has been little peer-reviewed literature for the use of hydrotherapy in dogs and cats, but there have been extensive studies in humans – from which much of the data has been extrapolated. Hydrotherapy should be performed under the guidance of a veterinary surgeon, and the Canine Hydrotherapy Association can recommend centres in the UK that adhere to set benchmark standards.

Physiotherapy

In the UK, physiotherapy on animals is governed by the Veterinary Surgery (Exceptions) Order 1962, which means that physiotherapy can only be provided under the direction of a veterinary surgeon. This also governs osteopathic and chiropractic treatments.

Much of the data and techniques for veterinary physiotherapy have been extrapolated from human studies, but some preliminary studies support the use of physiotherapy in dogs following surgery for cranial cruciate rupture (Millis et al, 1997; Marsolais et al, 2002; Monk et al, 2006).

Table 1 details some of the modalities used by physiotherapists, which I believe are much more
extensive and individually tailored than those provided by vets or nurses in practice. Further detailed information is available in a comprehensive and evidence-based article by Sharp (2008).

In addition to exercise therapy (Figure 4) and hydrotherapy, physiotherapists can also provide the following treatments.

- Manual therapy, such as joint mobilisations, passive movements (Figure 5), stretching (Figure 6) or massage.
- Laser therapy, which has moderate clinical proof of efficacy in humans for wound healing and the provision of pain relief in osteoarthritis (Jamtvedt et al, 2008) – its use in animals is extrapolated from this data.
- Thermotherapy – hot therapy can be useful before stretching or exercise, and to relieve chronic pain; cold therapy is used to reduce pain and inflammation.
- Ultrasound therapy can be used by experienced operators to provide deep-heat treatment. Ultrasound has been used in cases of osteoarthritis in humans and the effect is unclear due to low-quality evidence with respect to achieving reduction in pain, or improvement in function or range of motion (Jamtvedt et al, 2008). There is evidence in human literature that fracture healing is more rapid when ultrasound therapy is used, but the same peer-reviewed articles are not available for animals. In the UK, physiotherapists generally use ultrasound to enhance tissue healing rather than for its thermal effects.
- Electrical nerve stimulation influences the pain-gate mechanism and stimulates the release of endorphins – TENS reduces pain compared with a placebo intervention in a meta-analysis of human papers (Jamtvedt et al, 2008); neuromuscular stimulation is thought to strengthen muscles, and the evidence for its use is unclear (to my knowledge, there are no systematic reviews for the use of electrical nerve stimulation in dogs or cats).
- Trigger point therapy and simple or laser acupuncture, or acupressure.
- Physiotherapy is an especially important adjunct to conventional drugs or surgery, and owners often enjoy being actively involved in their pet’s care. Referral to a physiotherapist should be sought early in the course of the disease for optimal outcome.

At home, owners can readily perform regular passive range-of-motion or stretching exercises, massage or the application of warm/cold packs under veterinary and physiotherapist guidance. In many cases, the more the client feels involved in the treatment decisions and the easier the protocols, the more likely he or she is to actively engage in his or her pet’s successful treatment.

**Acupuncture**

Acupuncture is an element of traditional Chinese medicine. True acupuncture is the insertion of a solid needle into the body for the purposes of treating disease and for the maintenance of health.

However, some variations on traditional acupuncture (such as laser acupuncture) have been developed. Acupuncture is considered an act of veterinary surgery, and animal physiotherapists
and human acupuncturists are not legally entitled to perform this on animals.

Under Schedule 3, a qualified and suitably trained veterinary nurse is permitted to perform this treatment, but this must be under the direct supervision of a veterinary surgeon. The Association of British Veterinary Acupuncturists has a large membership, and has a certification scheme to ensure safety and competency.

Acupuncture is reported to have a potent analgesic effect by working locally (where the needle is inserted), at the level of the spine (segmentally at the dorsal horn of the spinal segment in which the needle is inserted, and, to a lesser degree, at other neighbouring spinal segments due to serotonin and noradrenaline release), or generally (such as through the systemic release of oxytocin).

To explain the reported analgesic properties, the “pain gate” theory has been proposed: the needle excites fast pain fibres and, as the stimulus reaches the dorsal horn of the spinal cord, the messages from these fibres compete with, and take priority over, those from the chronic osteoarthritic pain, effectively turning off the chronic pain.

Another source of pain in osteoarthritis is reported to be the “myofascial trigger point”, a hyperirritable region comparable to a muscle “knot”. Acupuncture is claimed to directly relieve these painful “knots” (Lindley, 2006).

Acupuncture is generally considered safe, but in humans, cardiac tamponade and tension pneumothorax have been reported. Due consideration should be given to animals with concurrent lung pathology, skin infection, clotting defects or pregnancy.

Most animals undergoing acupuncture do not require sedation for the sessions, which are usually carried out once or twice a week for between four and six weeks initially (Figure 7), and are then tailored subsequently. All animals respond differently and effects are anecdotally cumulative, but some animals may be more painful after the initial treatment; this is thought to be due to stimulation of slow (C) pain fibres. Between 10 and 20 per cent of animals do not appear to respond to treatment.

There is compelling and extensive evidence for the use of acupuncture in the treatment of osteoarthritic pain and joint function in humans (Jamtvedt et al, 2008). Witt et al (2005) noted a significant improvement in human patients with osteoarthritis of the knee who were treated with acupuncture, compared with minimal acupuncture or no acupuncture (p=0.0002, 294 patients). The study revealed that the effects lasted for up to 52 weeks.

Another large study (Vas et al, 2004) found that over 12 weeks, acupuncture plus diclofenac produces significant changes in physical capability (p=0.021) and physiological functioning (p=0.046) of the osteoarthritis knee compared to placebo acupuncture. To my knowledge, there are no
large peer-reviewed studies assessing acupuncture in veterinary medicine.

**Homoeopathy**

Homoeopathy dates back to the time of Hippocrates (460-377BC) and has been researched in human medicine. Between 1950 and 2007, 134 randomised, controlled trials have been reported, representing research in 69 different medical conditions. Of these, 59 were positive, eight were negative and 67 were inconclusive. Twenty-three systematic reviews have evaluated the research literature and 10 showed evidence in favour of homoeopathy.

To prepare the homoeopathic remedy, the initial medicine (animal, vegetable, mineral or synthetic) is repeatedly diluted in a solution (either water or alcohol-based) to achieve a given potency. Succussion (vigorous agitation) occurs between each dilution and is reportedly vital for the creation of a homoeopathic remedy, instead of a mere dilution.

Although peer-reviewed studies are lacking, properly utilised homoeopathy is claimed to have no toxic side effects, no medicine residues, no residues in sports animals and no stimulation of antibiotic resistance (which some clients will find appealing). Homoeopathy is also actively marketed as not requiring animal testing. Under the Veterinary Surgeons Act, only RCVS-registered veterinary surgeons are permitted to prescribe homoeopathic preparations, but this does not apply to owners who treat their own animals.

The potential effects of highly diluted homoeopathic remedies cannot be explained in terms of current scientific theories, which is the main reason for much of its controversy in academic medicine. There are various theories for the mechanism of action of ultra-high dilutions, and a recent meta-analysis evaluated 67 invitro biological experiments in 75 research publications and found that high-potency effects were reported in nearly 75 per cent of all replicated studies (Witt et al, 2007). There has been no demonstration of repeatable chemical effects (Linde et al, 1994), but this does not mean that investigations into the clinical effects is not justified. A meta-analysis in the human literature showed that some evidence exists to support the superiority of homoeopathic remedies over placebo for treating osteoarthritis and rheumatoid arthritis (Weiner and Ernst, 2004).

Research is emerging in the veterinary literature. Mathie et al (2007) conducted a prospective study into outcomes following homoeopathic treatment on 767 animals over six months, conducted by seven veterinary surgeons with VetMFHom qualifications and one with a Cert IAVH. Fifty-seven dogs were treated for osteoarthritis (the most common complaint) and rhus tox, *Ruta* and *Arnica* were the most commonly prescribed treatments. On the owner questionnaire, ‘major improvement’ or ‘moderate improvement’ was recorded in 66.4 per cent of the 119 animals with musculoskeletal disorders, although “osteoarthritis” in dogs was not analysed separately. While this is initially encouraging, owner questionnaire-based studies are often heavily unreliable and further objective investigation is required, preferably using the gold standard of double-blinded force plate analysis. Underresearch in this area is recognised by both human and veterinary
homoeopathic and conventional practitioners who are striving to correct this.

The Faculty of Homeopathy has more than 1,400 members, incorporating dentists, doctors, nurses, midwives, osteopaths, pharmacists, podiatrists and veterinary surgeons. In the UK alone, several dozen serious practitioners of veterinary homoeopathy work with conventional colleagues in an integrated manner.

Further information is available from The British Association of Homeopathic Veterinary Surgeons, the International Association for Veterinary Homeopathy and the Faculty of Homeopathy.

**Herbal therapy**

Herbalism is closely related to conventional pharmaceutical medicine and uses plant products for their direct effects.

Several hundred meta-analyses are available in the human literature, and a critical review of 12 clinical trials and two systematic reviews by Long et al (2001) was performed to assess herbal medicines for the treatment of osteoarthritis in humans. The use of 11 drugs was assessed: promising evidence (two favourable trials) was found for the use of devil’s claw and avocado/soya bean unsaponifiables, and strong evidence (three or more favourable trials) for capsaicin and phytodolor. There was no compelling clinical evidence for the use of ginger, and weak evidence for the use of willow bark, stinging nettles and articulin-F.

There is a large market for the sale of herbal treatments to pet owners, but the quality and results obtained are highly variable. In the UK, the training in rational veterinary herbal medicine was started three years ago, and the integration of herbal and conventional medicine has, anecdotally, offered favourable results.

To the author’s knowledge, all of the evidence appears to be extrapolated from human data and reliable objective veterinary studies are lacking in this field.

As with conventional medicine, clinicians should be aware of the potential for drug-herb interactions when prescribing treatments, since herbal medicines can be extremely potent. Owners should be questioned carefully about any over-the-counter preparations given to their pet and, as with conventional preparations, caution should be particularly exercised in cats.

**Magnotherapy**

In the past few years, magnotherapy has gained popularity among doctors, vets and pet owners. Dog and cat static magnets [Figure 8](#) are available as collars or bedding, and are marketed to treat joint pain and stiffness associated with osteoarthritis.
However, evidence for the scientific principles is limited. Some theories suggest that nociceptive C-fibres have a lower threshold potential and that magnetic fields selectively attenuate neuronal depolarisation by shifting the membrane resting potential. Additionally, magnetic fields are proposed to increase blood flow in the affected area (Pittler et al, 2007; Lednev, 1991).

In the literature, there is conflicting evidence regarding magnotherapy: some studies report significant pain reduction, whereas others show absolutely no effect. This may be at least partially explained by the wide variability between studies with regard to the type and strength of magnet used, conditions treated, evaluation method and treatment times. The waxing and waning nature of osteoarthritis also makes the evaluation of any technique or medication challenging.

One of the larger blinded studies (Harlow et al, 2004) looked at 194 men and women with hip or knee osteoarthritis and assessed the outcome following 12 weeks of wearing a standard-strength static bipolar magnetic bracelet, a weak magnetic bracelet or a dummy bracelet. Mean pain scores were significantly reduced in the standard magnet group compared to the dummy group (p=0.026) and, although there was no significant difference between the standard and weak magnet groups, there was a strong numerical trend.

A meta-analysis by Pittler et al (2007) concluded that peripheral joint osteoarthritis in humans is the one condition for which the initial research appears encouraging, but magnets are not convincingly useful for any other pain relief (such as for back pain).

All published papers advise that larger studies are required, but given the initial positive effects and the very limited side effects, magnotherapy could be useful in humans to provide supplementary benefits to conventional treatments.

To the author’s knowledge, there are no large objective studies assessing the use of magnets in animals. In a similar fashion to humans, and in the absence of any contradictory evidence, magnotherapy should be avoided in pregnant animals, those with acute infections, neoplasia or those with pacemakers.

**Nutraceuticals**

The use of nutraceuticals has been discussed in VT 39:29.

**Acknowledgements**

My knowledge of complementary therapies was minimal on starting this article, and thus the writing process has been a steep learning curve.

I am very grateful to those members of the profession who practise complementary medicine for their generous guidance, approachability and enthusiasm. In particular, I would like to thank Brian
Sharp and Chris Shales for reviewing this article, and Nick Thompson, Dietrich Graf von Schweinitz and Lowri Davies.

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Further reading

and Rehabilitation of Animals, Wiley-Blackwell.

Figure 1. Supervised hydrotherapy can be helpful for joint rehabilitation.

Photo: SHELEY MONKS, UNIVERSITY OF BRISTOL.
Figure 2: An underwater treadmill can be particularly useful to build muscle mass and reduce joint forces.

Photo: LOWRI DAVIES, THE SMART CLINIC.
Figure 3. Hydrotherapy is also an option for some cats.

Photo: LOWRI DAVIES, THE SMART CLINIC.
Figure 4. The author believes physiotherapist-planned exercise programmes are often much more detailed, structured and advanced than those provided by vets or nurses.

Photo: LOWRI DAVIES, THE SMART CLINIC.
Figure 5. Passive range-of-motion exercises.
Figure 5. Passive range-of-motion exercises.

Photo: LOWRI DAVIES, THE SMART CLINIC.
Figure 6. An example of manual therapy.

Photo: LOWRI DAVIES, THE SMART CLINIC.

Figure 7. Acupuncture does not usually require sedation.

Main photo: LOWRI DAVIES, THE SMART CLINIC.
Figure 8 (inset). Magnetic collars are available for dogs and cats.
Table 1. Tailored osteoarthritis treatments

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<table>
<thead>
<tr>
<th>Joint mobilisations</th>
<th>Maitland mobilisations</th>
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<tbody>
<tr>
<td><strong>Manual therapy</strong></td>
<td>(Sustained) natural apophyseal glides, traction, mobilisations with movement, soft tissue release, myofascial release, trigger point, acupressure, proprioceptive neuromuscular facilitation</td>
</tr>
<tr>
<td><strong>Electrotherapy</strong></td>
<td>Laser therapy, ultrasound therapy, neuromuscular electrical nerve stimulation, transcutaneous electrical nerve stimulation, pulsed shortwave diathermy</td>
</tr>
<tr>
<td><strong>Exercise therapy</strong></td>
<td>Strengthening exercises, flexibility exercises, endurance exercises, balance and proprioception exercises, gait re-education</td>
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