The streetwise assessment — muscle, bone and joints

Musculoskeletal problems are no less common in street dogs than in those living primarily indoors. It can be challenging to diagnose and manage such problems when there are only limited opportunities for investigating initial findings. Skills in history taking and physical examination are paramount. Common examples are given.

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Stuart Carmichael BVMS MVM DSAO FRCVS, Joint Adventures Ltd. Ash House, Gartocharn G83 8NE.
stuartc@joint-adventures.co.uk

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Musculoskeletal problems are no less common in street dogs however identifying and managing them in these patients can be a real challenge where opportunities for examining and investigating findings can be limited. This presentation will concentrate on using history and physical examination to identify problems using common examples as illustration. Fortunately, there is no real substitute for these skills in this area so the challenge can be addressed adequately.

Investigating a musculoskeletal issue

This process can be considered in three phases:

- Stage 1: the moving dog
- Stage 2: the static dog
- Stage 3: the sedated or anaesthetised dog.

Before undertaking any physical examination it is very important to obtain a full account of the problem from the owner's viewpoint. In particular, to understand what they are seeing day-to-day and what is concerning them. Remember that the veterinary surgeon has a very short window of opportunity to examine the problem in the patient, while the owner is literally living with it. Their information is critical so it is important to 'listen carefully'. During this conversation the dog and owner should be carefully assessed. For the dog, posture; the way it rises or sits; and temperament are key.

Stage 1: the moving dog

Observing the way the dog moves is vitally important, but space and circumstances can sometimes make this problematic. When time and space are limited, using a mobile phone camera to capture gait can be useful. It can be re-run without trying to get a dog to repeat movements. Similarly, if the owner has a mobile phone it is useful if they try to capture the movement that is concerning them, for later review.

In an ideal situation it is best if a set sequence is followed:

- Observe patient sitting, rising and standing
- Have the dog walked away from investigator. Observe from directly behind. Dog should be on a 'loose' lead and relaxed
- Dog turned and walked towards investigator. Observe from directly in front
- Repeat as necessary
- Move to affected side if possible and observe walk from side
- Repeat all at trot if necessary.

For each patient it is important to keep the objectives simple, looking to answer four simple questions:

- Is the dog lame?
- If so, is it front or back leg?
- Is it left or right?
- Could more than one leg be involved?

If you can answer these questions then this is all the information you need. The more severe the problem, the more obvious the abnormality.

Tips

- It is much easier to identify a forelimb lameness than a hindlimb. This is best seen with the dog walking/moving towards the investigator. Remember the head will dip as the SOUND leg lands as weight is placed on this leg. Pick one leg and every time it strikes the ground repeat in your head 'down' to pick up the rhythm of the walk and see if head is moving as it should.
- Hindleg lameness is more difficult and can also cause the head to nod. This is why it is best watching the animal walk away first, to establish any potential hindlimb issue before concentrating on forelimb. Classically, the rump should drop as the weight goes onto the respective hind leg.
- Hindleg lameness can be confirmed by observing movement, flexion and extension from the side

- Walk behind the dog mimicking the foot placement. Often you can 'feel' a lameness that is hard to see.

Stage 2: the static dog

Once again, a set sequence for examination should be developed and followed. This ensures that things are not missed. A great deal of information can be obtained by palpating the limbs and joints before they are actually moved. The logical sequence to use reflects that. In most dogs, with the exception of toy or small breeds, the examination is best conducted with the dog standing on the ground rather than being elevated. It is also important to let dogs know where you are as you move around them conducting the examination, much as you do with a horse. Keep a hand on the animal and get close contact during the examination, to maximise control.

- Assess the dog's temperament by approaching the dog from the front. Assess the ability of the handler (owner)
- Move to the back of dog and assess both hindlegs. Placing a knee between the hind legs to support the dog's weight can assist. Simultaneously, run hands from hip to foot on both legs feeling for lumps or bumps, and for muscle wastage (*Figure 1*)
- Move up the thoracic spine to examine forelimbs (I usually straddle the dog and grip it between my knees at this point)
- Again, working from shoulder to foot feel for any muscle or soft-tissue abnormalities
- Check the neck by moving the head from side to side, flexing and extending.

Figure 1. Placing knee between hindlegs and supporting the weight of the dog can facilitate clinical examination.

Next, moving the joints:

- Return to the hindlimbs and, starting from the foot and working up the leg, lift and flex and extend all the joints in sequence, finishing with the hip
- Conduct special tests for the stifle and hip joints
- When both sides are complete, extend both hips together
- Move to the front of the dog (sound side first). Starting from the toes, lift the leg and flex and extend all the joints in sequence.

It is always good practice to target a painful area as the last one to examine. Likewise, comparing one side to another is a good way of establishing whether there is an abnormality or not. If there is a suspected painful reaction then leave the area, continue the examination, then return to the suspicious area at the end of the examination to check if the same response occurs.

Specific tests for stability

It can be useful to perform part of the examination with the dog on its side. This is really of use when we are homing in on a particular area or joint. Sedation to relax the dog is also useful if trying to determine if there is joint instability, i.e. in the anterior drawer test. This option may be limited in a street examination.

Common conditions and findings

'Common things are common' and it is useful to have a very good working knowledge of the characteristic features of common disorders which may help in early recognition of these (*Table 1*).

Dealing with osteoarthritis in street dogs

Many street dogs will develop osteoarthritis (OA) in one or more joints as they get older. Early recognition of this will help with management.

There are many options to alleviate the pain and mobility problems associated with the disease. The main disadvantage in the street dog are the exclusion of more expensive options. The advantage is that we have an owner spending a great deal of time with the dog and able to help in other ways. A multimodal approach to managing the problem yields the best results over the long duration. It also provides an opportunity to customise the best combinations for particular circumstances.

Examples of how these options may be combined in street dogs is shown in *Table 2*.

Conclusions

Simplifying the understanding of OA and using 'tools' that suit the situation and the environment mean that street dogs suffering from painful OA can benefit and achieve an acceptable quality of life. CA

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Table 1. Common conditions and findings

Condition	History	Clinical findings
Cruciate disease/ rupture	Can vary. Often young large breed Gradual onset limp that becomes persistent Little evidence of pain reported Can have distinctive sitting posture Can be acute onset Can have bilateral problem	Unilateral lameness usually Obvious atrophy of quadriceps Firm swelling on medial aspect of proximal tibia Pain on tibial thrust test Instability on anterior drawer/tibial thrust test
Hip dysplasia (HD)	Juvenile dog Difficulty rising/ jumping Bunny hopping Bilateral lameness?	Pain on flexion and extension Instability on hip lift test Crepitus occasionally Tight and painful hip adductors including pectineal muscles
Hip arthritis	Differentiate from HD by age: mature dog Signs as above. Difficulty rising or jumping Lameness	Gait Instability is not a feature Reduced range of movement, in particular extension of hip Crepitus
Patellar luxation	May see in Boxers, Bulldogs, Bull Terriers and Labradors Young dogs typically Lifting leg intermittently Bowlegged gait Exercise intolerant	May be lame Find tibial crest and follow straight patella ligament to identify the patella: is it in groove ? Can it be displaced? Is groove empty with patella displaced medially or laterally
Elbow dysplasia/ arthritis	Can start to show problems from 5 months old onwards Intermittent/persistent mild lameness usually, which may show occasional worse bouts Often bilateral gait problem	Lameness — usually one side Diffuse swelling of elbow joint Discomfort on forced extension Reduced total range of movement
Bone neoplasia	Larger breeds Typically older, but can occur in young animals Worsening, persistent lameness	Typical sites: metaphyseal; proximal humerus/distal radius; distal femur/proximal and distal tibia Obvious lameness Muscle atrophy Characterised by severity and pain In distal limb, swelling palpable; in proximal limb, palpable with sedation

Table 2. Multimodal approach to osteoarthritis treatment

Multimodal target	Options	Clomment
Pain management	Any non-steroidal anti-inflammatory drug (NSAID) Paracetemol to augment Acupuncture	Medical pain control can be achieved with NSAID and this can be combined with paracetamol in severe cases Acupuncture could be very useful in responsive cases as an alternative
Nutritional management	Keep bodyweight within normal limits	Although there are a great many nutritional options the most important thing is maintaining a normal bodyweight and avoiding obesity
Physical rehabilitation	Employ therapeutic exercises specific to the problem that owner can perform daily on dog	Work at maintaining mobility of affected joint(s) in first instance with additional exercises for muscle development and proprioception
Owner participation and education	Use simple instructive material to encourage understanding and participation	Give control of problem to the owner by providing clear plans and objectives
Local disease modification	None	The drive to produce and use products which can have a longer term benefit could really benefit street dogs in the future but there are no practical (or proven) alternatives right now