



NORTHWEST LAGOTTO

LYNDEN · WASHINGTON

— A NORTHWEST LAGOTTO HEALTH ESSAY —

When to Spay or Neuter *Your Lagotto*

The current science on timing, and why waiting until eighteen to twenty-four months protects joints, hormones, and long-term health.

★ EVIDENCE UPDATED JUNE 2025 · WSAVA GUIDELINES INCLUDED

PEER-REVIEWED RESEARCH · PREPARED BY MARK NELSON, BREEDER & OWNER

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UPDATED MARCH 2026 · EVIDENCE CURRENT TO JUNE 2025 · BY MARK NELSON

IN THIS GUIDE

- | | |
|---|--|
| 01 Why Timing Matters More Than Most Breeders Admit | 04 Male vs Female: A Side-by-Side Timing Comparison |
| 02 The Evidence: What the Latest Studies Actually Show | 05 Practical Recommendations for Responsible Owners |
| 03 Breed-Specific Insights for the Lagotto Romagnolo | 06 Alternatives to Traditional Spay and Neuter |

Imagine your Lagotto at nine years old. She is still moving the way she moved at three, fluid, effortless, that characteristic trot that makes people stop and ask what breed she is. Her hips are clear. Her joints carry her without complaint. She is climbing the trails behind your house, nose down, entirely in her element.

Now imagine a different version of that same dog at nine. The one whose owners did everything right, the premium food, the regular vet visits, the careful socialization, but who was spayed at six months because that is what the clinic recommended. The one who has been managing mild hip dysplasia since she was four.

The difference between those two dogs is not luck. Increasingly, it is a decision made at six months of age.

This essay exists because the science has moved, decisively, in a direction that matters for every Lagotto owner, and most veterinary practices have not yet caught up. In 2024 and 2025, three major publications from the world's leading veterinary institutions reshaped how this question is approached. We believe our families deserve to make this decision with the best available evidence, not the guidelines written for shelter populations in 1990.

Here is what we know.

Questions about your puppy's health plan? We answer every family directly.

ASK US DIRECTLY →

Why Timing Matters More Than Most Breeders Admit

“Sex hormones do far more than make puppies. They govern bone growth, joint development, immune function, and cancer resistance.”

THE CORE FINDING SHELTER MEDICINE MISSED FOR THIRTY YEARS

The recommendation to neuter at six months was not based on a study of what is best for individual dogs. It was based on what was operationally manageable for population control, a way to ensure that dogs adopted from shelters would not produce more dogs. The recommendation migrated from shelter medicine into general practice and sat there, largely unchallenged, for three decades.

The biology tells a different story.

Testosterone and estrogen are not merely reproductive hormones. They are **architectural hormones**: they govern the timing of growth plate closure in the long bones, regulate immune surveillance against certain cancer pathways, influence cognitive aging, and shape the musculoskeletal proportions of the developing dog. When you remove the gonads before the body has finished using them, you do not simply switch off reproduction. You remove the biological signal that tells the skeleton when to stop growing.

There is also a second mechanism now under active investigation. After gonadectomy, **luteinizing hormone (LH) levels rise persistently to supra-physiological levels**, often for the life of the animal. The WSAVA's landmark 2024 guidelines explicitly cite chronic LH elevation as a likely contributor to the increased cancer rates observed in neutered dogs, independent of the loss of sex hormones themselves. This mechanism was not well understood even five years ago.

The result of disrupting growth plate closure is a dog whose bones have grown slightly too long relative to the joints they serve. The hip sockets, the elbow joints, the stifles, all calibrated by evolution for a particular bone length. A dog altered before that calibration is complete will carry those joints through a lifetime of activity that the joints were not built for.

SECTION TWO

The Evidence: *What the Latest Studies Actually Show*

★ 2024–2025 PARADIGM SHIFT

The largest veterinary bodies in the world have changed their guidance.

In May 2024, the World Small Animal Veterinary Association (WSAVA), representing over 200,000 veterinary practitioners across 116 national associations, published its first-ever comprehensive guidelines on dog reproduction (Romagnoli et al., *Journal of Small Animal Practice*, doi:10.1111/jsap.13724). Their conclusion: routine gonadectomy of companion dogs “can no longer be supported for all categories of animals.”

A 2025 follow-up paper by Romagnoli further confirms this and adds that early gonadectomy may worsen behavioral problems rather than resolve them.

Orthopedic Health

The first major signal came in 2013. Drs. Benjamin and Lynette Hart at UC Davis published a study in *PLOS ONE* examining Golden Retrievers and found that dogs neutered before 12 months showed significantly elevated rates of hip dysplasia, elbow dysplasia, and cranial cruciate ligament (CCL) rupture, in some categories more than double the rate of intact animals.

That study was criticized for being breed-specific. Hart’s group spent the following decade answering it, extending the analysis across more than forty breeds. Their 2024 paper added five large breeds (German Short/Wirehaired Pointer, Mastiff, Newfoundland, Rhodesian Ridgeback, and Siberian Husky), published in *Frontiers in Veterinary Science* (doi:10.3389/fvets.2024.1322276). For these larger breeds, the pattern was stark:

Orthopedic outcomes by neutering age in larger breeds over 20 kg (Hart et al., 2024)

NEUTERING AGE	HIP DYSPLASIA	CCL RUPTURE	ELBOW DYSPLASIA
Before 6 months	Up to 3× increased	Up to 4× increased	Up to 2.5× increased
6–12 months	1.5–2× increased	1.5–2× increased	Modestly increased
12–24 months	Near-intact levels	Near-intact levels	Near-intact levels
After 24 months / intact	Baseline (lowest)	Baseline (lowest)	Baseline (lowest)

Source: Hart LA, Thigpen AP, Hart BL, et al. (2024). *Frontiers in Veterinary Science*. doi:10.3389/fvets.2024.1322276

The mechanism is well understood: sex hormones close the growth plates. When hormones are removed early, the long bones grow slightly beyond their calibrated length. The resulting geometry, a longer femur and tibia relative to the hip socket and stifle joint, creates abnormal mechanical loading that, sustained over years of normal activity, produces the joint damage that shows up in X-rays at age four or five.

Cancer

A study of over 40,000 dogs (*PLOS ONE*, Hoffman et al., 2013) found that neutered males and females were significantly more likely to die of cancer than intact dogs. The relationship is not universal: some cancers are reduced by early sterilization, but the cancers increased by early sterilization are often the aggressive, late-presenting ones:

Cancer risk by sex and sterilization timing

CANCER TYPE	SEX	STERILIZATION EFFECT	TIMING SENSITIVITY
Mammary	Female	Reduced if spayed before first heat	Strong effect only before first heat
Testicular	Male	Eliminated	Applicable at any age
Osteosarcoma (bone)	Both	Increased with early neuter	Risk elevated with early neuter
Hemangiosarcoma	Both	Increased (1.5–2×) with early neuter	Particularly cardiac HSA in females
Lymphoma	Both	Increased with early neuter	Effect size moderate
Mast cell tumor	Both	Increased with early neuter	Primarily in large breeds
Prostate	Male	Slightly increased in neutered	Benign prostatic disease reduced
Bladder / TCC	Female	Modestly increased with early spay	Small effect

Sources: Hoffman et al., 2013 (PLOS ONE); Hart et al., 2024 (Frontiers in Veterinary Science); Cooley et al., 2002 (Purdue University Cancer Center)

WATERS ET AL. · 2011 · GONADAL HORMONE EXPOSURE & SURVIVAL

The Rottweiler data from Purdue University’s Gerald R. Murray Cancer Center makes this vivid: female Rottweilers who retained their ovaries beyond six years of age were **four times more likely to reach exceptional longevity (13+ years)** compared to those spayed earlier. The longer the hormone exposure, the longer the life.

Urogenital Health: Where the Tradeoffs Live

Urogenital outcomes by sex and sterilization timing

CONDITION	SEX	EFFECT OF EARLY SPAY/NEUTER	NOTES
Pyometra	Female	Eliminated by spay	Serious risk in intact females; symptoms are recognizable
Urinary incontinence	Female	2–3× increased after spay	Particularly after early spay
Urinary tract infection	Female	Modestly increased post-spay	Related to perineal conformation
Prostatic hyperplasia	Male	Reduced	Most common in intact males over 5 years
Prostatic cancer	Male	Slightly increased after neuter	Rare; chronic LH implicated

Pyometra is the legitimate counterargument to delayed spay in females. It is a life-threatening condition, it occurs in intact females, and it requires emergency surgery. The risk is real. It is also manageable: pyometra does not develop invisibly. The symptoms, excessive drinking, lethargy, and vaginal discharge, are recognizable, and an engaged owner can act quickly. This risk must be weighed against the irreversible orthopedic damage of early spay, not dismissed, and not dramatized.

The Longevity Question

Population-level statistics show neutered dogs tend to live longer than intact dogs. This is true but deeply confounded. Intact males roam, get hit by cars, and engage in fights. Intact females develop pyometra. In managed, responsible households, those variables are controlled. The relevant question is this: for a dog in a responsible home, does the timing of sterilization affect lifespan? The Rottweiler data, and the 2024–2025 WSAVA guidelines, say yes, and strongly in favor of later sterilization.

— SECTION THREE

Breed-Specific Insights for the Lagotto Romagnolo

No breed-specific study has been published on the Lagotto. We reason from the biology, and the biology is clear.

The Lagotto Romagnolo weighs 24–35 lbs at maturity. An important nuance worth stating honestly: some evidence suggests that dogs under 20 kg may not show the same elevated orthopedic risk from early neutering as larger breeds. Female Lagottos, typically 24–28 lbs, fall at or near this threshold.

We acknowledge this because credibility matters. However, three factors lead us to maintain our 18–24 month recommendation regardless:

1. **The orthopedic data for sub-20 kg dogs is less studied, not absent.** Absence of evidence is not evidence of safety, particularly for a working breed with active joint demands.
2. **The cancer and immune-function data is not weight-stratified in the same way.** Hormone-related cancer risk does not follow the same size threshold as orthopedic risk.
3. **We err on the side of full skeletal maturity.** Waiting costs nothing. Proceeding early, if it causes harm, is irreversible.

Hip dysplasia is a documented concern for this breed. It is one of the primary reasons breed clubs mandate OFA certification before breeding. We certify every dog in our program. Anything that elevates hip dysplasia risk, including early sterilization, is an active concern, not an abstract one.

The Lagotto is a working sporting dog. These dogs should be able to work, hike, and move freely well into middle age. Joint integrity is not a cosmetic consideration for the breed. It is functional.

The Lagotto is a breed with known neurological sensitivity. While this is primarily related to a specific genetic condition (benign familial juvenile epilepsy, discussed in our genetics essay), it underscores the importance of cautious, evidence-based health management across all dimensions, including hormonal development.

OUR POSITION

Hart’s strongest joint-disorder findings are in breeds over 20 kg, and the Lagotto sits just under that line, where the orthopedic evidence is mixed. We weigh that against the factors above (cancer and hormonal risks that do not follow the same size threshold, and the plain fact that waiting is reversible and early altering is not) and come down on the side of full skeletal maturity. Treat the Lagotto as a working sporting dog whose joints have to last decades, and wait. This is our considered judgment, not a universal mandate.

SECTION FOUR

Male vs Female: *A Side-by-Side Timing Comparison*

Spay and neuter timing compared by sex (Lagotto Romagnolo)

	MALES	FEMALES
Minimum recommended age	18 months	18 months
Our recommended age	24 months	18–24 months
Why this timing	Full skeletal maturity; aligns with OFA hip and elbow certification	After 1–2 heat cycles; growth plates closed; hormonal architecture established
OFA opportunity	Neuter under the same anesthetic as OFA radiographs: one procedure, one recovery	OFA radiographs can be timed to align with the spay
Cancer risk reduced by waiting	Osteosarcoma, hemangiosarcoma, lymphoma	Osteosarcoma, hemangiosarcoma, lymphoma
Cancer risk increased by waiting	None significant in managed dogs	Small increase in mammary risk per heat cycle
Orthopedic benefit	Significant: reduced CCL and hip dysplasia risk	Significant: reduced CCL and hip dysplasia risk
Management considerations	Intact males mark and may mount; manageable with training	Two heat cycles per year (~2 weeks each); manageable with supervision
Urgency	None in a managed, single-dog household	Watch for pyometra symptoms in years 3+ if delaying beyond 24 months

SECTION FIVE

Practical Recommendations for Responsible Owners

- 01 **Wait until 18 months at minimum.** This is our contract requirement and our recommendation. Eighteen months is when growth plates are reliably closed in medium-breed dogs. Before this point, the orthopedic risk of sterilization is not theoretical. It is documented in the data.
- 02 **Aim for 24 months if circumstances allow.** The additional six months allows fuller hormonal development, better muscle mass, and the opportunity to complete OFA certifications concurrently with the sterilization procedure.
- 03 **Combine OFA radiographs with the neuter or spay.** Your dog requires general anesthesia for both. The OFA X-rays add minimal time and cost to an existing procedure. This is the single most efficient health decision you can make as a Lagotto owner.
- 04 **Learn to manage intact dogs.** This is straightforward with basic knowledge. For females in heat: secure fencing and no off-leash time in areas with intact males. For intact males: recall training and consistent leash management. We are happy to walk any of our families through this.
- 05 **Discuss the research with your vet.** You are not asking your vet to accept your word. You are presenting published, peer-reviewed research from UC Davis and guidelines from the WSAVA and AAHA, the two largest veterinary professional bodies in the world. A vet who dismisses this evidence without engaging with it is telling you something important.
- 06 **Monitor your intact female carefully.** Pyometra is the legitimate risk of extended intact status. Know the signs: excessive drinking and urination, lethargy, abdominal distension, and vaginal discharge. Any of these warrant same-day veterinary contact. Caught early, pyometra is treatable. The risk is real; the management is not complicated.

— SECTION SIX

Alternatives to Traditional Spay and Neuter

The binary of “early spay/neuter” versus “leave intact forever” is a false one. The 2024 WSAVA guidelines explicitly discuss these alternatives and recommend they be considered on a case-by-case basis.

FOR FEMALES

Ovary-Sparing Spay (OSS)

The uterus is removed, eliminating pyometra risk and pregnancy, while the ovaries are left in place. Full hormonal protection is preserved. Requires a surgeon comfortable with the procedure.

FOR MALES

Vasectomy

The vas deferens is severed, rendering the male infertile. The testicles remain in place, so full testosterone production continues and all hormonal health benefits are preserved. Must be specifically requested.

MOST PRACTICAL

Delayed Traditional Spay / Neuter

Simply waiting until 18 to 24 months before performing the standard procedure. The orthopedic and cancer-risk data improves substantially with this timing alone, without requiring any specialist surgery.

LIMITED AVAILABILITY

Chemical Neuter (Deslorelin)

A subcutaneous implant that suppresses testosterone for 6 to 12 months. Reversible. Available in some countries but not widely in the USA. Useful for specific management situations.

Our families most commonly proceed with a delayed traditional spay or neuter at 18 to 24 months. A small number have opted for vasectomy or OSS. We support any of these approaches and are happy to discuss what fits your household.



OUR COMMITMENT

The Northwest Lagotto Promise

We import champion bloodlines from Italy and the United States. We OFA-certify every breeding dog. We test for every heritable condition the breed is known to carry. We do not breed for convenience or volume. We breed when we have the right pairing, and we place our puppies in homes that will match that standard of care.

Asking our families to wait 18 to 24 months before altering their dog is consistent with everything else we do. It is not a restriction. It is a continuation of the standard we set from the first genetic health test we ordered on every breeding animal.

We are available to every family who takes home a Northwest Lagotto puppy, for the life of that dog. Questions about heat cycles, about navigating veterinary conversations, about OFA timing. These are not questions you should be left to research alone at midnight. They are questions we answer, directly and personally.



Mark Nelson

BREEDER & OWNER · NORTHWEST LAGOTTO LLC · LYNDEN, WASHINGTON

Over a decade of lived experience with the Lagotto Romagnolo, breeding from OFA-certified, health-tested champion bloodlines imported from Italy and the United States. Every recommendation in this guide is backed by peer-reviewed research and the daily reality of raising these dogs to the highest standard we know.

— COMMON QUESTIONS

What Families Ask About Spay and Neuter Timing

Q1 When should I spay or neuter my Lagotto Romagnolo?

Northwest Lagotto requires a minimum of 18 months and recommends 24 months. This aligns with the Hart et al. 2024 multi-breed study and the 2024 WSAVA guidelines, which show that medium-breed dogs neutered before 18 to 24 months face significantly elevated risks of hip dysplasia, CCL rupture, and certain cancers.

Q2 What do the 2024–2025 WSAVA guidelines say about neutering?

The WSAVA's 2024 comprehensive guidelines (Romagnoli et al., Journal of Small Animal Practice) concluded that routine gonadectomy of all companion dogs not intended for breeding can no longer be universally supported. They recommend individual assessment based on breed, sex, age, and management situation.

Q3 What is the risk of waiting to spay a female dog?

The primary risk of waiting is pyometra, a serious uterine infection that occurs in intact females and requires emergency surgery. Its symptoms (excessive drinking, lethargy, and vaginal discharge) are recognizable. In a managed household with an attentive owner, this risk is manageable and must be weighed against the documented orthopedic and cancer benefits of waiting.

Q4 What is ovary-sparing spay?

Ovary-sparing spay (OSS) removes the uterus while leaving the ovaries in place. The female cannot become pregnant or develop pyometra but continues to receive the full hormonal benefits of her ovaries: reduced cancer risk, better joint health, and full immune development. It requires a surgeon experienced in the procedure.

ONE MORE THING

Have Questions About Your Specific Dog?

The research in this guide is a starting point, not a prescription. If you have a Northwest Lagotto puppy and want to discuss timing for your dog specifically, reach out - we are happy to talk it through with you and your vet.

GET IN TOUCH

References & Citations

- 1 Hart LA, Thigpen AP, Hart BL, Willits NH, et al. (2024). *Assisting Decision-Making on Age of Neutering for German Short/Wirehaired Pointer, Mastiff, Newfoundland, Rhodesian Ridgeback, and Siberian Husky*. *Frontiers in Veterinary Science* 11:1322276. doi:10.3389/fvets.2024.1322276
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This guide is provided to Northwest Lagotto families as general education. It reflects the current published evidence and our considered judgment, and it is not a substitute for individualized veterinary advice for your dog.