ECVSMR Sample questions 2023

Part 1 MCQ:

What describes the Vertical Impulse ?

It represents the area under the force curve

It defines the force related to the body mass

It defines the force related to the body weight

It is a basic kinematic parameter

What is the most important method of heat loss for exercising dogs?

Evaporation

Radiation

Conduction

Convection

Hydrotherapy equipment allows the regulation of water temperature. What is the cardiovascular response to exercise in cold water?

Heart rate decreases and stroke volume increases

heart rate decreases and stroke volume decreases

heart rate increases and stroke volume increases

heart rate increases and stroke volume decreases

Guttural pouch mycosis most commonly involves which cranial nerves?

IX and X

X and XI

VIII and X

X and XII

Part 2 cases:

Case example small animal:

One of your clients asks for a consultation. He would like to purchase a Labrador from a Field-Trial line and use it later in sport and/or hunting. The puppy comes from a very successful line, but even though the puppies come from HD-free parents, he would like an early assessment of the hip joints.

1. Explain to the owner …

a. the advantage of the PennHIP method (1 point)
b. the value on which the risk assessment is based (0.5 point)
c. name the limit value at which a hip joint is considered as very tight (0.5 point)

Answers:

a. A major advantage of the PennHIP method is the ability to assess the "risk" of a young dog developing the osteoarthritis of canine hip dysplasia (1) later in life.

b. The distraction index (DI) (0.5) is used to estimate that risk.

c. Dogs with a high distraction index (looser hip joints) will show radiographic (and clinical) signs earlier than those with a lower distraction index (tighter hip joints). A DI < 0,3 (0.5) is considered as a "very tight hip".

2. Now the owner wants to know whether he can take additional preventive measures to keep his future dog's musculoskeletal system healthy for as long as possible. Beside radiographic examination of the dog, further preventive strategies can be used to minimize the risk for osteoarthritis of canine hip dysplasia. One of the best investigated preventive measures is caloric restriction, early in life. Explain the owner the benefits of keeping osteoarthritis-susceptible dogs lean for life as investigated in a life span study in Labrador Retrievers with respect to:

A. Occurrence of osteoarthritis of hip dysplasia (1 point)
B. median life span (1 point)
C. pain management (1 point)

Answers:

A. Osteoarthritis of hip dysplasia was delayed in onset and reduced in severity (1) in lean dogs

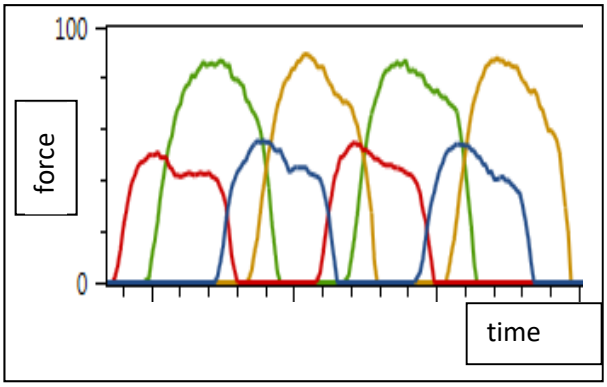
B. the median life span of lean dogs was 1.8 years longer (1)

C. lean dogs required pain management 3 years later (1) compared with overweight dogs

3. The owner now wants to know from you what effects wearing dummies has on weight distribution. Below you can see a video that was recorded in the context of a study in which this was investigated. In this study the dogs wore dummies with different weights while being guided over a pressure plate. In the video shown here, the dog walks over the pressure plate without a dummy. In addition the calculated ground reaction force curves are shown.

A. Describe which 2 important ground reaction force parameters can be derived from the curves (commonly used in studies). (1 point)

B. In order to compare parameters between dogs of different weights, which method can be used? (1 point)



Answers:

A. Peak vertical force (0.5) – the highest force value and Vertical Impulse (0.5) – a function of force and time

B. Normalization to body mass, or total force, or calculation of symmetry indices (one must be named, 1)

4. a. With respect to peak vertical force and vertical impulse, what was the main effect of carrying a weight? (1 point)

b. Based on that – explain the owner in easy words the effect of carrying weights on the body mass distribution (1 point)

Answers:

a. The PFz and IFz significantly increased in forelimbs and decreased in hindlimbs with increasing dummy weight(1)

b. The load on the front legs is not only increased by transferring the weight of the dummy or game to the front legs, the dog also tilts forward, which further increases the load on the front legs (1).

5. Finally, the future Labrador owner has one more question. He has heard of a disease called "limber tail", which occurs frequently in working dogs. Since he wants to spare his dog this disease, he has decided not to use the dog for water work.

Based on the results of Pugh et al. (2017), how useful do you think this idea is? (1 point)

Answers:

This decision cannot safely prevent the appearance of a limber tail, because even dogs that have not been swimming can develop this disease. (1)

References:

Veterinary Surgery: Small Animal. Tobias KM and Johnston SA , chapter 58.
Bockstahler et al. Compensatory load redistribution in Labrador retrievers when carrying different weights--a non-randomized prospective trial. BMC Vet Res. 2016 Jun 7;12:92.
Pugh CA et al, Cumulative incidence and risk factors for limber tail in the Dogslife labrador retriever cohort. Vet Rec. 2016 Sep 17; 179(11): 275.

Case examples equine

Case 1:

A 3-year-old male Standardbred racehorse developed an increasing lameness immediately at the end of a training session on the racetrack. Half an hour later the horse was reluctant to bear weight on the lame limb.

1. Interpret the radiographs and describe relevant findings (1 point).
   What therapeutic approach would provide the best outcome? (1 point)

The x-rays of the distal aspect of the right hind limb (latero-medial, dorso-plantar, 45° dorsomedial-plantarolateral, 45° dorsolateral-plantaromedial views) are shown

Answers

1.This horse shows a fracture of the proximal phalanx in the right hindlimb (0.2 point). Configuration of the fracture is an articular (0.2 point), non-displaced (0.2 point), complete (0.2 point), sagittal-oblique line (0.2 point), as shown by the fracture line in the 45° DLPLO view (total 1 point)

2.Due to the opportunity to obtain a perfect reconstruction of the fracture line and the non-displaced characteristic of this fracture, the best recommendation is surgical fixation (1 point)

2. The right hind pastern was stabilized with a half-limb splinted Robert Jones bandage and the fracture was repaired using four lag screws, inserted through stab incisions. The screws were positioned using a standing technique with a combination of sedation and local regional anaesthesia.

   1.On the basis of the surgical result shown in the corresponding x-rays, what is the expected prognosis for fracture healing? (1 point)

   2.Which are the most common complications (short and long-terms) we have to discuss with the owner? (1 point)

   The x-rays of the right hind pastern taken post-operatively are shown

Answers

1. Surgical result in term of fracture healing is good/excellent, because the post-operative x-rays showed an effective compression of the fracture line (1 point).

2. Short and long terms complications of this surgical procedure are: surgical site infection (0.2 point), implants failure (0.2 point), degenerative joint disease (0.2 point), incomplete healing of the fracture line (0.2 point), bandage-associated skin sore (0.2 point) (total 1 point)

3. After fracture repair, the pastern was protected using a half-limb Robert Jones bandage. Analgesia was provided using a combination of NSAID's and morphine during the first 24 hours post-operatively (meloxicam 0.6 mg/kg q24h, morphine 0.1 mg/kg q8h). The video shows the gait 24 hours after surgery.
    1. Comment on the ongoing analgesic protocol for this horse (1 point).
    2. Which type of complications would you aim to prevent with such analgesic protocol? (1 point)

Video of the horse at walk 24h after fracture repair

Answers

1. The horse is fully weight-bearing on the operated limb. The multimodal pain treatment control strategy is working effectively at the moment (0.5 point). We need to monitor pain score attentively, not only its gait (0.5 point). (total 1 point)

2. The potential complications we need to prevent are: pain related anorexia (0.3 point), pain related ileus/impaction (0.3 point), secondary laminitis in the contralateral hindlimb (0.4 point). (total 1 point)

4. Post-operative radiographs were obtained 8 weeks post-operatively to evaluate fracture healing. The dorso15°proximal-plantarodistal was the most important view to evaluate the fracture line.

1. How would you describe the fracture healing in the corresponding radiographic image? (1 point)

2. What is the reason for the radiographic pattern in the corresponding radiographic image? (1 point)

Dorso15°proximal-plantarodistal radiographic view of the right hind pastern 8 weeks post-operatively

Answer

1. There is a radiodense line bridging the site where a fracture line had been identified previously (0.5 point), but a complete healing process has not been achieved (0.5 point). (total 1 point).
2. A linear radiolucency is still present in proximity of the joint space in consequence of the limited compression obtained at this site (1 point).

5. You need to explain to the driver and the owner a proper rehabilitation plan to encourage bone healing.
    1. What is the level of activity you prescribe to this horse at this stage?
    2. Please, justify your answer. (2 points)

Answers

1. A daily in-hand walking (controlled exercise) is prescribed at this stage (1 point)

2. A small gradually increasing cyclic loading, to increase micromotion at the fracture site, could improve secondary bone healing. (1 point)

References:

Thrall 6th ed. Veterinary Diagnostic Radiology, Chap 23 The equine phalanges.
Auer 4th ed. Equine Surgery, Chap 91 Phalanges and metacarpo(tarso)-phalangeal joints.
Muir, Handbook of Veterinary Pain Management. Chap 23 Pain management in horses and cattle.
Smith MRW, Wright M Radiographic configuration and healing of 121 fractures of the proximal phalanx in 120 Thoroughbred racehorses (2007-2011) Equine Veterinary Jounal 46 (2014) 81-87.
Millis- Rehabilitation and Physical Therapy 2nd ed. Chap 6 Tissue healing: tendons, ligaments, bone, muscles, and cartilage, Box 6-3.

Case 2:

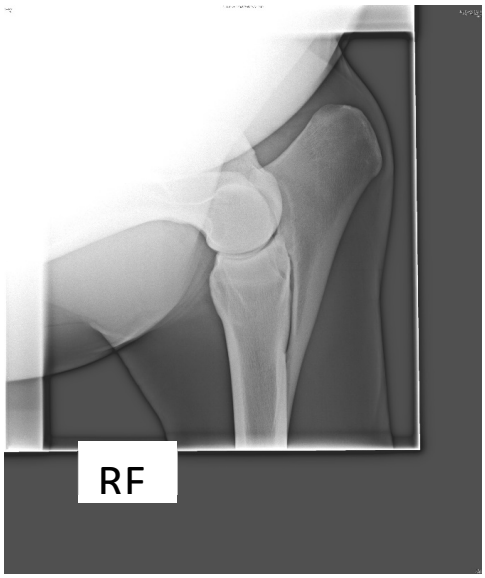
The horse was found out in the pasture following a possible collision with another horse. Status: 5 degree (5/5) lame right fore, flexed elbow and carpus, stands with the toe on the ground. No swelling. No crepitation can be palpated, however, due to the severe pain it is difficult to examine the limb. No bounding in digital pulse. The horse has a dropped elbow stance with RF. No reaction to visitation of the hoof, the toe and fetlock can be flexed without any reaction, no linear soreness, the carpus ok. Palpation of the radius and overlying muscles yields no reaction, and manipulation of the tuber olecrani no either. No consistent reaction of palpation of the scapulo-humeral joint and palpation over the length of the spine of scapula. Most proximally, the horse reacts to pressure over the spine of scapula and the area cranially to this.

1. Diagnosis: How would you proceed with the examination of the horse? (2 points)

Answers

0,5 point for each of the following: a) Diagnostic imaging; x-ray prox radius/ulna, b) Diagnostic imaging; x-ray humerus/shoulder, c) diagnostic ultrasound shoulder and d) neurological examination (emg)

2. Diagnosis: Are there any findings on the following images that could explain the symptoms? (1 point)



Answers

Diagnosis: No.

3. The X-ray and diagnostic ultrasound of spina scapula/ scapulo-humeral joint/biceps tendon showed no signs of injury. Nerve and muscle function RF: No extensor activity, elbow drop, no muscle tonus in triceps. Some small activity in the flexors, can flex the distal joints/hoof. No sensory

deficits. Can elevate scapula. Reduced muscle tonus in m. supraspinatus, m. infraspinatus and m. deltoideus. Some tonus and activity in m pectoralis.

Diagnosis: What is the most likely diagnosis? (2 points)

Answers

Diagnosis: N. radialis paralysis (Brachial plexus injury) (2 points).

4. You have confirmed the diagnosis radial nerve paralysis. How do you explain the three different types of nerve injury to the owner and the prognosis for each of them? (3 points)

Answers

1. Neurapraxia, The mildest form of injury, no actual structural damage, rather an interruption in the impulse transfer, completely restored function (up to weeks), prognosis good (0.5 point for each, a total of 1 point)

2. Axonotmesis, A break in the axon, but intact myelin sheath and surround fascia, due to crushing or elongation, healing approximately 1 – 4 mm / day, prognosis guarded to poor (0.5 point for each, a total of 1 point).

3. Neurotmesis, Total nerve rupture, due to strain, contusion or cut, both the axon and the supporting fascia are damaged, complete loss of function, prognosis poor. (0.5 point for each, a total of 1 point)

5. What are your treatment options ? (2 points)

Answers

Caudal splint, rest, nsaids, (1 point for each, a total of 2 points)

References:

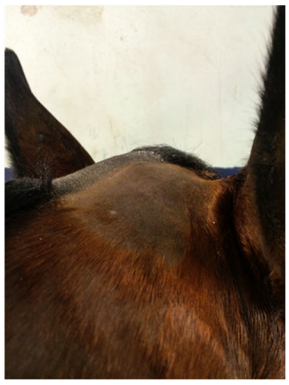
Nelson & Goodrich (2014). Elbow and Shoulder in Hinchcliff, K.W, Kaneps, A.J & Geor, R.J. (eds) Equine sports medicine and surgery, Saunders, p 350-351.
Hahn, C. In Practice: first published as 10.1136/inpract.30.6.322 on 1 June 2008; Equine Medicine and Surgery.
Equine Surgery (2019) 5th Edition, Auer, Stick, Kümmerle and Prange (Eds), Elsevier, p901-902.

Case 3

A 8 year old Warmblood gelding is presented for depression and low-head carriage after a suspected trauma sustained in the field. The horse was found 3 days before examination in the paddock with blood coming out from the nostrils (epistaxis), swelling in the retropharyngeal region and inability to raise the head and neck.

1. Describe the abnormal finding (images) (1 point). Describe and justify the diagnostic approach (including multiple diagnostic modalities) (4 points) based on the history and clinical findings.





Answers

There is asymmetric appearance of the left and right side of the nuchal area (1 point).

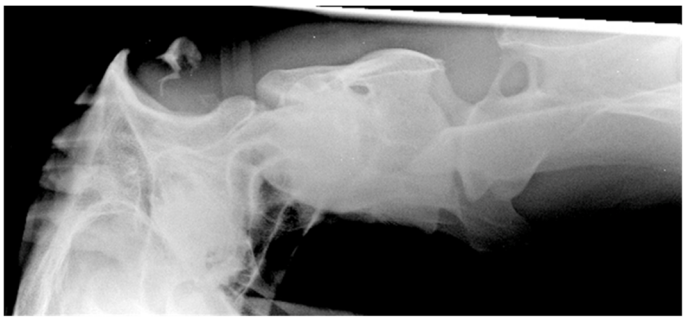
Endoscopy of the upper respiratory tract (0.5 point) including guttural pouches (0.5 point) for history of epistaxis.

Radiographic examination of the head and neck (1 point) for the swelling and inability to raise head and neck.

Ultrasonographic examination of the nuchal area (1 point) for the swelling.

Computed tomography of the head (1 point) for the epistaxis and swelling

2. The horse underwent endoscopy of the upper respiratory tract including guttural pouches, which showed a haematoma at the level of the left digastric muscle. A left to right lateral radiographic projection of the head and cranial cervical vertebrae was performed. Describe the radiographic findings (1 point) and formulate the most likely differential diagnosis (0.5 point).

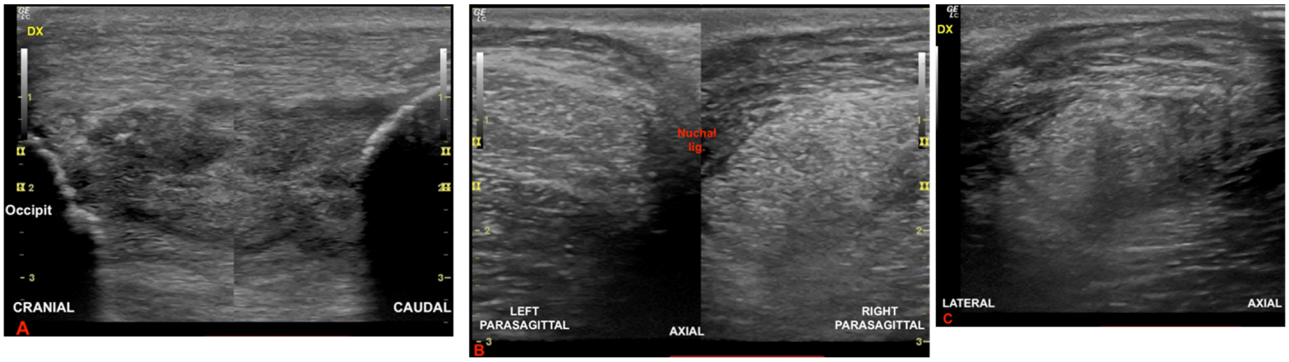



Answers

There is an irregular opacity (0.5 point) partially displaced caudad to the occipital bone (0.5 point). The most likely differential diagnosis is an avulsion fracture of the external occipital protuberance (0.5 points).

3. An ultrasonographic examination of the nuchal area was performed focused on the nuchal ligament and semispinalis capitis tendons. Describe the ultrasonographic findings (2.5 points).

A. Longitudinal right parasagittal image of the nuchal area
B. Transverse left and right parasagittal images of the nuchal area at the level of the atlas
C. Transverse right parasagittal image of the nuchal area at the level of the atlas



Answers

Increased size of the right semispinalis capitis tendon and heterogeneous echogenicity of the right semispinalis capitis tendon (1 point)

Haematoma at avulsion side (1 point)

Oedema of the surrounding soft tissues (0.5 point)

4. The final diagnosis was avulsion fracture of the external occipital protuberance and tendonitis of the right semispinalis capitis tendon. Report your treatment plan (0,5 point) and short term management (0.5 point).

Answers

Non-steroideal anti-inflammatory drugs (0.5 point)

Conservative treatment with rest and hand-walking for 4-6 weeks (0.5 point) (no point for less than 4 weeks). Surgery not indicated

References:

Equine Sport Medicine and Surgery. Hindcliff. Respiratory system. pages 578-579
Lameness in the horse. Ross and Dyson, pages 610-611
Clinical radiology of the horse. Butler et al. 465
Longus capitis and rectus capitis ventralis minor rupture in a horse following general anaesthesia for a laryngeal tie-forward procedure. Thomas I, Dixon JJ, Fraser B. Vet Rec Case Report 2020;6:e000962
Equine surgery. 5th ed. Pages 779-780
Computed tomography of nuchal ligament and semispinalis capitis tendon avulsions in a foal. Equine vet educ 2018;30:70-75