

VETERINARY PHYSICAL DIAGNOSIS
SHEEP AND GOATS
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HANDLING SHEEP AND GOATS

- I. Their desire to escape is a fundamental key to successful handling. Sheep and goats
- will readily follow one another
 - will move away from things that frighten them (less so goats)
 - will move better around slight corner or curves
 - will move away from building
 - prefer to move uphill
 - prefer lighted areas and resist dark barns, alleys, chutes, etc.
 - will respond to well-trained herding dogs (not dairy goats - will turn and challenge)

If attempting to catch an individual animal, keep within the flock, ideally in a small yard. Do not grab wool or hair. Use of a crook or lariat is acceptable.

Milk goats are more used to human contact than sheep or hair goats, and as a rule are more curious about and less wary of people. Two troublesome characteristics of goats should be kept in mind when handling or working with goats.

- A. They will climb everywhere - leave your practice vehicle outside the enclosure.
- B. They are very curious - do not leave equipment or health papers lying about during examinations - they will disappear or be eaten.

Mismothering of lambs and ewes can readily occur if they are disturbed, particularly during first few weeks of life.

GENERAL NOTES - "OVER THE FENCE" EXAMINATIONS

- II.
- A. The herding instinct in sheep and, to a lesser extent in goats, is very strong. Therefore, the individual animal that separates itself from the flock should be suspect. Sheep and goats are relatively undemonstrative animals. The sick animal may show few signs apart from isolation.
 - B. Any animal that lags behind when the group is moved rapidly, even for a short distance, should be suspect. Respiratory signs may be detected by moving animals rapidly for short periods.
 - C. Feces in these species are normally pelleted. Observe for evidence of diarrhea on pasture or soiling of breech area.
 - D. As sheep and goats are either fed as a group or graze pasture, observe their feeding behavior carefully from a distance. Reluctance to feed may be due to disease, but inability because of lack of bunker space and bullying is not uncommon. Sheep and goats usually chew their cud more rapidly than cattle. Goats are very particular about cleanliness of feeders and waterers. Healthy goats may refuse to drink from water buckets contaminated with a single fecal pellet.
 - E. Look for signs of wool or hair abnormalities. Loss of wool may indicate irritation or chewing by other sheep.
 - F. Observe carefully for signs of lameness. Feet and joint problems occur commonly in sheep and goats. Watch for the "praying sheep or goat."

- G. Common nervous signs in sheep and goats include circling, head pressing, apparent blindness.
- H. Keep in mind that an individual diagnosis may represent a condition affecting other animals in the flock, albeit in a subclinical condition. Therefore, in cases where no clinical diagnosis can be made readily, try and persuade the owner to allow a full necropsy to be carried out, particularly if there are a large number of animals at risk.
- I. History taking is particularly relevant with regard to:
1. Were animals recently purchased? If so, from where?
 2. Were the animals recently transported? Have any been to shows or fairs?
 3. Has there been a sudden change of feed?
 4. What is the water source of the animals?
 5. Were the animals grazing or were they totally confined?
 6. Have the animals been recently vaccinated, castrated, tailed, drenched, etc.?
 7. Stage of pregnancy or lactation? Remember that sheep and goats are seasonal breeders. In our region, breeding season occurs in late summer early fall, with lambing and kidding in late winter and early spring.
- J. It is impossible to make a visual judgment on the bodily condition of sheep if they are carrying a heavy fleece. Therefore, attempt to feel the spinous and transverse processes, as well as loin musculature of several animals in the flock to estimate their condition. Empty or open ewes and ewes in early pregnancy are often purposely kept in light condition. Nevertheless, emaciated sheep may be heavily parasitized, suffering from paratuberculosis or caseous lymphadenitis, for example.
- K. Maternal behavior and suckling:
Normal parturition in sheep and goats takes about 60-90 minutes. Animals may separate from the flock, frequently lay down and rise and finally, remain recumbent during delivery. Multiple births are usually rapid. Ewes may chew or eat parts of the fetal membranes, but they do not consume the entire placenta.
- A very strong maternal relationship develops in these species. Ewes in particular vigorously reject any attempt by other lambs to suckle although some even prior to lambing will "steal" lambs. Confined ewes are routinely "jugged" (penned) for up to 48 hours in the USA to ensure maternal bonding. Nearly all lambs will have suckled within two hours of birth. Lambs suckle very frequently, at least 60-70 times/day. Kids are more like cattle and lie out from does at pasture feeding only 5-7 times per day. They are, therefore, more readily adopted to artificial rearing with only 2-3 feedings per day.
- L. On grazing properties, walk or drive to examine animals under undisturbed conditions. Sheep and goats do not graze or defecate randomly but selected campgrounds, especially under trees and near water, to rest and ruminate. In very hot weather both species tend to graze more at night.

EXTERNAL EXAMINATION

Wool and Hair

- Check for wool blindness, i.e., wool over eyes
- Loss of wool - generalized or local?
- Evidence of irritation - ecto parasites (e.g., lice, use a magnifying glass and a good light source, keds, mange, fly strike), scrapie?
- Chewing of wool
- "Break" in wool - indicates previous systemic disease - nutritional or infectious
- Look for evidence of screwworms in endemic areas
- Myiasis - especially head, breech, body, preputial areas - odor, depression?
- Matting of wool with exudation - mycotic dermatitis?
- Loss of crimp and steely appearance of wool - copper deficiency?
- "Fleece Rot" - prolonged wetness with bacterial multiplication
- Grass seed infestation may also occur in range sheep
- Hairiness in sheep may indicate Border disease

Hair and Skin in Goats

- Normal shedding - goats will shed winter coat in spring
- Pruritus - mange, allergy, scrapie
- Hair loss - ringworm, mange, nutritional causes, scrapie
- Skin nodules - abscesses, pustules, demodex mange
- Dandruff - nonspecific sign of illness or poor nutrition
- Crustiness - especially under dew claws - chorioptic mange
- Sunburn - especially on udders of white goats

Photosensitization

- Shaking of head, restlessness, itching, swelling, peeling of white or unprotected portions of skin, sloughing of tips of the ears, etc.

Lips

- Examine for vesicles, scabs, suggestive of contagious ecthyma ("ORF")
- Also examine muzzle, coronet, udder

Teeth

- "Broken mouth"
- Missing or overgrown incisors
- Poor bodily condition - also leads to "cudding" of roughage
- Mottling and pitting of enamel - fluorosis?
- Grinding of teeth - abdominal pain/nervous disease

Aging of Sheep:

- Incisors cut -
 - 1-1 ½ years - 2 tooth (medial first)
 - 1 ½-2 years - 4 tooth
 - 2 ½-3 years - 6 tooth
 - 3 ½-4 years - 8 tooth
- "Broken mouth" - missing, overgrown, misplaced teeth

Aging of Goats:

- - 1 year - 2 incisors (medial first)
 - 2 years - 4 incisors
 - 3 years - 6 incisors
 - 3-4 years - 8 incisors (lateral last)
- Note teeth wear greatly varies with diet, soil types and breed

Gums

- Inflammation, odor, loosening of teeth - periodontal disease

Jaws

- Especially in lambs (overshot or undershot)

Salivation

- Excessive - local irritation?
- Contagious eczema?
- Rabies?
- Foreign body?
- Toxicities

Frontal sinuses

- Examine - nasal bot migration?
- Dehorning sinusitis in goats

Head

- Fighting injuries not uncommon in rams with secondary infections or myiasis

EXAMINATION OF THE HEAD IN GOATS

Always look for signs of dysymmetry during examination

- Body swellings - sinus infections after dehorning or tooth infection
- Nervous dysfunction - lip droop, eyelid droop, tongue deviation 2° to trauma or listeriosis
- Subcutaneous swellings - check for abscesses, abscessed lymph nodes, trauma. Often palpable thymus in neck of young goats

Horned and Polled Goats

- Goats of either sex can be born with horns. Two horn buds are present at birth on male kids surrounded by tufts of hair. On female kids, the buds may be present or show up shortly after birth. Naturally hornless or polled have no horn buds and a single symmetrical whorl of hair is evident on the forehead. This is important to recognize since natural hornlessness is associated with pseudohermaphroditism and infertility.

Scent Glands

- Male goat (buck) odor is in part due to secretion of glands located caudomedially to the horn buds. They can be excised, but should not be in bucks kept for breeding. There is a pheromonal attractant in the odor.

Eyes

- Watery discharge, conjunctival inflammation, keratitis and blepharospasm suggests contagious ophthalmia, especially if bilateral and epidemic occurrence. Also examine for signs of anemia (parasitism) or jaundice (copper poisoning), congestion (fever), entropion common in young lambs.

Tongue

- Cyanosis suggests bluetongue.

Ears

- Eartag or predator injuries? Carcinomas? Psoroptic ear mites common in goats. Know the normal ear configurations of the various goat breeds. LaMancha goats have a rudimentary external ear. Goats are identified by ear tattoos, except for LaManchas which are tattooed on the tail underside.

Pharynx

- Palpate - drenching related injuries?

Oesophagus

- Palpate - choke?

Rumen

- Palpate - bloat occurs in sheep, especially on diets high in alfalfa

Young Lambs and Kids

- Palpate abdomen carefully, especially naval area

Perineal area

- Evidence of diarrhea? Salmonellosis or *Escherichia coli* in young lambs. Parasitism. Associated myiasis?
- There is a normal yellowish waxy accumulation of material around the anus of goats due to glands located under the tail head.
- Rectal prolapse not uncommon in fattening lambs.

Respiratory System

Clear bilateral watery nasal discharge relatively common in sheep

Purulent Discharge

- Pneumonia, contagious ecthyma, foreign body?

Sneezing

- *Oestrus ovis* larvae?

Coughing

- Parasitic? - grazing animals
- Dusty environment
- Enzootic pneumonia
- Chronic progressive ovine pneumonia - older animals associated with emaciation

Auscultation

- Avoid wool

Cardiovascular System

Pulse - Use femoral artery

Pericarditis

- Sequel to pneumonia/navel infection in young animals

Cardiomyopathy (White Muscle Disease)

- Especially in young animals
- Sudden collapse following exercise

Urinary System

Urine samples can be obtained usually by temporary occlusion of nostrils in sheep. More problematic in goats.

Note urethral process in males of both species.

Impossible to pass a catheter in male goats due to the presence of a urethral diverticulum when the urethra crosses the caudal border of the pelvic floor.

Dribbling of urine or straining

- Urinary calculi? Abdominal distension? Perineal swelling and pulsation indicates urethral obstruction and possible rupture.

Scabs or ulceration of prepuce

- Posthitis especially in wethers
- Vaginal prolapse relatively common in ewes close to parturition. Risk factors include genetics, obesity, short tail.

During mating season it is normal behavior for male goats to spray themselves with urine, soaking their beards and forequarters. This contributes to their strong odor and may promote skin irritation.

Genital System

Scrotum

- Chorioptic mange, injuries, hernias?

- Testes - Palpate carefully for abnormalities of shape (epididymitis), size, consistency (orchitis, hypoplasia), adhesions? Varicocele?, abscesses

Look for pseudohermaphroditism in goats

- Normal vulva, enlarged clitoris with very short vagina. Associated with hornlessness

Congenital hypoplasia in female goats

- Very small vulva with absence of estrus

Uterine Discharge?

- Type, odor, color
- Retained placenta?
- Dystocia?

In goats a white to cloudy mucoid discharge may be seen in association with and following standing heat. After kidding, a normal liquid red-brown uterine discharge (lochia) may be present up to 3 weeks.

Mammary Glands

If a lamb or kid is apparently starving or "bumming," or a ewe resists suckling her own lamb, always examine udder carefully.

- Observe bilateral symmetry, color
- Physiological prepartum edema?
- Palpate carefully for evidence of acute or chronic mastitic lesions so called "hard bag" syndrome may be a manifestation of retrovirus infections in sheep and goats.
- Check teat patency
- External lesions - contagious eczema, udder impetigo
- Accessory teats - should be removed when immature or dry

Locomotor System

- Observe stance and gait carefully
- Difficulty in walking - arthritis, especially in young lambs or White Muscle Disease. Arthritis due to a variety of causes is a common problem in mature goats. Carpal swellings are commonly seen. However, some thickening of the skin over the carpi can occur naturally when goats are housed on firm surfaces. Differentiate this from arthritic swelling.
- Palpate individual joints, rickets (spontaneous fractures)? (Enlargement of epiphyseal areas).
- Footrot - commonly animals graze on knees. Observe - smell - pare feet carefully - necrosis of horn. Usually affects more than one foot. Secondary myiasis common.
- Foot abscess - acute pain, swelling, suppuration - usually one foot only
- Ataxia - copper deficiency/spinal abscesses, especially in young animals. Scrapie, other causes in mature animals

Nervous System

Animals should be observed carefully from a distance.

Behavioral abnormalities may be associated with primary nervous system disease or secondary. For example, sheep and goats in later stages of pregnancy toxemia exhibit ataxia and blindness, if advanced → recumbency. Sternal recumbency with head deviated toward flank - hypocalcemia? Circling to one side only - listeriosis, brain abscess or parasitic lesion.

Tetanus - localized stiffness, erect ears, prolapse third eyelid, opisthotonos common in sheep and goats often recent history of docking, disbudding and no tetanus prophylaxis.

Remember, rabies does occur in sheep and goats albeit rarely. Usually paralytic form rather than furious. Pseudorabies also occurs in animals in contact with infected swine → signs of pruritis, convulsions, sudden death.

Rear limb paresis/paralysis - *P. tenius* if deer co-graze with sheep. Fall/Winter.

References: Livestock Behavior - A Practical Guide. Kilgour and Dalton (Methuen). Chapter 3 - Sheep, Chapter 4 - Goats.

PHYSIOLOGICAL DATA

<u>Barometer</u>	<u>Sheep</u>	<u>Goats</u>
Rectal temperatures	102° (101.4-104°)	102-104°
Very subject to ambient temperatures and fleece or hair coat		
Ruminations	2/minute	1-2 minute
Pulse	70-80 minute	70-80 minute
Respiration	12-20 minute	12-20 minute
Puberty	8-12 months	4-12 months
Estrum	1-2 days	Avg 18 hours (12-23 hours)
Estrus cycle	16-17 days	18-23 days
Gestation	147-153 days	150 days
Average Birth Weight		Dependent upon breed
Single	8-13 lb.	
Twin	7-10 lb.	
Fleece Weight	7-15 lb.	
Specific Gravity - Urine	1.015-1.045	1.015-1.035
Hematology		
Blood Volume	8% of body weight	
Hbg	12-14 Gm%	8-14%
Ht (PCV)	24-49 Vol. %	18-38 Vol. %
RBC	8-13x10 ⁶ /mm ³	8-17.5x10 ⁶ /mm ³
WBC	4-10,000/mm ³	6-16,000/mm ³
Clotting	2.5 minutes	2.5 minutes
Differential		
Neutrophils	1-4,000 10-40%	30-48%
Lymphocytes	2.5-7000 25-70%	50-70%
Basophils	0-200 0-2%	0.2%
Monocytes	0-800 0-8%	1-4%
Eosinophils	0-700 0-7%	308%
Clinical Chemistry		
Bl. Glucose	35-60% mg%	45-60 mg%
Bl. Urea Nitrogen	8-20 mg%	13-28 mg%
Creatinine	1.2-1.9 mg%	0.9-1.8 mg%
SGOT	97-191	50-100 SF Units
SGPT		12.7 SF Units
Calcium	11.9-12.4 mg/%	9-11 mg/%
Magnesium	2.2-2.8 mg/%	2.9-3.6 mg/%
Phosphorus	2.5-9.0 mg/%	3.8-17.6 mg/%
Sodium	146-161	135-154
Potassium	4.8	3.9-6.3
Chloride	98-109	105-120
Urine Ketone Positive	Think of Ketosis, Pregnancy Toxemia	
Urine Glucose Positive	Think of Enterotoxemia	
Ram-Ewe Ratio	Ram Lamb 1:15; Mature Ram 1:35-50	

BEHAVIORAL AND PHYSICAL DIFFERENCES BETWEEN SHEEP AND GOATS

<u>ACTIVITY</u>	<u>SHEEP</u>	<u>GOATS</u>
Food Preference	Grass and succulent herbage	Browse (weeds, leaves and twigs)
Food Variety	Accept monotonous diet	Need more variety
Habitat Selection	Lowlands or hilly grass-lands	Climb on rocks and elevations
Agonistic Behavior	Butt head on	Sideways hooking motion
Fighting	Butt	Rear on hind legs
Sexual Behavior	Less herding	"Herd" females
Newborn Young Behavior	Remain by mother ("lying in")	"Freezing" some distance from mothers ("lying out")
Alarm Signal	Snort and stamp one forefoot	Frequent high pitch ("sneeze")
Alarm	Form a compact bunch	Form a thin line
Hornless Condition	Fertile	Sterile
Separate 2 animals	Few separate	Some separate
Leader	Follows goat	A goat makes first move from source of alarm
Tail	Hang's down	Stands up (erect)
Beard	Absent	Present in buck and in some females
Wattles	Absent	May be present
Hears a low-flying plane	Frightened and likely to run	Often stand and watch
Stress (elevated blood cortisol)	Isolation from mob and subjection to an unfamiliar environment	More of a problem with young kids and doelings

REPRODUCTIVE PARAMETERS

ITEM	BOVINE	OVINE	CAPRINE
Age at Puberty (Months)	12	6.5	6.5
as % adult BW	Dairy 30-40% Beef 45-55%	40-63%	?
Estrous cycle length	21-22 d	16-17 d	20-21 d
Duration of estrus	18-19 h	24-36 h	26-42 h
Ovulation	10-11 h after end of estrus	24-30 h after beg. estrus	Shortly after end of estrus
CL Regression	day 16-17	day 13-15	day 16-17
Gestation length	280 d	148 d	148 d
Parturition to ovulation	Dairy 34 d Beef 63 d	Seasonal	Seasonal
Parturition to 1st estrus	Dairy 34 d Beef 63 d	Seasonal	Seasonal
Parturition to uterine involution	45 d	27 d	?
Avg. ovulation rate	1	1.8	2.3
Avg. twinning rate	Dairy 2% Beef 0.5%	50%	< 100% breed variation
Normal conception rate	Dairy 50% Beef 75%	85%	?
Loss to abortion/fetal death	Dairy 18% Beef 9%	?	?

Body Scoring of Sheep

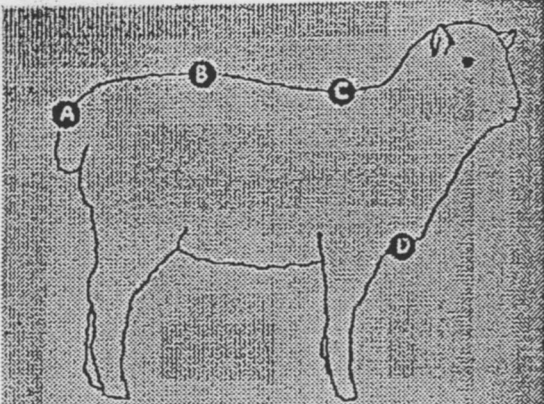
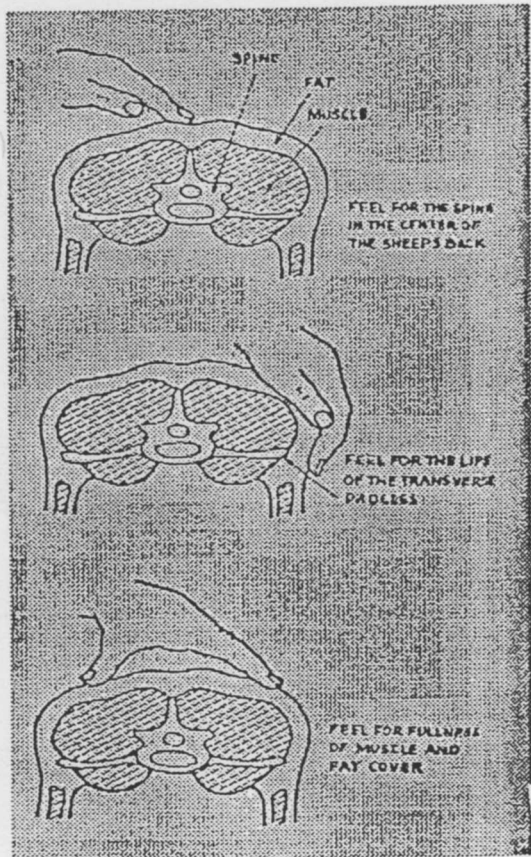


Fig. 7.5. Handling procedures recommended by the Meat and Livestock Commission for assessing the fatness of live lambs. (Reproduced by permission of the Meat and Livestock Commission.)



Several times through the year, the body score of the breeding sheep should be taken. Due to the heavy wool of some breeds, a system was devised that is reproducible and reliable. These four points are important to assess: 1) Sharpness or roundness of spinous processes, 2) Prominence and degree of cover of the transverse processes, 3) Extent of muscular and fatty tissue beneath the transverse processes, and 4) the fullness and fat cover of the eye muscle (press between the spinous and transverse processes).

Condition Scores:

- 0 Extremely emaciated. Not possible to detect any muscular or fatty tissue beneath skin and bone.
- 1 The spinous and transverse processes are prominent and sharp. Fingers pass easily under the ends. Possible to feel between processes. The loin muscles are shallow with no fat cover.
- 2 The spinous and transverse processes are smooth and rounded. Possible to pass fingers underneath the ends with little pressure. The loin muscles are of moderate depth, but have little fat cover.
- 3 The spinous processes are smooth and round. Individual bones can be felt with pressure. The transverse processes are smooth and well covered. Firm pressure is required to feel over the ends. The loin muscles are full and have moderate fat cover.
- 4 The spinous processes require pressure on the hard line. The ends of the transverse processes cannot be felt. Loin muscles are very full and have very thick fat cover.
- 5 The spinous and transverse processes cannot be detected even with pressure. Loin muscles are very full and have a very thick fat cover.

Overviews of Body Scores

Pictures courtesy of SID American Sheep Production Association.

