RCVS KNOWLEDGE

RCVS KNOWLEDGE CANINE CRUCIATE REGISTRY REPORT 2026



RCVS Knowledge is a charity with a mission to advance the quality of veterinary care for the benefit of animals, the public and society.

We empower and support veterinary teams to provide evidence-based, quality care and improved animal health and welfare outcomes.

Veterinary teams face many challenges in accessing up-to-date knowledge and applying it in practice. To support them and deliver our mission we:

- Create and share practical support and tools to help veterinary teams and other animal health professionals deliver better animal health and welfare outcomes in a structured and sustained way.
- Provide veterinary science and animal health resources to help busy veterinary professionals stay up to date with the most relevant research and apply it in practice.
- Curate and raise awareness of veterinary history to ensure that veterinary care today and in the future is built on knowledge and understanding of the past.

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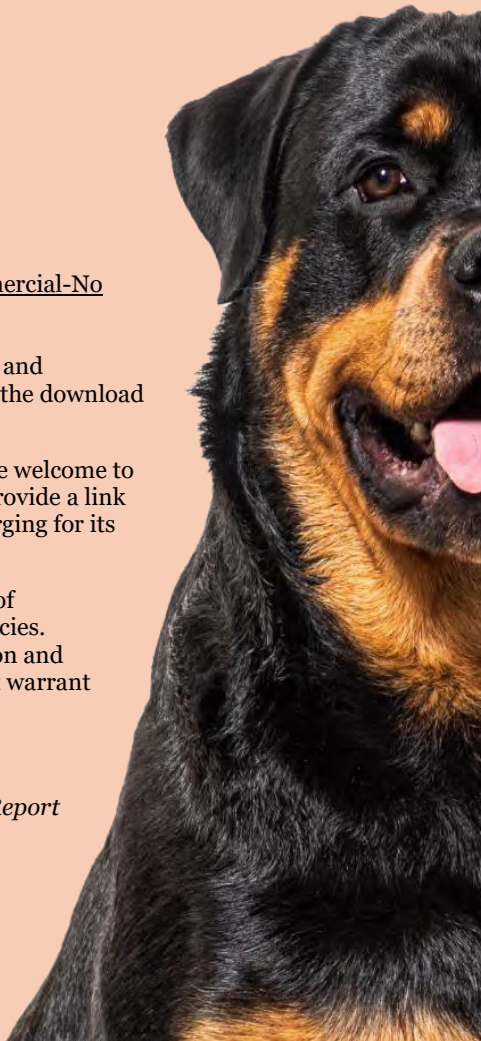

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This report uses data from 1 August 2025 to 31 July 2026.

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CANINE CRUCIATE REGISTRY
REPORT 2026

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A MESSAGE
FROM THE CHAIR OF OUR BOARD OF TRUSTEES

As a long-time member of the RCVS Knowledge Board of Trustees, of which I've recently become chair, I've watched the RCVS Knowledge Canine Cruciate Registry (CCR) develop since its inception in 2021. I'm absolutely delighted to see that this year the number of cases recorded on the CCR has broken the 2,000 mark for the first time.

When this project was launched, the aim was to gather data on canine cruciate surgeries to provide information to veterinary surgeons about which surgical techniques are most effective, lead to the least complications, and improve patients' quality of life. Reaching that milestone of 2,000 cases is an important step on the way towards getting there.

We couldn't have achieved that without the trust, enthusiasm, and dedication of the 649 veterinary professionals who have provided their canine cruciate surgery data since 2021. They have no obligation to do so but are participating out of a desire to build the evidence base to help veterinary teams provide better care for their patients and clients in future. As a vet and the owner of two Labrador retrievers – one of which has had cruciate surgery – I can't help but be inspired by their selfless contributions. I hope that you will all continue to record cases on the CCR for many years to come.

The vets who contribute also see some benefits to participating in the CCR. We've heard many stories from our contributors over recent years that have underlined the importance of the CCR as an audit tool. Submitting your own cases to the registry allows you to see your overall results and compare those against the national average. That's a powerful resource to have, and one that I'd urge any non-participating veterinary teams to make use of.

If you work in a veterinary team that handles a lot of orthopaedic cases, I'd urge you to show your colleagues this report and suggest submitting your cases to the CCR. You'll be contributing a great deal to the evidence base around canine cruciate surgery outcomes and will be able to use the data to audit your own work and make improvements.

To the pet owners reading this, I'm delighted that you've taken an interest in this project, thank you. I hope it helps you navigate any cruciate ligament issues your pet may have, to go into consultations about their medical care with more information.

As a final point to note, we've noticed a decrease in the use of post-operative antibiotics recorded on the CCR in the last two years. Post-operative antibiotic use has decreased by 13.8% in the previous year and by 33.4% since 2021. This is not what we set out to measure with the CCR, instead focusing on post-operative outcomes, but it's an encouraging side note that CCR participants are auditing their outcomes and practising better antimicrobial stewardship as a result.

I hope everyone reading this will feel inspired to continue working together to help the CCR grow and improve for many years to come.





Sue Paterson FRCVS
Chair, RCVS Knowledge Board of Trustees

A MESSAGE FROM OUR CLINICAL LEAD

This year's report comes at a time when the profession is being asked to be clearer about the care we provide and what it costs. The Competition and Markets Authority's final report has placed considerable emphasis on transparency and helping owners make informed choices. Alongside information about price, we need to be able to demonstrate the quality of our care. To do this, we need reliable data on outcomes and complications.

For cruciate surgery, knowing how many procedures we perform is only part of the picture. The CCR gives us a way to collect this information and review our own results. Participating vets can use registry data to benchmark outcomes, better understand recovery and complication patterns, and to support discussions with owners about treatment choices and expected outcomes. However, these insights are only as strong as the data that underpin them, making consistent case entry and follow-up essential.

An encouraging finding this year is the continued reduction in post-operative antibiotic use. Among procedures where the antibiotic continuation question was completed, use fell from 30.4% in 2024–2025 to 16.3% in 2025–2026. This is a substantial reduction. Collecting complication data alongside prescribing information will help us understand how changes in antibiotic use relate to patient outcomes.

There has also been a change in the procedures recorded. TPLO now accounts for 84.7% of procedures submitted in the latest reporting year, compared with 72.1% in the previous year. The proportion of CCWO procedures has fallen from 20.4% to 13.1%. These figures reflect submissions to the registry though, and should be taken as an indicator of practice across the UK, rather than a definitive measure, as cases not captured by the registry may change the spread of procedures performed. We need contributions from clinicians using all techniques if the data are to represent the range of treatment options available.

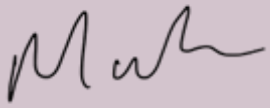
The number of procedures recorded fell from 494 to 320 this year. We therefore encourage more colleagues to contribute, and existing users to continue entering their cases. This applies across the profession: first-opinion and referral practice, vets with and without additional qualifications, and practices of all sizes and ownership types. Routine cases are just as important as more challenging ones.

Follow-up remains particularly important. Cases with complications or disappointing outcomes need to be recorded as consistently as patients that recover well. Without this, we risk presenting an incomplete picture. Reporting a complication provides an opportunity to review what happened, learn from it and consider whether anything could be done differently.

I would encourage everyone performing cruciate surgery to make case entry and follow-up part of your routine. Colleagues who are not performing the surgery can also help by encouraging owners to complete their assessments and ensuring that problems identified during recovery are shared with the surgeon. Veterinary nurses and the wider practice team have an important role in supporting this.

Thank you to everyone who has contributed cases and helped owners provide follow-up information. The more consistently we collect these data across the profession, the better placed we will be to understand our results, improve our care, and discuss its quality and value with owners. My thanks, as always, go to the wider teams at both RCVS Knowledge and Amplitude Clinical Outcomes, who make this project possible.





Mark Morton
Clinical lead

STEERING GROUP MEMBERS

The RCVS Knowledge Canine Cruciate Registry Steering Group has been developed to represent a broad spectrum of the veterinary profession.

It comprises two specialists in small animal orthopaedics, two experienced GP vets, an epidemiologist, a lay member, representation from the RCVS Knowledge Quality Improvement Advisory Board and members of the British Veterinary Orthopaedic Association (BVOA), which endorses the project.



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BACKGROUND

The RCVS Knowledge Canine Cruciate Registry (CCR) launched in July 2021 with the aim of improving canine cruciate patient outcomes and minimising complications, by supporting clinicians to evaluate which surgical techniques and implants are most effective and to advance their quality of care.

The CCR is open to any veterinary surgeon in the UK performing any cruciate surgery technique. Outcomes are owner assessed using the Liverpool Osteoarthritis in Dogs (LOAD)[1] questionnaire and the Canine Orthopaedic Index (COI).[2]

The CCR is endorsed by the British Veterinary Orthopaedic Association (BVOA).

Surgeons can use the registry to monitor their own patients and can use the inbuilt reporting tools for personal clinical audit. Cases from across the registry are analysed centrally to produce annual reports. Data collected up to the end of July 2026 is included in this report.



REPORT SUMMARY

- There were **649** registered users.
- **2,164** surgical procedures have been recorded since registry launch, with a **17.4%** increase over the previous 12 months.
- Most procedures performed were osteotomies. The proportion of Tibial Plateau Levelling Osteotomy (TPLO) increased by **12.6%** since the 2025 report. All other procedures decreased by proportion. Most notably, the proportion of Cranial Closing Wedge Osteotomy (CCWO) decreased 7.3% since the 2025 report.
- Regional anaesthesia remained constant, being used in **84.3%** of patients. Most commonly this was a combined femoral and sciatic block (58.1%).
- Patient ages recorded in the period remained unchanged, and ranged from 3 months to 18 years.
- Patient body condition score was recorded in 48.6% of patient pathways. More than half (**53.2%**) were of ideal bodyweight.
- Patient weights were recorded in 70.3% of patients, ranging from 1.6kg to 80.3kg.
- The degree of cranial cruciate ligament tear was recorded in 90% of patients, with **75.8%** being complete tears.
- Intra-articular assessment was performed in **97.5%** of procedures, most commonly via arthrotomy (96.2%).
- Peri-operative antibiotics continued to be used in 99.7% of surgical procedures. However, **post-operative antibiotic use has decreased by 14.1% over the past 12 months and by 33.8% since 2021**.
- There was no change in the five most reported breeds: Labrador retriever, Cockapoo, Staffordshire bull terrier (which rose to third most common), English springer spaniel and Golden retriever.

149 different dog breeds (or recognised variations) were reported



1. USER PROFILES

1.1 Users

There were 649 registered users of the CCR with 197 pathway owners (i.e. have contributed cases). Of the registered users, 485 were veterinary surgeons, 160 were delegates and 4 were administrative users.

1.2 Professional designation

58.8% of pathways were registered to Advanced Practitioners (n=1,772). 14.4% were registered to RCVS Recognised Specialists (n=433). Pathways with procedures were distributed in a similar way. There was no significant change in this distribution compared to 2025.

1.3 Experience

Using years since graduation as a measure of experience, the mean experience of pathway owners was 20.6 years (median 20 years) with a range of 4–41. Mean years were calculated using the 'Activity Date' (either the date of the procedure or the date of pathway registration).



2. PATIENT NUMBERS



Since launch, 3,015 pathways and 2,164 surgical procedures have been logged

3. PATIENT DEMOGRAPHICS

3.1 Sex and neutered status

Sex was reported in all pathways. Neutered status was unknown in 1.9% of pathways. (**Table 1** and **Figure 1**).

3.2 Age

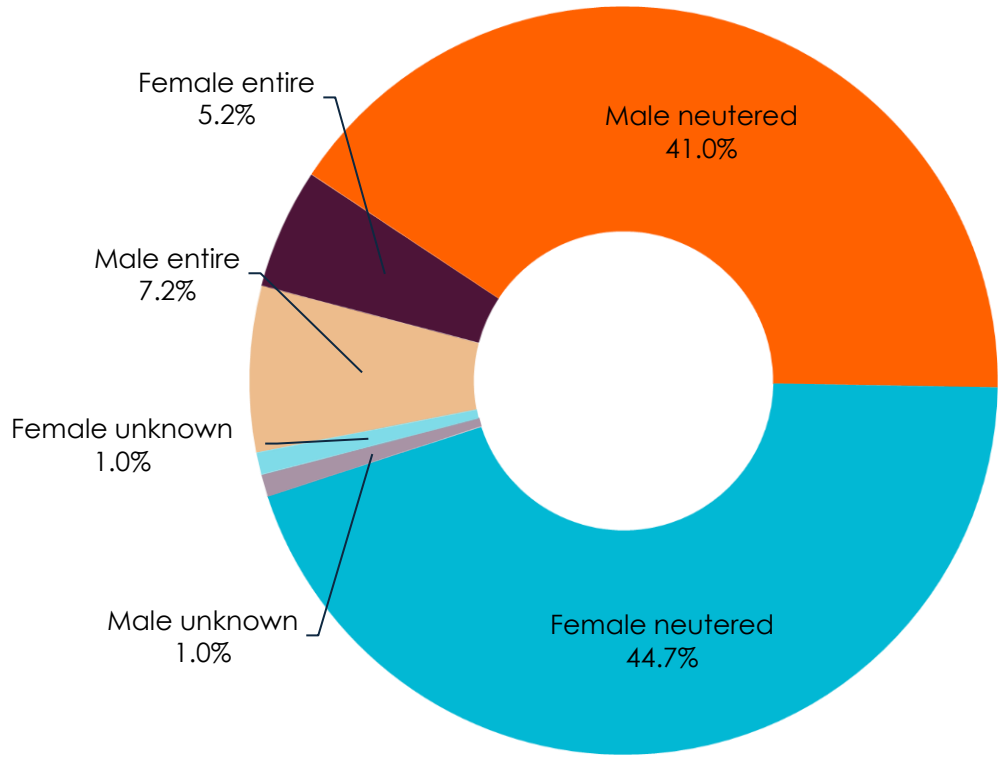
The age of patients was calculated based on their age at the time of the procedure (or at the time of registration if no procedure was performed). Age ranged from 3 months to 18 years. The average age of patients was 7.3 years (median=7.6 years). Age was recorded in 98.8% of pathways (n=2,980). The age recorded in six cases was outside the biologically possible range so these cases were excluded from this analysis.

The age of patients ranged from 3 months to 18 years

Table 1: Sex and neutered status

	Number (n)	%
Male entire	216	7.2
Female entire	157	5.2
Male neutered	1,235	41.0
Female neutered	1,349	44.7
Male unknown	29	1.0
Female unknown	29	1.0
Total	**3,015**	

Figure 1: Sex and neutered status



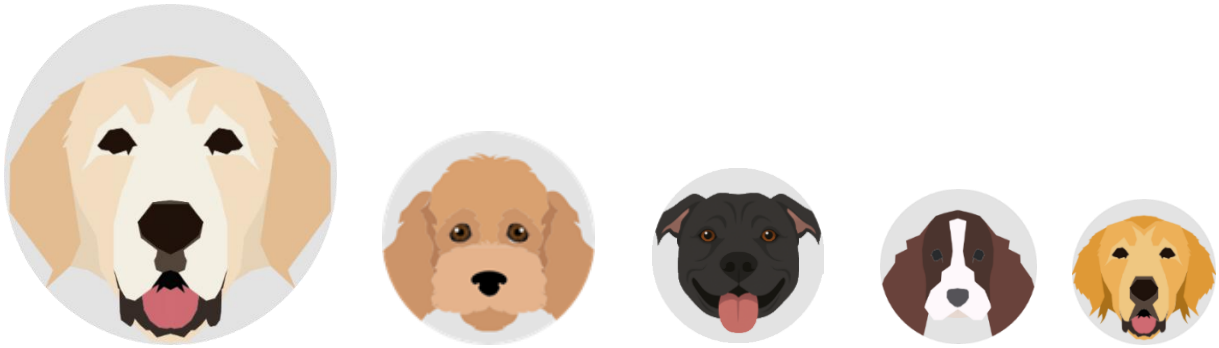
3.3 Breed

149 different breeds (or recognised variations) were reported (n=2,779 dogs). The five most common were Labrador retriever (9.1% n=252), cockapoo (5.4% n=149), Staffordshire bull terrier (4.9% n=135), English springer spaniel (4.6% n=128) and Golden retriever (4.5% n=126) (**Figure 2**). 5.4% of patients were crossbreeds (n=149), though this figure does not include non-Kennel Club registerable 'designer breeds', which are recorded separately. The breed was unknown or not recorded in 8.6% of patients (n=242).

3.4 Body condition score

Body condition score was recorded by the veterinary surgeon following initial patient assessment in 48.6% of patient pathways (n=1,466) using the Royal Canin 9-point scale.[3] 0.7% of patients were classified as too thin, 53.2% were of ideal body weight, 26.7% were overweight and 19.4% were too heavy (**Figure 3**).

Figure 2: Most common breeds



Labrador retriever 9.1%

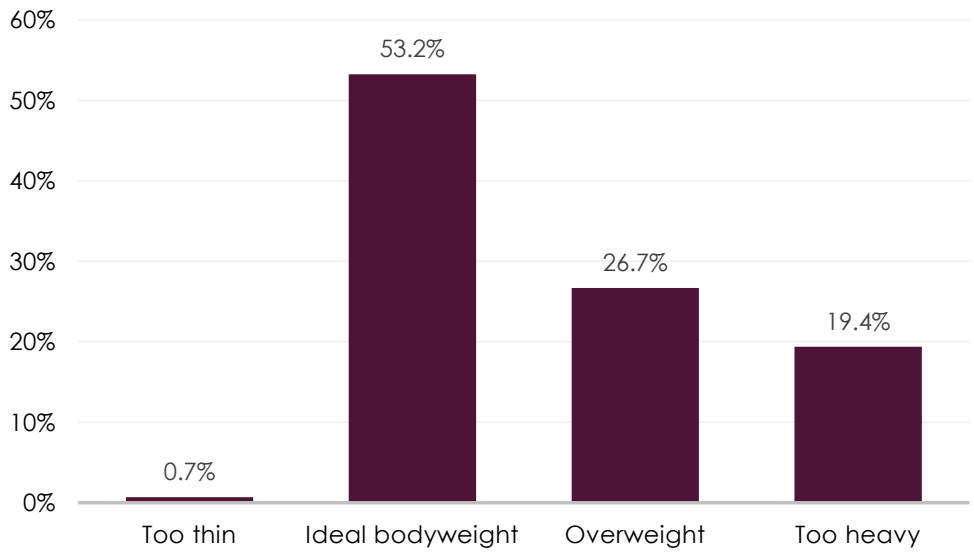
Cockapoo 5.4%

Staffordshire bull terrier 4.9%

English springer spaniel 4.6%

Golden retriever 4.5%

Figure 3: Body condition score



3.5 Body weight

Body weight was recorded in 70.3% of patient pathways (n=2,120). The average patient weighed 22.8kg ±12.1 (median 21.0). Weight ranged from 1.6kg–80.3kg. Variation by gender and neutered status is displayed in **Table 2**.

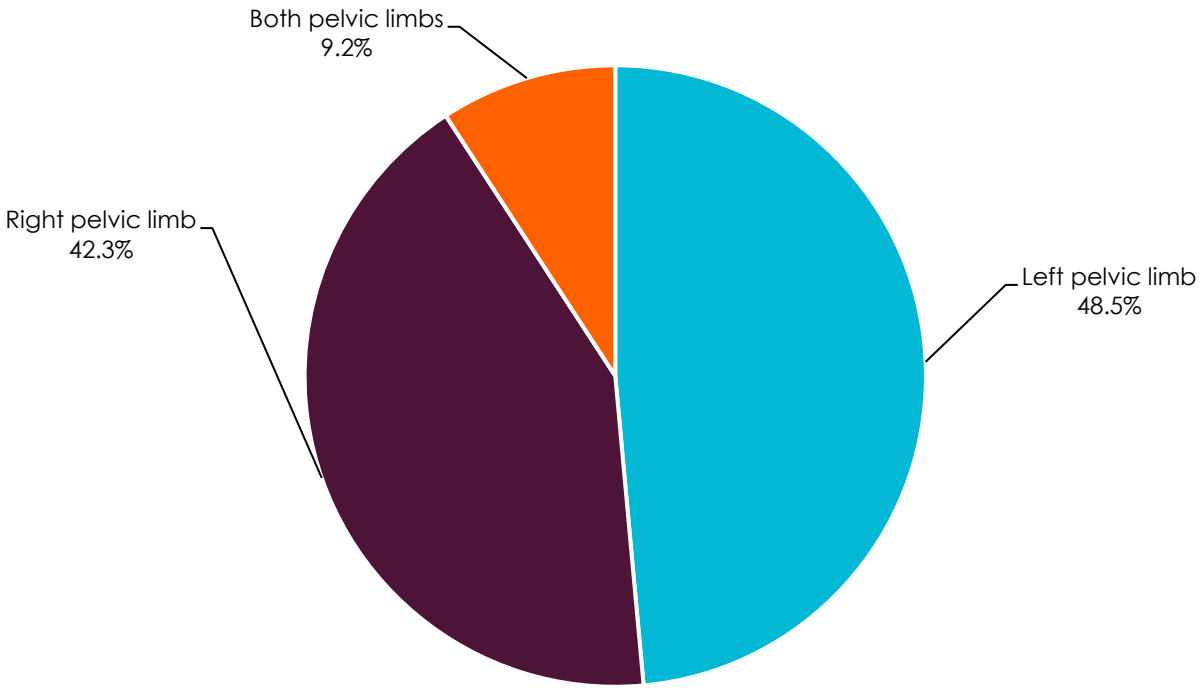
3.6 Affected limb

The affected limb was recorded in 98.2% of pathways (n=2,960). The left pelvic limb was affected in 48.5%, the right pelvic limb was affected in 42.3%, and the remainder were affected bilaterally (**Figure 4**).

Table 2: Body weight

	Mean (kg)	Median (kg)	SD (kg)	Range (kg)		Number (n)
Male neutered	22.2	20.4	11.8	1.6	80.3	856
Male entire	27.8	26.5	15.3	5.2	80.3	153
Male unknown	20.9	19.8	11.8	3.5	49.6	24
Female neutered	21.8	20.0	11.3	3.7	65	955
Female entire	29.5	27.9	12.7	4.4	61.5	110
Female unknown	24.0	19.7	14.4	6.9	46.0	22

Figure 4: Affected limb



4. CLINICAL ASSESSMENT

4.1 Lameness

Lameness at the time of presentation was assessed by the veterinary surgeon using a 6-point scale.[4] Lameness was graded in the affected limb in 59.9% of pathways (n=1,805) and in the unaffected limb in 51.3% of pathways (n=1,547). The median lameness grade in the affected limb was 3/5 (**Table 3** and **Figure 5**). Duration of lameness was recorded by the owner in 95.5% of pathways (n=2,879) (**Figure 6**).

4.2 Clinical signs

Clinical signs were documented in 74.5% of patient pathways (n=2,247). When documented, lameness was reported in 97.7% (n=2,196) of patient pathways, with stiffness after exercise reported in 15.5% (n=348) and reluctance to exercise reported in 10.1% (n=228). When recorded, 20.7% of patient pathways had previously had cruciate surgery on the contralateral limb (n=471) and another medical issue was reported in 23.2% of patient pathways (n=615).

4.3 Clinical examination findings

Clinical examination findings were reported in 74.3% (n=2,239) of pathways. When recorded, the most reported clinical findings were a stifle effusion (76.8% n=1,719) and cranial drawer (75.1% n=1,681) (**Table 4**).

Figure 5: Lameness grade

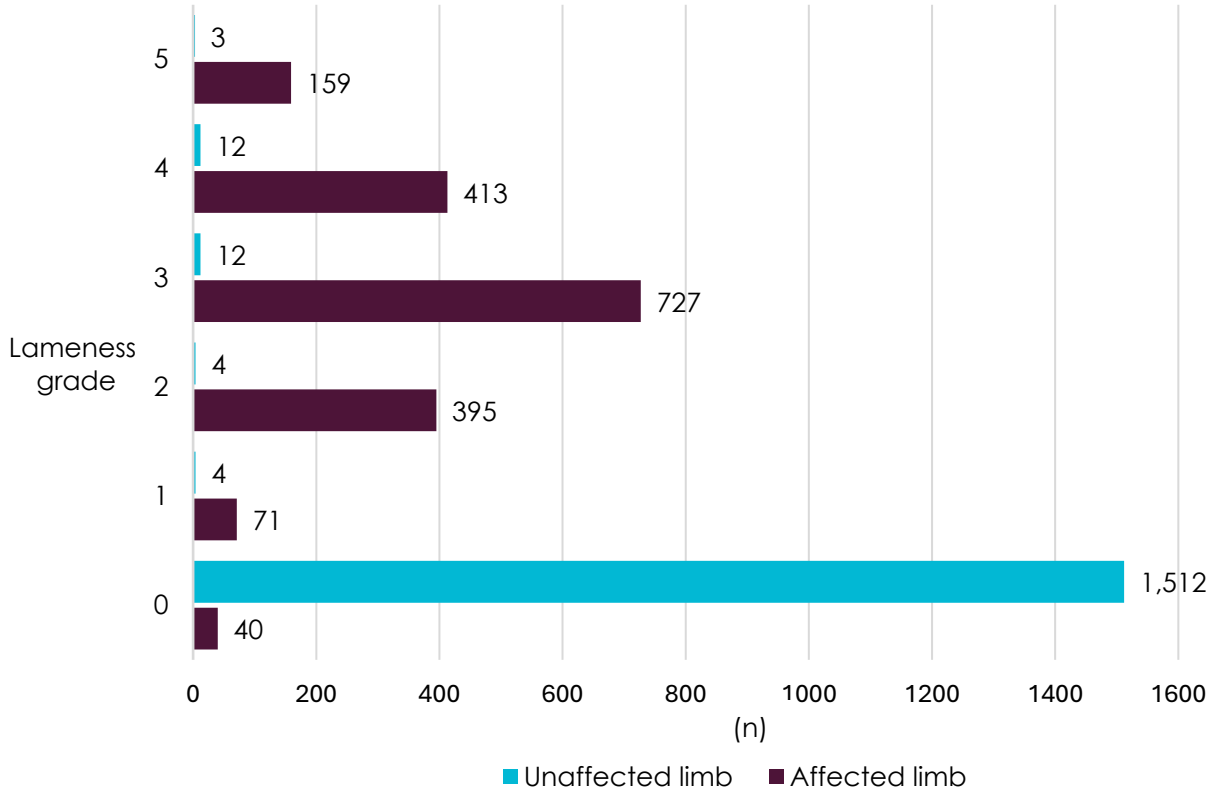


Table 3: Lameness grade

Lameness grade	Affected limb (n)	Unaffected limb (n)
0	40	1,512
1	71	4
2	395	4
3	727	12
4	413	12
5	159	3

Lameness was reported in 97.7% of pathways

Figure 6: Duration of lameness

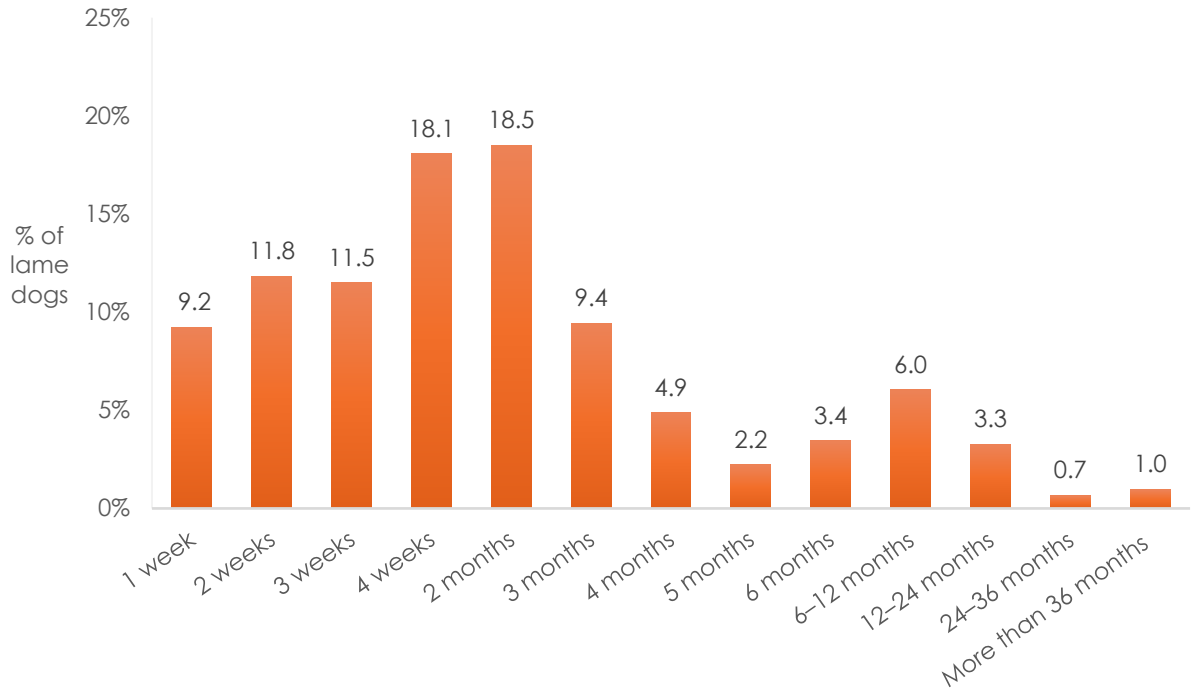


Table 4: Clinical examination findings

Clinical findings	Reported findings (n)
Stifle effusion	1,719
Cranial drawer	1,681
Pain in stifle joint	1,236
Tibial thrust	1,182
Medial buttress	1,006
Hind leg extension with sitting	534
Decreased range of motion	288
Crepitus	287
Other	119

5. SURGERY

5.1 Procedures

2,164 surgical procedures have been recorded since the launch of the registry, with a 17.4% rise in the past 12 months. This represents 71.8% of patient pathways. The majority of procedures were osteotomies (**Table 5 and Figure 7**).

Table 5: Surgical procedures

	Number (n)	%
TPLO	1,472	68.1
CCWO	523	24.2
TTA/MMP	94	4.3
Extracapsular	69	3.2
CBLO	5	0.2
Total	**2,164**	

5.1.1 Annual variation/trends

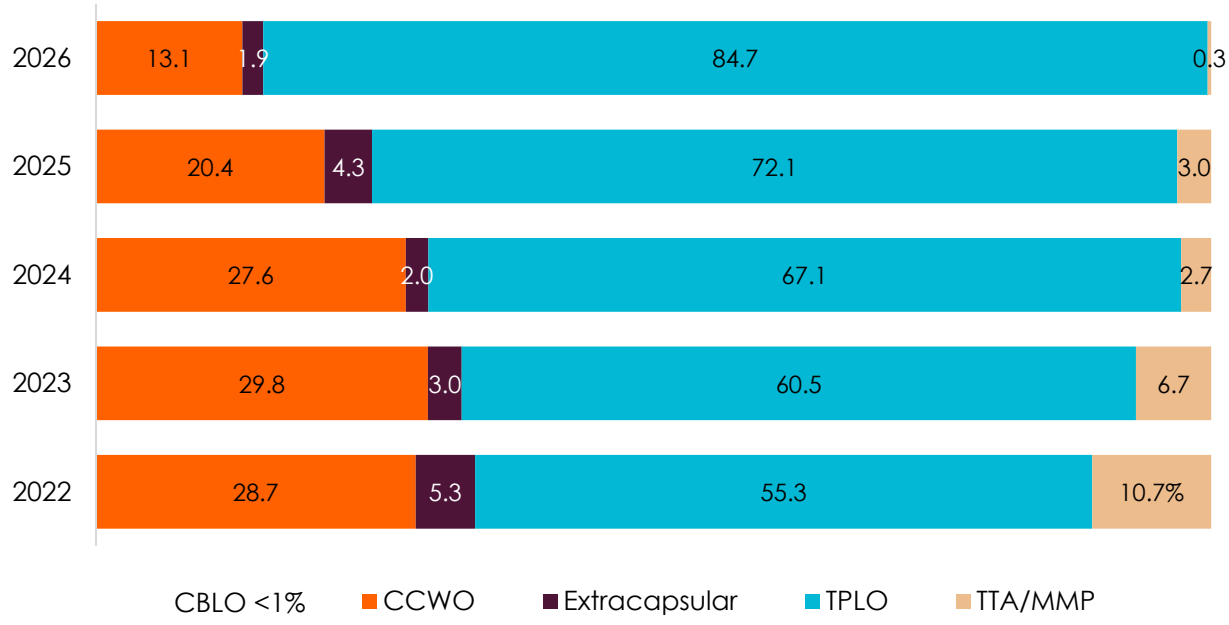
There continues to be variation in procedures over time. The proportion of TPLO performed has increased by 12.6%, whereas the proportion of CCWO has decreased by 7.3%. There has been a 2.4% increase in the proportion of extracapsular procedures performed, while the proportion of Tibial Tuberosity Advancement (TTA)/Modified Maquet Procedure (MMP) decreased by 2.7%. CORA (Centre of Rotation of Angulation) Based Levelling Osteotomy (CBLO) accounts for less than 1% of procedures each year. No new procedures were performed. **Table 6** and **Figure 7** show the number and proportion of surgical procedures by year respectively. Overall there was a 35.2% decrease in the number of procedures reported.

The proportion of TPLO performed has increased by 12.6%

Table 6: Surgical procedures by year

	2021 (n)	2022 (n)	2023 (n)	2024 (n)	2025 (n)	2026 (n)
TPLO	19	166	260	401	356	271
CCWO	1	86	128	165	101	42
TTA/MMP	1	32	29	16	15	1
Extracapsular	1	16	13	12	21	6
CBLO	0	0	0	4	1	0
Total	**22**	**300**	**430**	**598**	**494**	**320**

Figure 7: Percentage of surgical procedures by year



5.2 Intra-articular assessment

An intra-articular assessment was performed in 97.5% of procedures (n=2,140). When recorded, this was performed via an arthrotomy in 96.2% of patients (n=2,058) and arthroscopically in the remainder.

5.3 Cruciate tear

The degree of cranial cruciate ligament tear was recorded in 90% of procedures (n=1,947). 75.8% were complete tears and 24.2% were partial tears.

5.4 Medial meniscal assessment

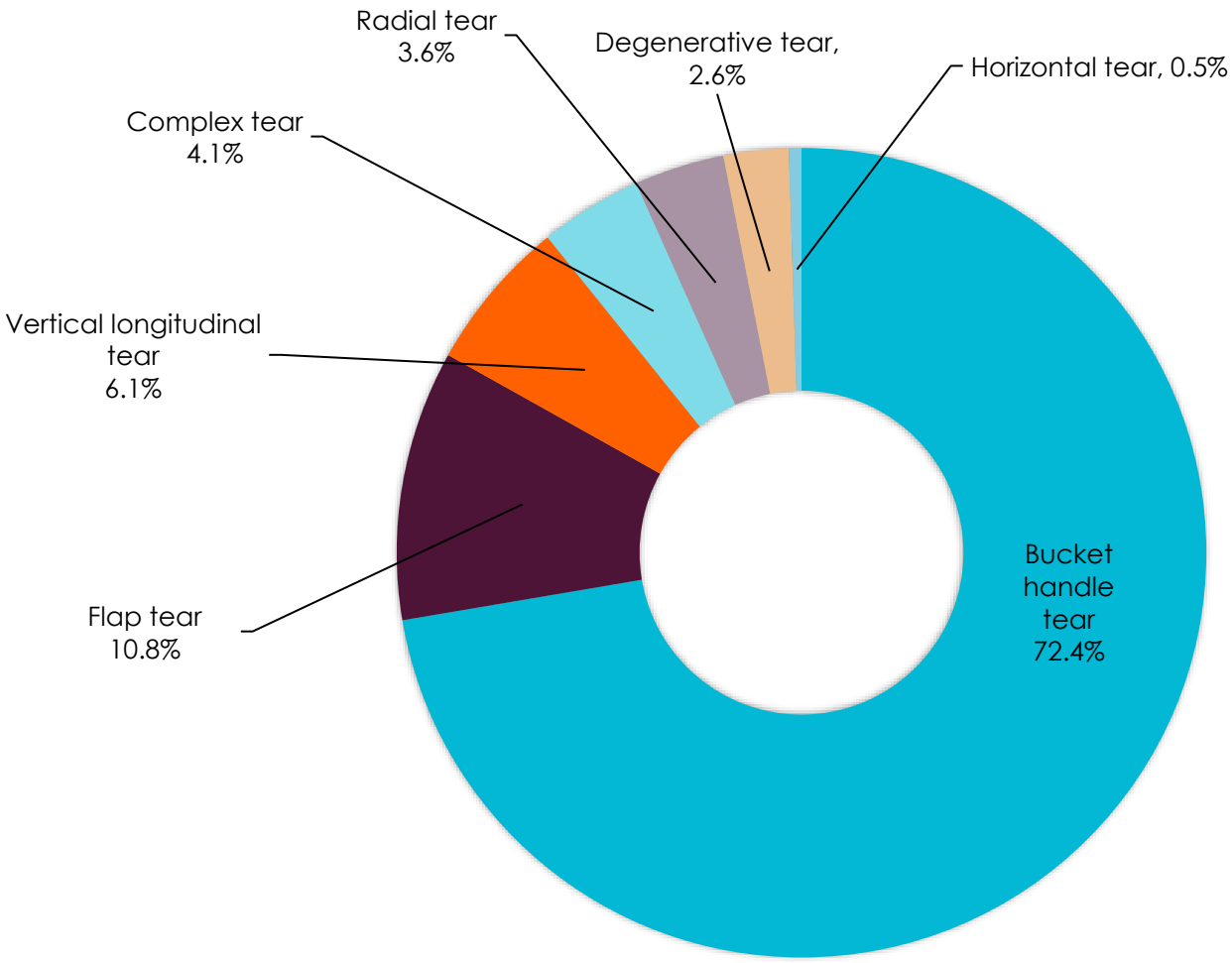
The condition of the medial meniscus was recorded in 91.8% of the pathways when intra-articular assessment was performed (n=1,936). A medial meniscal tear was identified in 38.4% of these patients (n=743). The tear was classified in 88.8% (n=660) of these cases, with a bucket handle tear being most common (**Table 7** and **Figure 8**).

A meniscal tear was recorded in 42.7% of patients with a complete tear of the cranial cruciate ligament (n=630) vs 20.1% of patients with a partial tear (n=95).

Table 7: Meniscal tear type

Meniscal tear type	n	%
Bucket handle tear	478	72.4
Flap tear	71	10.8
Vertical longitudinal tear	40	6.1
Complex tear	27	4.1
Radial tear	24	3.6
Degenerative tear	17	2.6
Horizontal tear	3	0.5
Total	**660**	

Figure 8: Meniscal tear type





Most commonly reported meniscal tear: bucket handle tear

5.4.1 Meniscal treatment

Where a medial meniscal tear was reported, a partial meniscectomy was performed in 96.7% of patients (n=718), whereas a meniscal release was reported in 1.8% of patients (n=39).

5.5 Additional procedures

Additional procedures were performed in 6.4% (n=139) of procedures. Three additional procedures were reported: an additional osteotomy, correction of a medial patellar luxation, and placement of an anti-rotational suture. Both correction of a medial patellar luxation and placement of an anti-rotational suture were performed in four patients. Placement of an anti-rotational suture in isolation was only reported following TPLO (1.7% of TPLOs n=37) (**Table 8**).

Additional procedures were performed in 6.4% of surgeries

5.6 Regional anaesthesia

Regional anaesthesia/analgesia was used in 84.3% of patients (n=1,824). A proportion of patients received a combination of regional anaesthesia components. Most commonly this was a combined femoral and sciatic block (58.1% n=1,060). Regional anaesthesia classified as 'Other' mainly consisted of local splash blocks (**Table 9**).

Regional anaesthesia or analgesia was used in 84.3% of patients

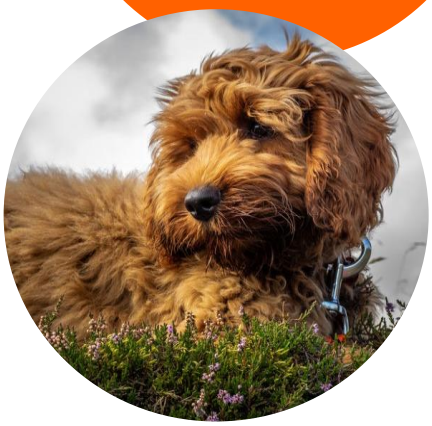


Table 8: Additional procedures

Procedure	CCWO (n)	TPLO (n)	TTA/MMP (n)	Extracapsular (n)	Total
Anti-rotational suture	0	37	0	0	37
Medial patellar luxation correction	9	41	12	14	76
Medial patellar luxation correction with anti-rotational suture	2	1	0	1	4
Medial patellar luxation correction with osteotomy	0	1	0	0	1
Osteotomy	3	18	0	0	21
Total	**14**	**98**	**12**	**15**	**139**

Table 9: Regional anaesthesia

Regional anaesthesia components	(n)	%
Sciatic nerve block	1,089	59.7
Femoral nerve block	1,071	58.7
Epidural	468	25.7
Other	229	12.6
Intra-articular block	67	3.7
Lumbar plexus block	12	0.7
Total	**2,936**	

5.7 Surgery and anaesthesia time

Total surgical time and anaesthesia time were recorded in 70.7% (n=1,531) and 63.4% (n=1,371) of procedures respectively. Mean surgical time was 77.4±28.2 minutes (median 74 minutes) with a range of 15–270 minutes. Mean anaesthesia time was 145.2±37.8 minutes (median 143 minutes) with a range of 40–240 minutes. There was some variation between procedures (**Table 10**).

5.8 Antibiotic usage

Peri-operative antibiotics were used in 99.7% of surgical procedures (n=2,164). Post-operative antibiotics were used following 31.3% of surgical procedures (n=677). The mean duration of the post-operative course was 5.2 days (median 5 days, range 1–14 days). The percentage of procedures receiving post-operative antibiotics has decreased by 33.8% from registry year 2021 to registry year 2026 (16.3%) (**Table 11**).

Table 11: Use of post-operative antibiotics

Registry year	Procedures	(n)*	%
2021	22	11	50.0
2022	300	132	44.0
2023	430	143	33.3
2024	598	189	31.6
2025	494	150	30.4
2026	320	52	16.3
Overall	**2,164**	**677**	**31.3**

*Of procedures when recorded

Surgical time ranged from 15 to 270 minutes



Table 10: Surgery and anaesthesia time

	Surgical time				Anaesthesia time			
Procedure	**(n)***	**Mean time ±SD (mins)**	**Median (mins)**	**Range (mins)**	**(n)***	**Mean time ±SD (mins)**	**Median (mins)**	**Range (mins)**
CBLO	4	117.5±9.6	115	110–130	4	170±14.1	175	150–180
CCWO	363	89.9±27.6	90	20–270	295	151.1±39.1	152	40–240
Extracapsular	50	52.3±23.4	45	26–120	47	107.5+39.6	100	45–210
TPLO	1,039	74.8±27.0	70	30–255	946	145±35.0	140	57–240
TTA/MMP	75	66.9±24.3	60	15–150	79	147.3±50.0	135	40–240
Overall	**1,531**	**77.4±28.1**	**74**	**15–270**	**1,371**	**145.2±37.8**	**143**	**40–240**

*Of procedures when recorded

Most common anaesthesia or analgesia technique: combined femoral and sciatic nerve block





Outcomes are assessed using client-reported outcome measures (CROMs). Owners are asked to complete both a baseline Liverpool Osteoarthritis in Dogs (LOAD) and a Canine Orthopaedic Index (COI) questionnaire

6. OUTCOMES

6.1 Assessment

Primarily, outcomes are assessed using client-reported outcome measures (CROMs). Owners are asked to complete both a baseline Liverpool Osteoarthritis in Dogs (LOAD) questionnaire and a Canine Orthopaedic Index questionnaire (COI). Follow-up questionnaires are sent after the procedure at 6 weeks, 12 weeks, 6 months, 1 year and then at yearly intervals.

Both LOAD and COI scores are calculated on a numeric basis, with a lower score being representative of better mobility. The maximum LOAD and COI scores are 52 and 64 respectively. In both CROMs a clinical improvement is represented by a lower score when compared to the previous assessment point. The numbers of outcome measures completed at each time point is shown in **Table 12**.

6.2 Procedure

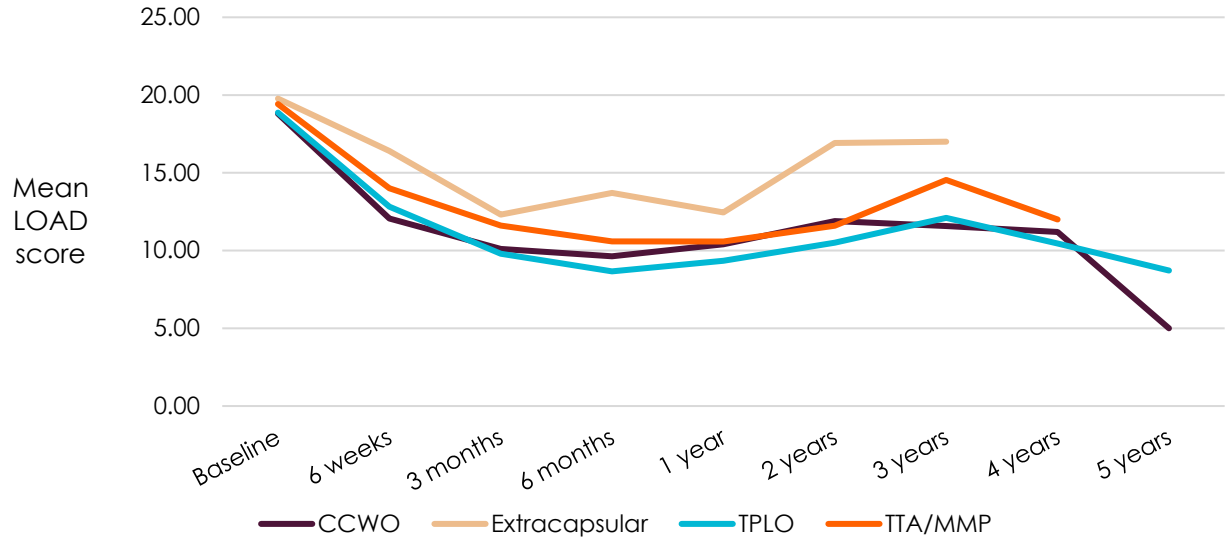
Outcomes assessed by LOAD and COI are displayed in **Figure 9** and **Figure 10** respectively. There is an improvement following surgery with all procedures, though there is variation in the amount and rate of improvement.



Table 12: Completed outcome measures

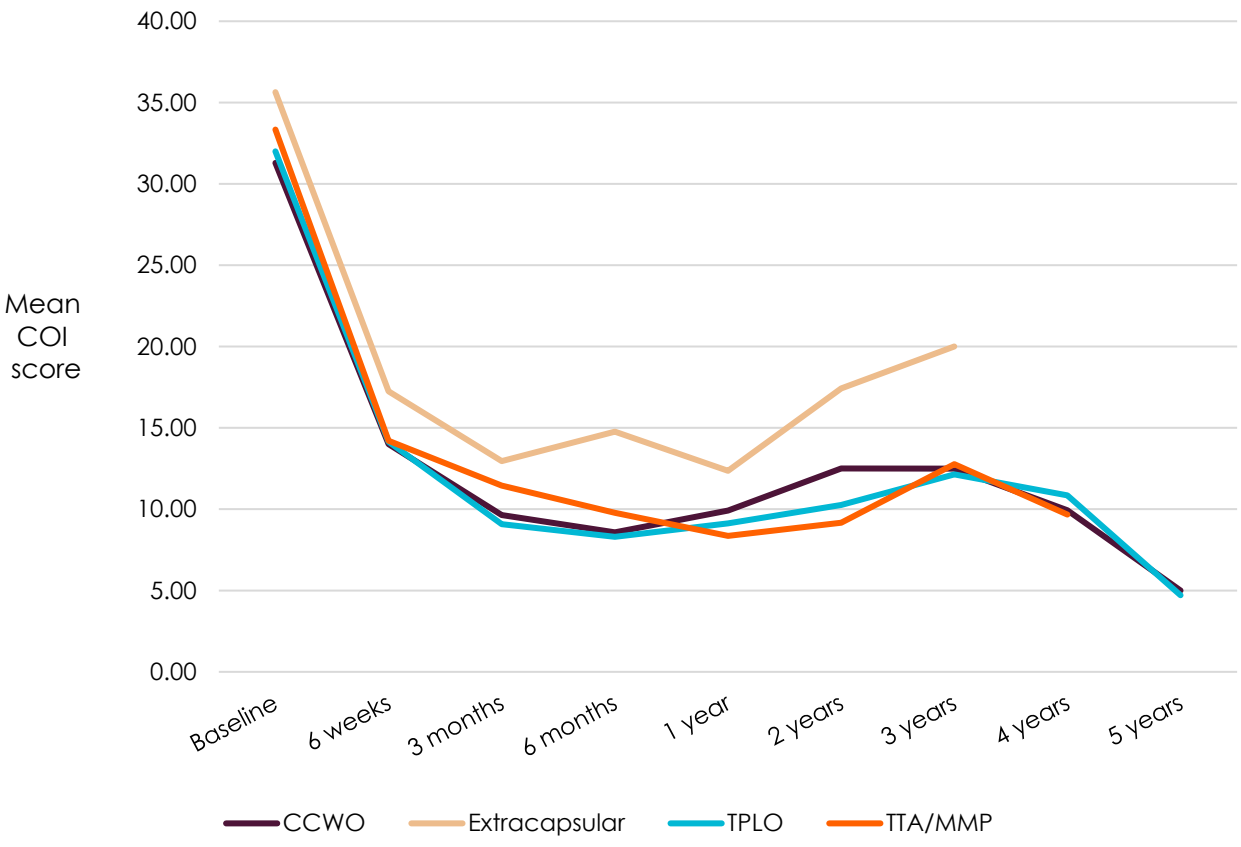
		CBLO	CCWO	Extracapsular	TPLO	TTA/MMP
Baseline (n)	**LOAD**	5	472	62	1315	88
	COI	5	465	61	1293	88
6 weeks (n)	**LOAD**	5	247	25	835	54
	COI	4	242	24	808	53
3 months (n)	**LOAD**	3	239	26	738	49
	COI	3	236	26	730	49
6 months (n)	**LOAD**	1	228	31	637	41
	COI	1	227	30	631	41
1 year (n)	**LOAD**	2	185	22	540	36
	COI	2	184	22	536	36
2 years (n)	**LOAD**	1	123	12	312	20
	COI	1	123	12	310	18
3 years (n)	**LOAD**	0	47	1	132	13
	COI	0	47	1	127	13
4 years (n)	**LOAD**	0	16	0	40	3
	COI	0	16	0	40	3
5 years (n)	**LOAD**	0	1	0	7	0
	COI	0	1	0	7	0

Figure 9: Mean LOAD score by procedure



CBLO data has been omitted due to the small number of cases and lack of follow-up.

Figure 10: Mean COI score by procedure



CBLO data has been omitted due to the small number of cases and lack of follow-up.

6.3 Partial vs complete tear

The effect on outcomes of a complete tear of the cranial cruciate ligament vs a partial tear is displayed in **Figure 11** (LOAD) and **Figure 12** (COI). The degree of partial tear was not evaluated.

Figure 11: Mean LOAD score vs cruciate tear

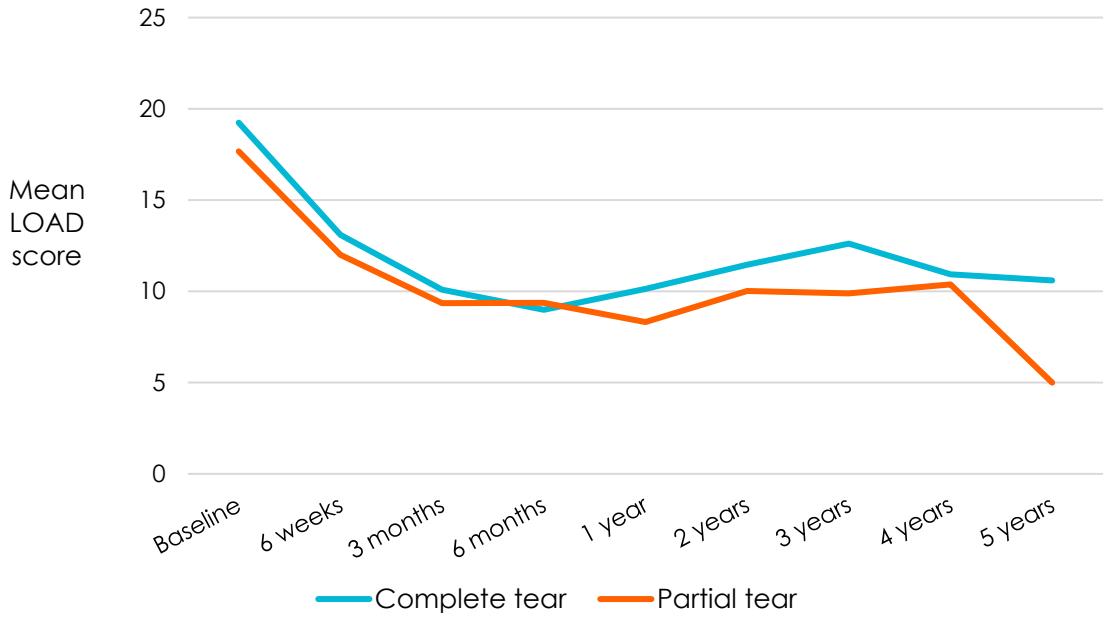
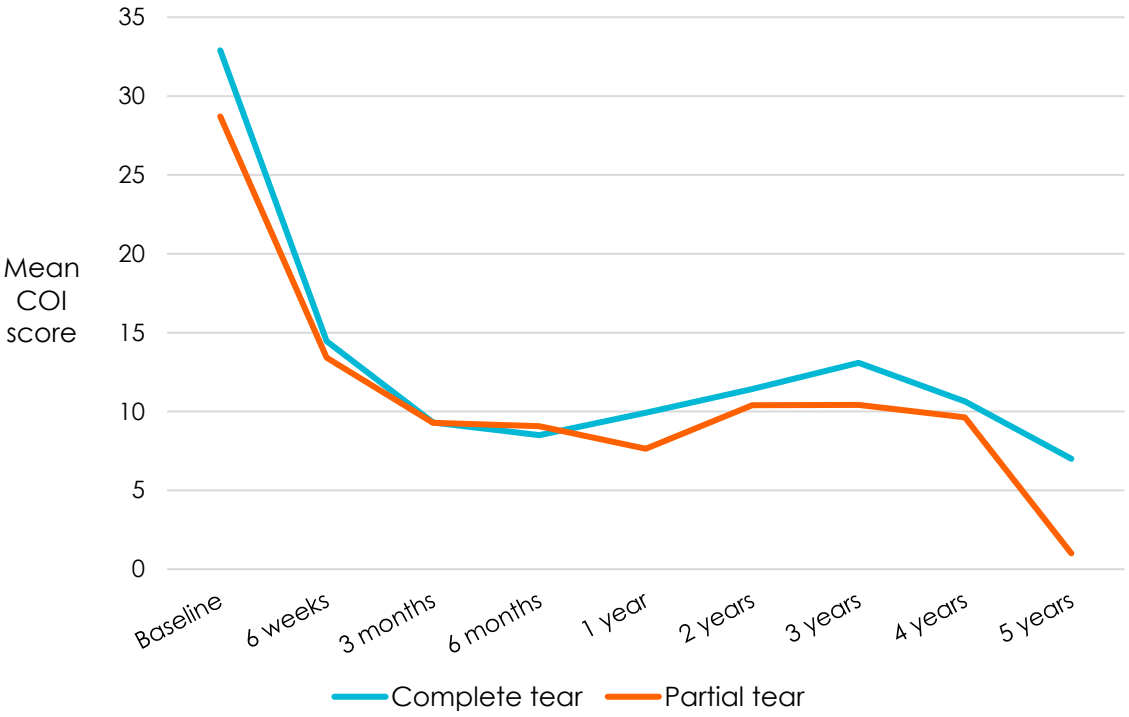


Figure 12: Mean COI score vs cruciate tear



6.4 Meniscal tear

Outcomes with a medial meniscal tear are compared by LOAD (**Figure 13**) and COI (**Figure 14**).

Figure 13: Mean LOAD score vs meniscal tear

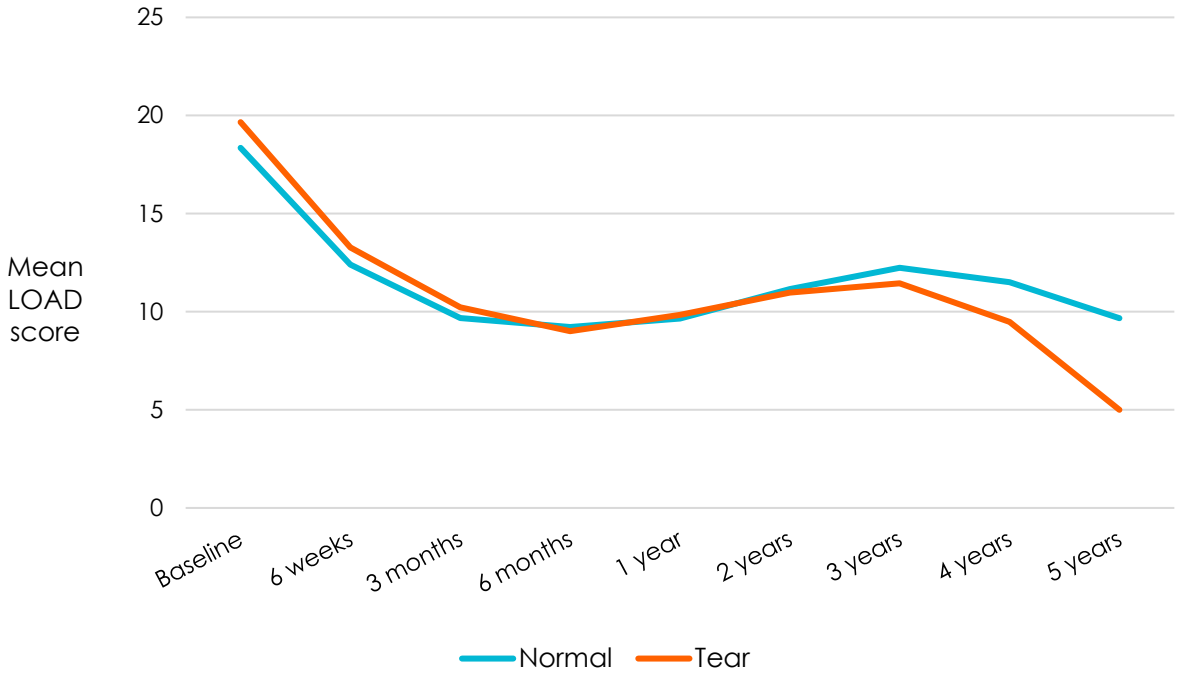
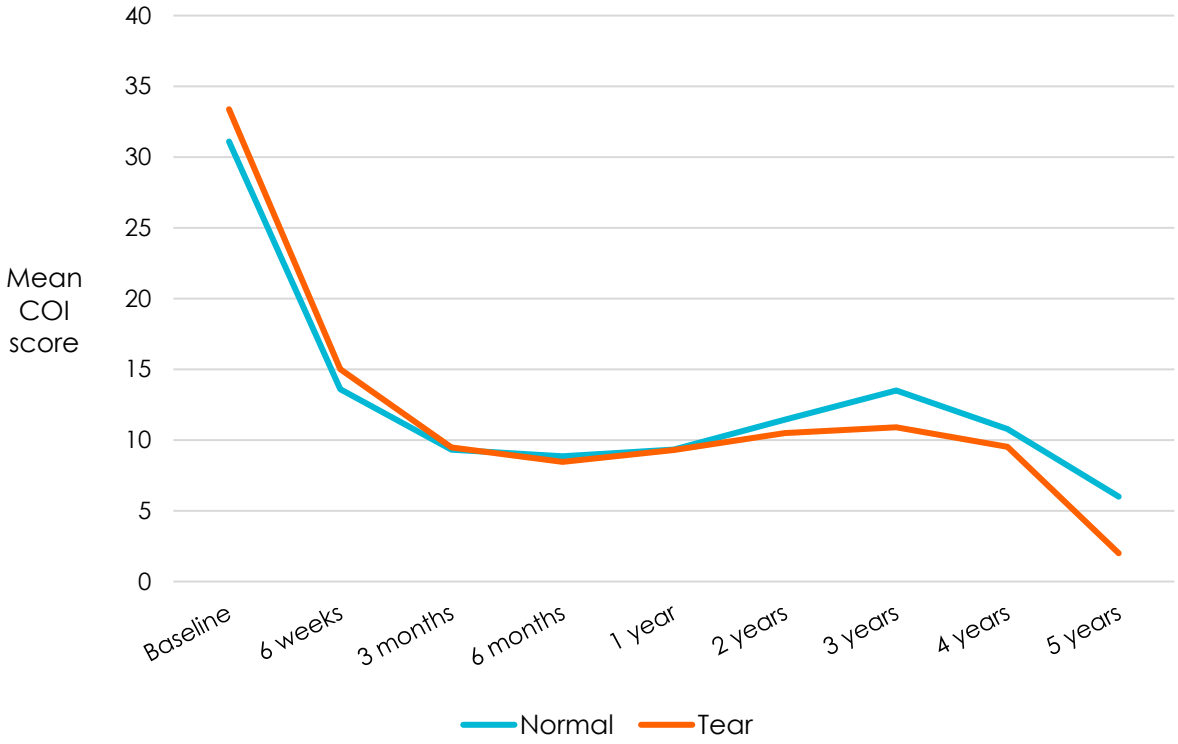


Figure 14: Mean COI score vs meniscal tear




There was an improvement in outcome scores following surgery with all procedures

6.5 Owner assessment of function

Owners were asked to rate their dog's function after surgery, as compared to before surgery. The majority of patients are rated as 'much better' at all time intervals. There is some variation between procedures at each time point (**Table 13** and **Figure 15**).

The majority of owners rated their pet's function as 'much better' than before surgery



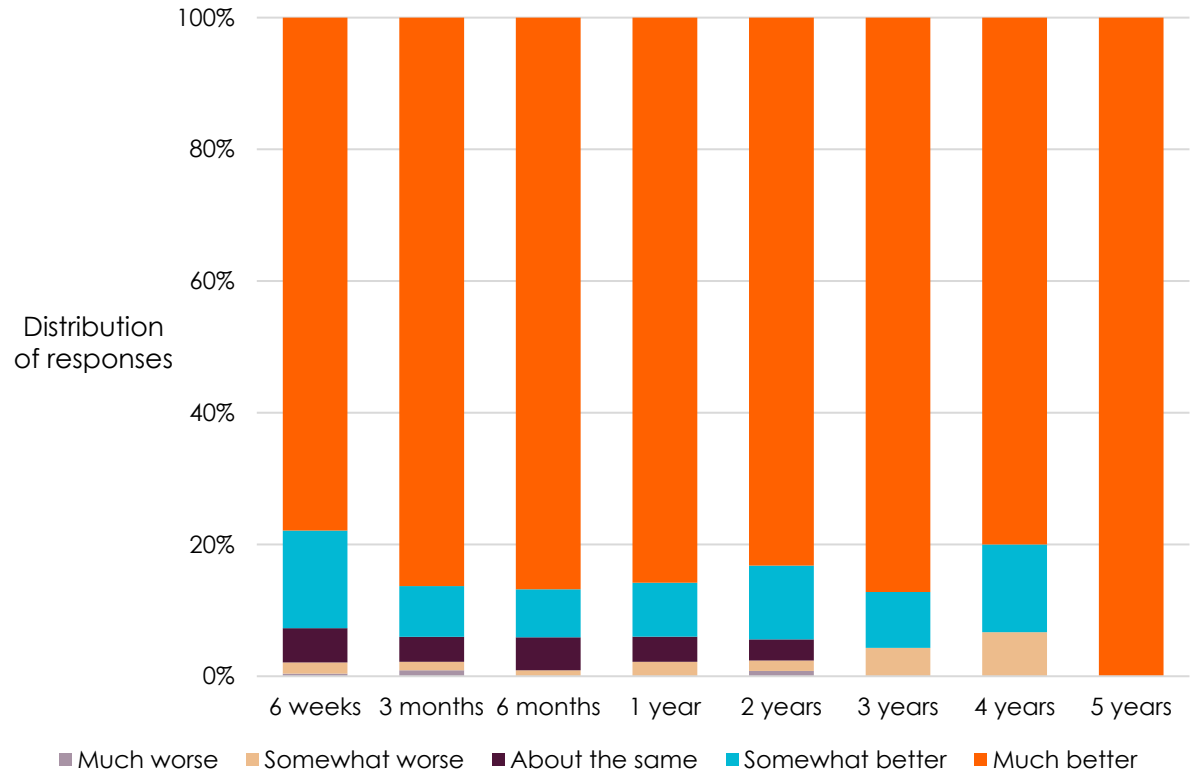
Follow-up questionnaires are sent after a procedure at 6 weeks, 12 weeks, 6 months, 1 year and then at yearly intervals

Table 13: Owner rating of leg function post-operation

	Much worse	Somewhat worse	About the same	Somewhat better	Much better
CBLO					
6 weeks	0.0%	25.0%	0.0%	50.0%	25.0%
3 months	0.0%	0.0%	0.0%	66.7%	33.3%
6 months	0.0%	0.0%	0.0%	0.0%	100.0%
1 year	0.0%	0.0%	0.0%	0.0%	100.0%
2 years	0.0%	0.0%	0.0%	0.0%	100.0%
CCWO					
6 weeks	0.4%	1.7%	5.2%	14.8%	77.8%
3 months	0.9%	1.3%	3.8%	7.7%	86.4%
6 months	0.0%	0.9%	5.0%	7.3%	86.8%
1 year	0.0%	2.2%	3.8%	8.2%	85.8%
2 years	0.8%	1.6%	3.2%	11.2%	83.2%
3 years	0.0%	4.3%	0.0%	8.5%	87.2%
4 years	0.0%	6.7%	0.0%	13.3%	80.0%
5 years	0.0%	0.0%	0.0%	0.0%	100.0%
Extracapsular					
6 weeks	0.0%	4.5%	0.0%	9.1%	86.4%
3 months	0.0%	3.7%	7.4%	11.1%	77.8%
6 months	0.0%	0.0%	6.5%	19.4%	74.2%
1 year	0.0%	0.0%	4.5%	18.2%	77.3%
2 years	0.0%	0.0%	15.4%	7.7%	76.9%
3 years	0.0%	0.0%	0.0%	0.0%	100.0%
TPLO					
6 weeks	0.9%	2.5%	6.2%	16.2%	74.1%
3 months	0.7%	0.8%	3.7%	9.0%	85.8%
6 months	0.5%	1.3%	3.0%	6.1%	89.2%
1 year	0.7%	1.3%	3.3%	7.6%	87.1%
2 years	0.3%	2.8%	5.7%	7.9%	83.2%
3 years	0.0%	4.4%	3.7%	13.3%	78.5%
4 years	0.0%	2.3%	6.8%	4.5%	86.4%
5 years	0.0%	0.0%	0.0%	0.0%	100.0%
TTA/MMP					
6 weeks	0.0%	1.9%	5.7%	5.7%	86.8%
3 months	0.0%	4.2%	6.2%	8.3%	81.2%
6 months	0.0%	2.5%	5.0%	10.0%	82.5%
1 year	0.0%	2.8%	0.0%	22.2%	75.0%
2 years	0.0%	0.0%	0.0%	16.7%	83.3%
3 years	7.7%	7.7%	7.7%	0.0%	76.9%
4 years	0.0%	0.0%	0.0%	0.0%	100.0%
5 years	0.0%	0.0%	0.0%	0.0%	100.0%

Figure 15: Owner rating of leg function post-operation

a) CCWO



b) Extracapsular

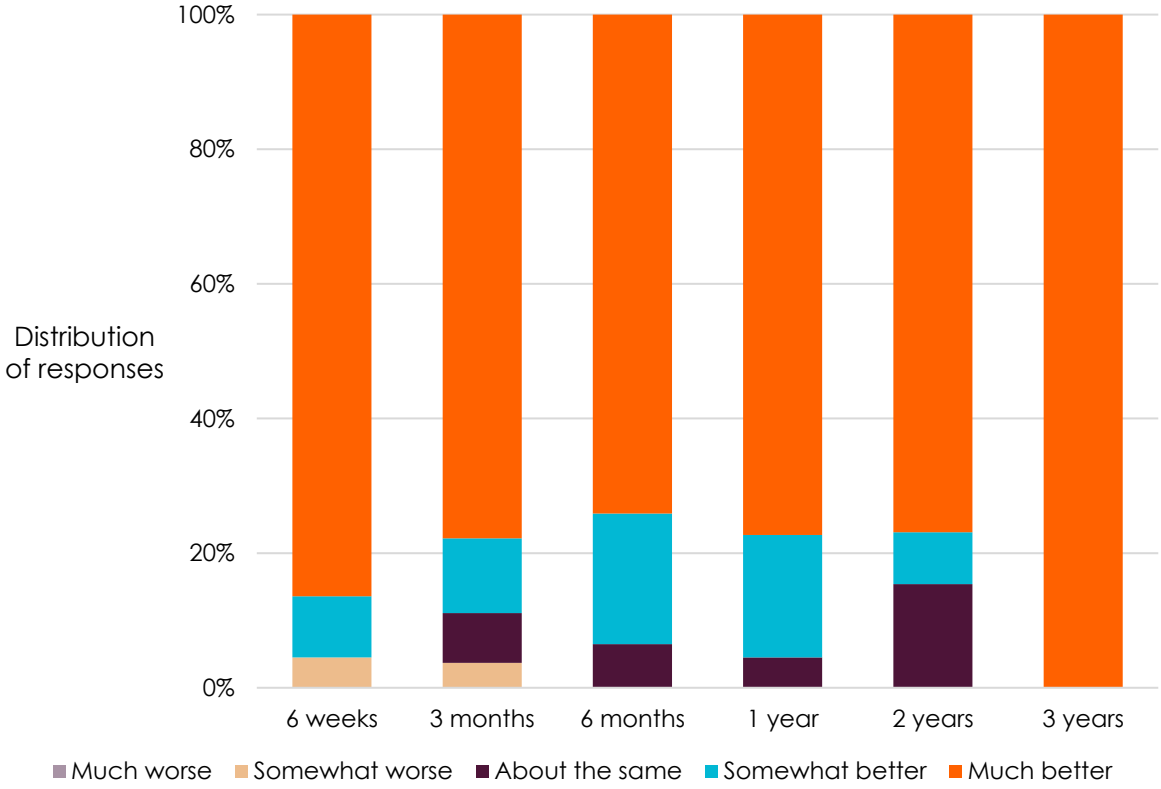
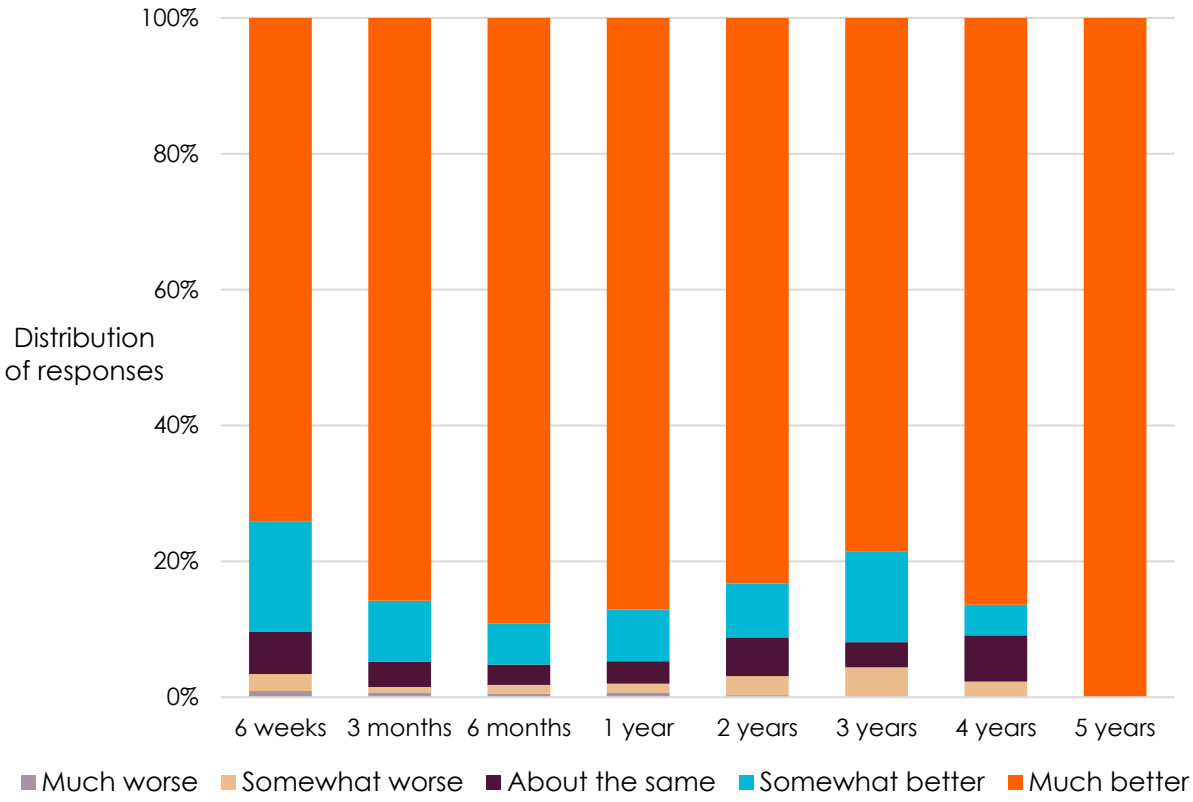
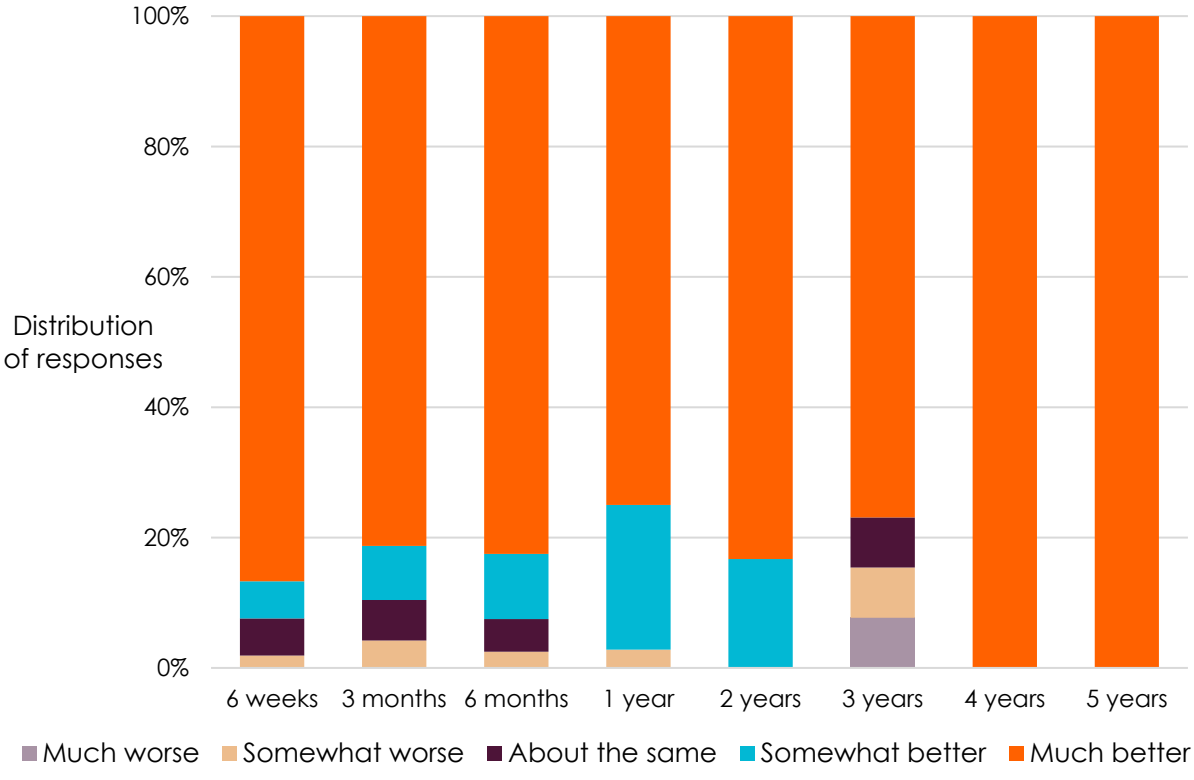


Figure 15: Owner rating of leg function post-operation *continued*

c) TPLO



d) TTA/MMP



CBLO data has been omitted due to lack of follow-up.

6.6 Compliance

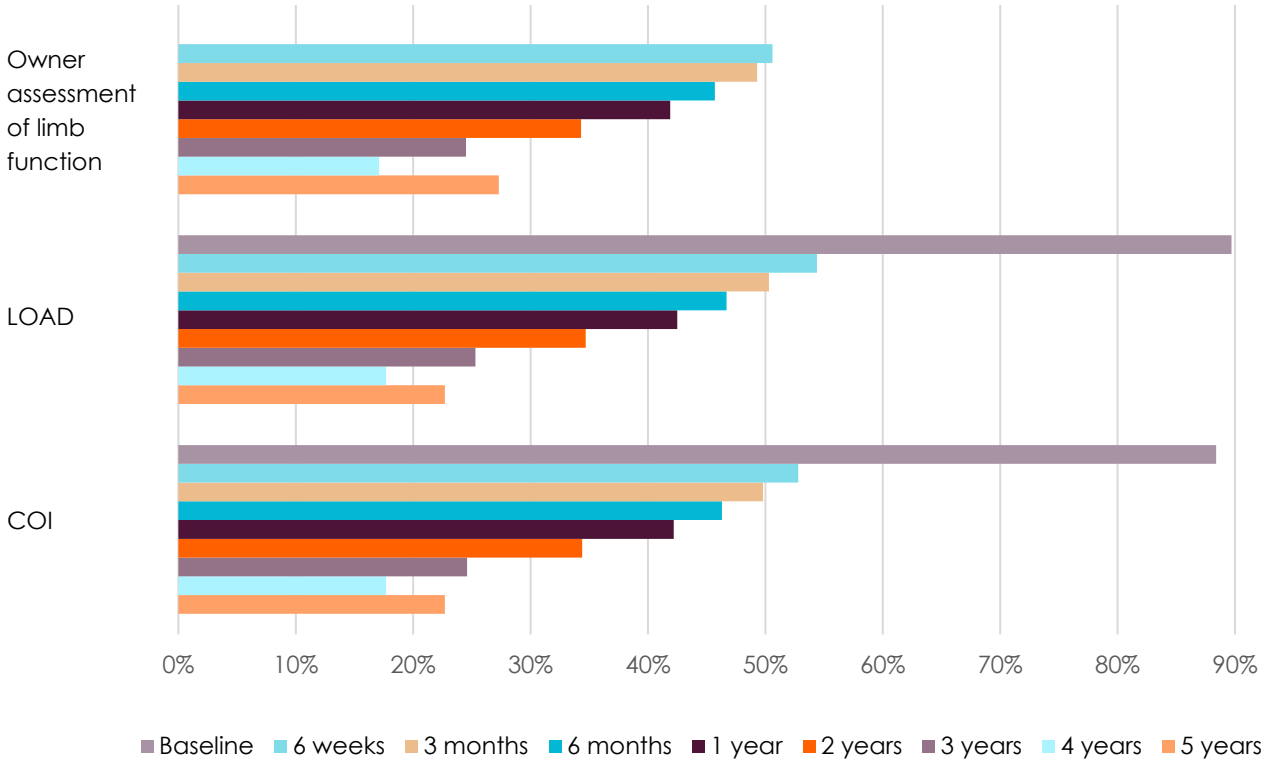
Compliance is defined as the proportion of requested outcome measures completed at each time interval. This is calculated from all pathways with a surgical procedure (pathways with a baseline outcome measure completed without a subsequent surgical procedure are excluded). Compliance is estimated with this methodology, as missing data at one time point does not mean subsequent surveys are not completed (**Table 14** and **Figure 16**).



Table 14: Compliance

Compliance	Baseline	6 weeks	3 months	6 months	1 year	2 years	3 years	4 years	5 years
Owner assessment of limb function	N/A	50.6%	49.0%	45.7%	41.9%	34.3%	24.5%	17.1%	27.3%
LOAD	89.7%	54.4%	50.3%	46.7%	42.5%	34.7%	25.3%	17.7%	22.7%
COI	88.4%	52.8%	49.8%	46.3%	42.2%	34.4%	24.6%	17.7%	22.7%

Figure 16: Client-reported outcome measure compliance



7. ADVERSE EVENTS

7.1 Incidence

Intra-operative adverse events were reported in 6.0% of surgical procedures (n=130). More than one adverse event was reported in 0.5% of procedures (n=11). In five procedures, the adverse event was not classified.

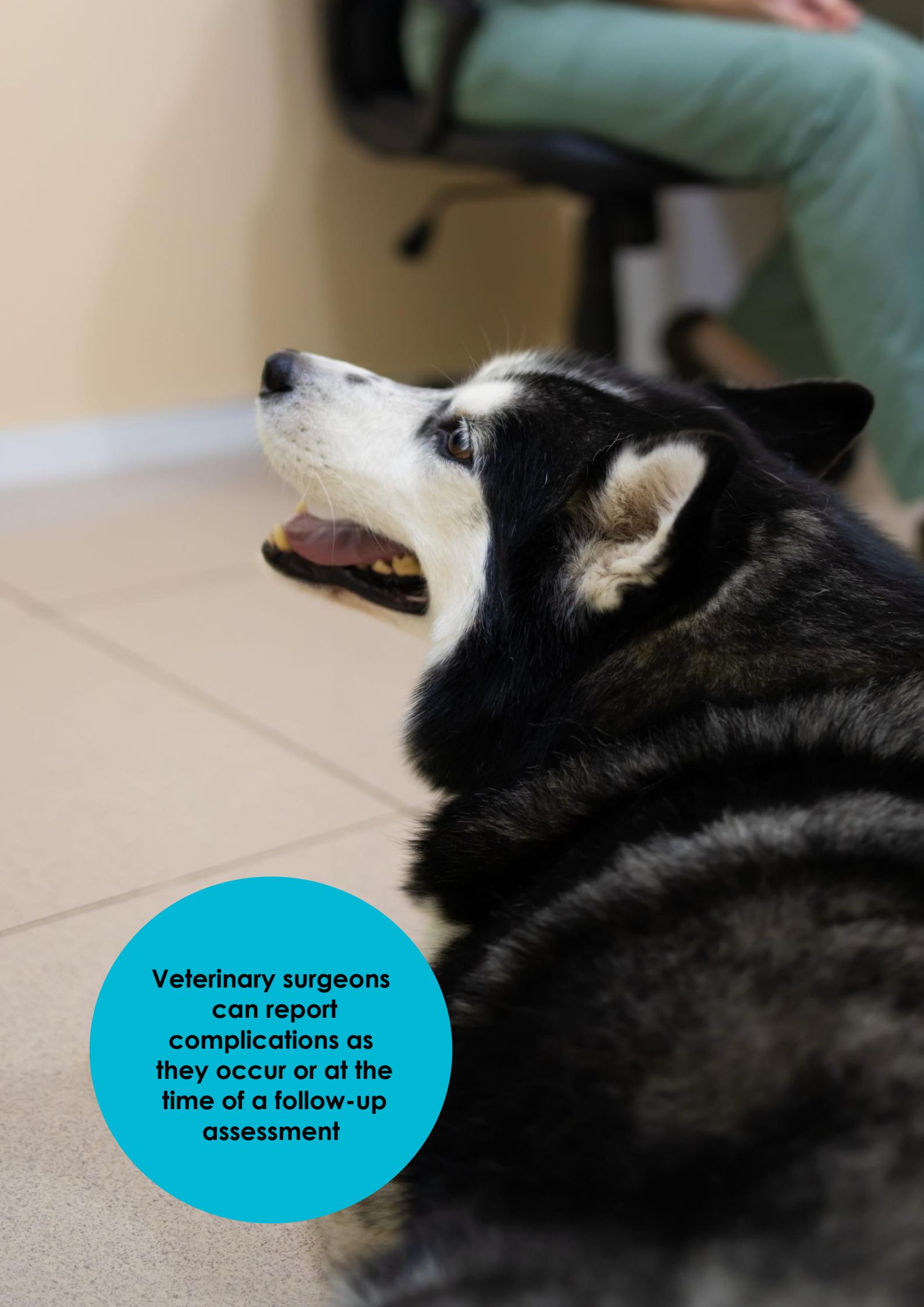
7.2 Type of event

The most common adverse event was significant haemorrhage (n=27) (**Table 15**). The other adverse events reported included a range of issues relating to equipment, implants, regurgitation, and anaesthesia.

Table 15: Adverse events

Adverse event	Number (n)	%
Significant haemorrhage	27	1.2
Screw in joint	10	0.5
Screw placed in osteotomy	7	0.3
Broken holding pin	4	0.2
Fibular fracture	4	0.2
Hinge break	4	0.2
Break in aseptic technique	3	0.1
Broken drill bit	2	0.1
Broken screw/anchor	2	0.1
Distal cortex fracture	2	0.1
Tibial fracture	2	0.1
Wire cut through bone	2	0.1
Incorrect bone tunnel position	1	0.0
Malalignment	1	0.0
Other	65	3.0
Total	**136**	



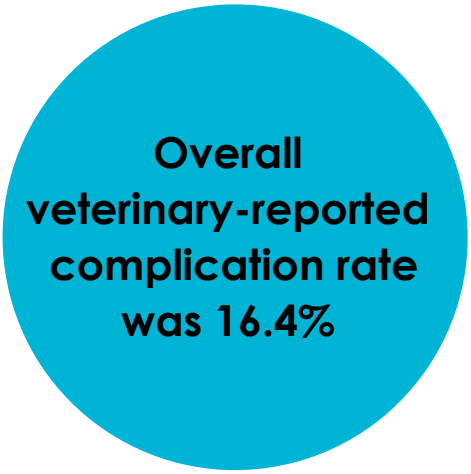


Veterinary surgeons can report complications as they occur or at the time of a follow-up assessment

8. COMPLICATIONS

8.1 Reporting

Owners are asked to report complications each time they complete a follow-up questionnaire. Veterinary surgeons can report complications as they occur or at the time of a follow-up assessment.



8.2 Complication rates

A complication represents a pathway where one or more complications were reported. The overall veterinary-reported complication rate was 16.4% (n=355). The overall owner-reported complication rate was 18.6% (n=403). The variation in procedure is shown in **Table 16** and **Figure 17**. The complications reported by time frame are shown in **Figure 18**.

The veterinary-reported complications, frequency of occurrence and time frame are listed in **Appendix 1 (Table 17** and **Table 18)**. The owner-reported complications, frequency of occurrence and time frame are listed in **Appendix 2 (Table 19** and **Table 20)**.

Table 16: Complication rates by procedure

Procedure		Complications			
		Vet reported		Owner reported	
	n	%	n	%	n
CBLO	5	40.0%	2	20.0%	1
CCWO	523	16.8%	88	18.0%	94
Extracapsular	69	7.2%	5	8.7%	6
TPLO	1,473	16.6%	244	19.1%	281
TTA/MMP	94	17.0%	16	22.3%	21
Overall	**2,164**	**16.4%**	**355**	**18.6%**	**403**

Figure 17: Complication rates by procedure

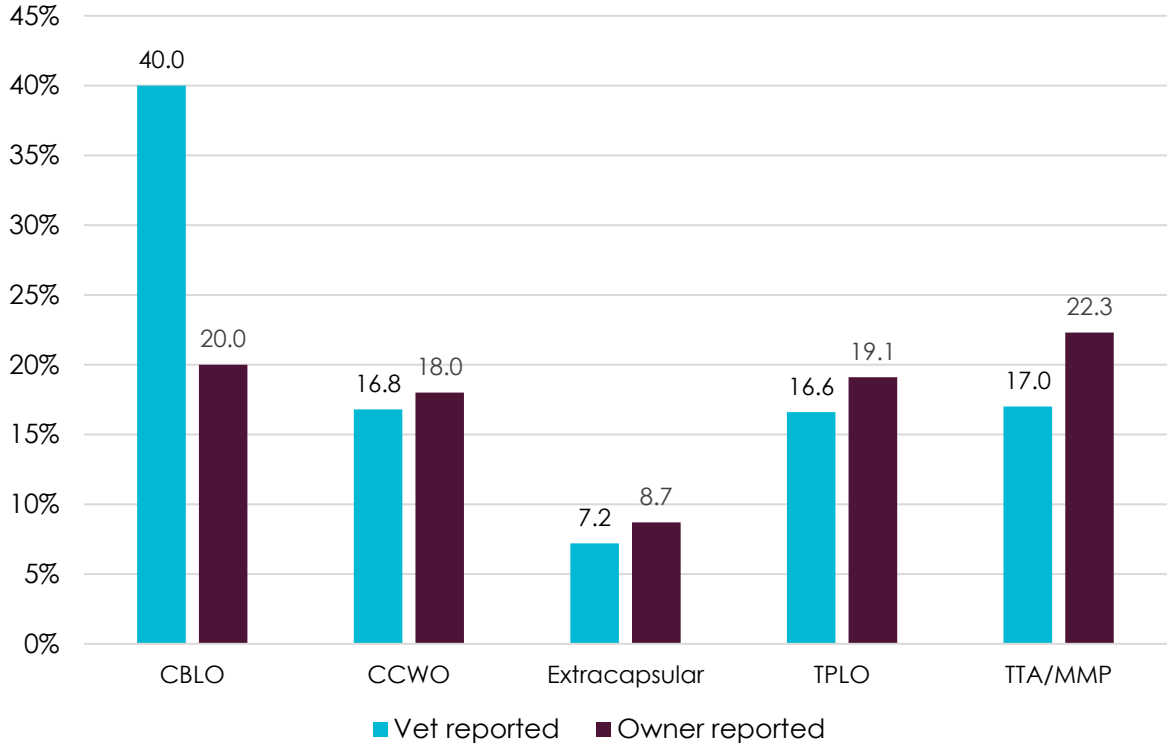
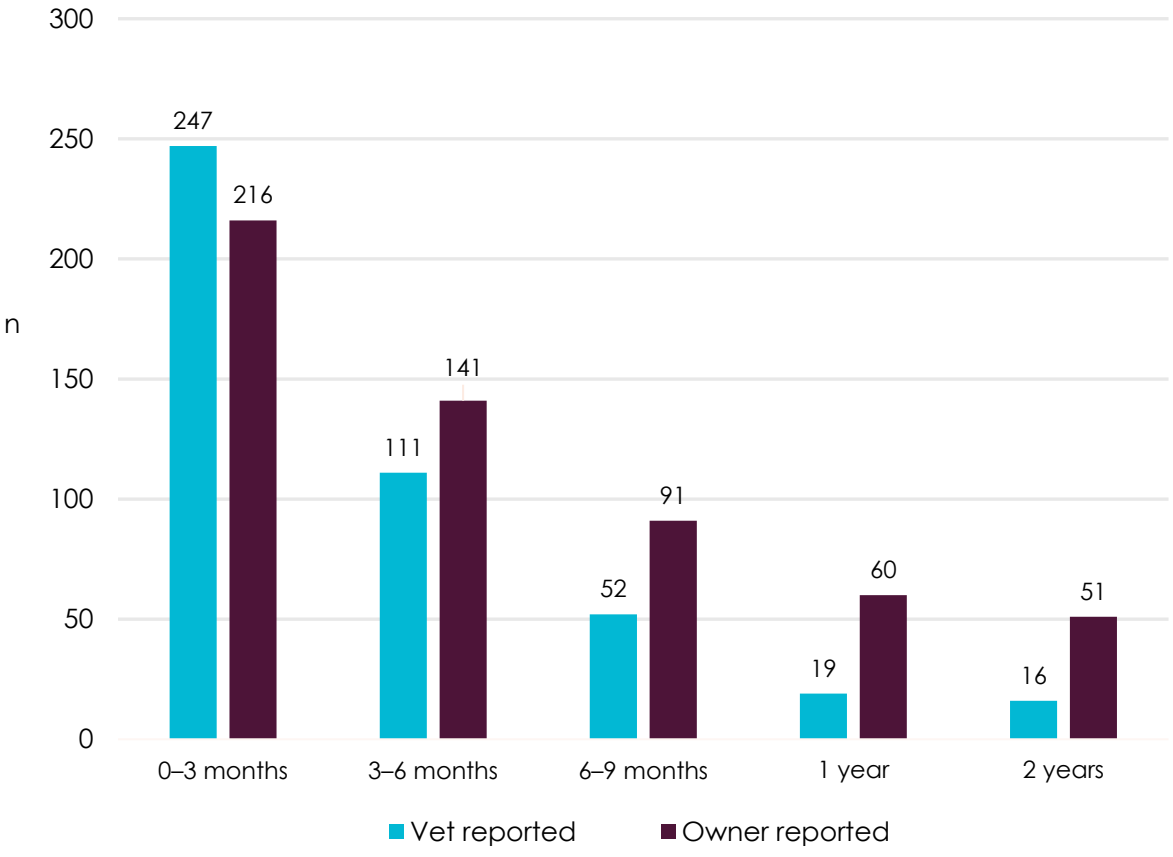


Figure 18: Complication rates by time frame



9. FUTURE FOCUS AND DEVELOPMENT

Our priority is to increase both participation in the registry and to make it as easy as possible to contribute. Every additional case and follow-up strengthen the quality and usefulness of the data. This helps to build a more representative picture of cruciate care across the profession and directly benefits those who are contributing to it with meaningful insights to support clinical decision-making, conversations with owners and continuous improvements in patient care.

To support this, we will look to work with more partners to support growth in the UK and further afield. As the registry grows, so too does its potential to generate insights that are relevant to vets, owners and patients.

We are also interested in exploring how emerging technologies, including artificial intelligence, offer opportunities to explore the growing dataset and identify trends which can help us and develop questions that may warrant further investigation. Artificial intelligence may also help reduce the work involved in collecting and analysing data, for example, by assisting with extraction from clinical records and identifying missing information. These approaches will need careful validation, appropriate guardrails and clinical oversight. The ultimate aim of using any emerging technologies would be to make participation easier while maintaining data quality.



10. INFORMATION FOR USERS

Are you a dog owner?

Discover how the CCR could benefit dogs in the UK.

caninecruciateregistry.org/dog-owners



Do you work in veterinary practice?

Find out how you can use the CCR to improve outcomes.

caninecruciateregistry.org/veterinary-professionals



Are you ready to start contributing to the CCR?

Sign up to take part.

caninecruciateregistry.org/veterinary-professionals/take-part



Do you want to know more about cruciate ruptures?

Learn about the most common surgical procedures.

caninecruciateregistry.org/dog-owners/common-surgical-procedures



APPENDIX 1:
VETERINARY-REPORTED COMPLICATIONS

Table 17: Veterinary-reported complications

Complication	Procedure	0–3 months (n)	3–6 months (n)	6–9 months (n)	1 year (n)	2 years (n)
Bandage complications	All	1	0	0	0	0
	TPLO	1	0	0	0	0
Broken screw	All	1	0	0	0	0
	TPLO	1	4	0	0	0
Delayed union	All	4	5	0	0	0
	CCWO	1	0	0	0	0
	TPLO	3	5	0	0	0
Draining tract	All	12	3	0	0	0
	CCWO	2	0	0	0	0
	TPLO	7	3	0	0	0
	TTA/MMP	3	0	0	0	0
Extracapsular suture failure	All	1	0	1	0	0
	Extracapsular	1	0	1	0	0
Fibular fracture	All	10	3	0	0	0
	CCWO	1	1	0	0	0
	TPLO	9	2	0	0	0
Implant failure	All	5	1	1	1	0
	CCWO	3	1	1	1	0
	TPLO	2	0	0	0	0
Incisional oedema/ haematoma/bruising	All	2	2	0	0	0
	TPLO	2	2	0	0	0
Infection	All	72	31	5	0	1
	CBLO	1	1	0	0	0
	CCWO	11	3	0	0	0
	Extracapsular	2	0	0	0	0
	TPLO	52	25	4	0	1
	TTA/MMP	6	2	1	0	0
Kirschner wire loosening	All	1	0	0	0	0
	CCWO	1	0	0	0	0
Medial patellar luxation	All	2	3	1	0	1
	TPLO	2	3	1	0	1
Meniscal tear	All	7	16	12	3	1
	CCWO	5	6	3	1	0
	TPLO	1	10	9	2	1
	TTA/MMP	1	0	0	0	0

Table 17: Veterinary-reported complications *continued*

Complication	Procedure	0–3 months (n)	3–6 months (n)	6–9 months (n)	1 year (n)	2 years (n)
Other	All	80	42	28	17	12
	CBLO	1	0	0	0	0
	CCWO	18	19	14	6	3
	Extracapsular	1	0	1	0	0
	TPLO	55	23	13	11	9
	TTA/MMP	5	0	0	0	0
Patella alta	All	1	1	0	0	0
	CCWO	1	1	0	0	0
Patellar fracture	All	1	0	0	0	0
	TPLO	1	0	0	0	0
Patellar tendonitis	All	20	9	0	0	0
	CCWO	0	1	0	0	0
	TPLO	20	8	0	0	0
Residual joint laxity	All	3	0	0	0	1
	TPLO	3	0	0	0	1
Rotational instability (pivot shift)	All	14	2	1	0	0
	CCWO	6	1	1	0	0
	TPLO	8	1	0	0	0
Screw loosening	All	3	0	1	0	0
	TPLO	3	0	1	0	0
Seroma/swelling	All	32	10	2	0	0
	CCWO	10	4	0	0	0
	Extracapsular	0	1	0	0	0
	TPLO	21	5	2	0	0
	TTA/MMP	1	0	0	0	0
Tibial fracture	All	3	0	0	0	0
	TPLO	2	0	0	0	0
	TTA/MMP	1	0	0	0	0
Tibial tuberosity fracture	All	5	4	1	0	0
	CCWO	2	2	1	0	0
	TPLO	0	2	0	0	0
	TTA/MMP	3	0	0	0	0
Traumatic wound dehiscence	All	19	0	1	0	0
	CCWO	3	0	0	0	0
	Extracapsular	1	0	0	0	0
	TPLO	14	0	1	0	0
	TTA/MMP	1	0	0	0	0

The following complications are selectable options but were not reported: anchor failure, bone tunnel widening, extracapsular suture failure, iatrogenic tibial deformity, lateral patellar luxation, osteomyelitis, patella baja, peroneal nerve injury, ring sequestrum, tibial deformity.

Table 18: Veterinary-reported complications by procedure

Procedure	Number of procedures (n)	Number of complications (n)	0–3 months (n)	3–6 months (n)	6–9 months (n)	1 year (n)	2 years (n)
CBLO	5	3	2	1	0	0	0
CCWO	523	134	64	39	20	8	3
Extracapsular	69	8	5	1	2	0	0
TPLO	1,473	353	207	89	31	13	13
TTA/MMP	94	24	21	2	1	0	0
All	2,164	522	299	132	54	21	16

APPENDIX 2:
OWNER-REPORTED COMPLICATIONS

Table 19: Owner-reported complications

Complication	Procedure	0–3 months (n)	3–6 months (n)	6–9 months (n)	1 year (n)	2 years (n)
Clicking/grinding sound	All	16	17	14	7	14
	CCWO	3	5	6	2	3
	Extracapsular	0	0	0	0	1
	TPLO	12	11	7	3	8
	TTA/MMP	1	1	1	2	2
Inability to walk	All	25	26	24	12	8
	CCWO	3	8	6	3	3
	Extracapsular	1	0	1	0	0
	TPLO	19	16	15	8	3
	TTA/MMP	2	2	2	1	2
Infection – deep	All	31	18	14	3	4
	CBLO	0	1	0	0	0
	CCWO	4	3	1	2	2
	TPLO	25	12	12	1	2
	TTA/MMP	2	2	1	0	0
Infection – skin only	All	24	14	4	1	0
	CCWO	6	5	1	0	0
	Extracapsular	1	0	0	0	0
	TPLO	16	7	3	1	0
	TTA/MMP	1	2	0	0	0
Joint/leg swelling	All	49	31	14	5	4
	CCWO	9	8	2	3	3
	TPLO	38	22	11	2	1
	TTA/MMP	2	1	1	0	0
Ongoing pain	All	47	33	22	20	20
	CBLO	1	1	0	0	0
	CCWO	6	10	4	5	4
	Extracapsular	1	0	0	0	1
	TPLO	36	20	17	14	12
	TTA/MMP	3	2	1	1	3

Table 19: Owner-reported complications *continued*

Complication	Procedure	0-3 months (n)	3-6 months (n)	6-9 months (n)	1 year (n)	2 years (n)
Other	All	96	67	37	34	20
	CCWO	21	21	17	8	7
	Extracapsular	1	1	2	0	0
	TPLO	72	41	17	22	12
	TTA/MMP	2	4	1	4	1
Wound problems	All	36	20	8	2	3
	CCWO	2	4	2	0	2
	TPLO	32	13	6	1	1
	TTA/MMP	2	3	0	1	0

Table 20: Owner-reported complications by procedure

Procedure	Number of procedures (n)	Number of complications (n)	0–3 months (n)	3–6 months (n)	6–9 months (n)	1 year (n)	2 years (n)
CBLO	5	3	1	2	0	0	0
CCWO	523	204	54	64	39	23	24
Extracapsular	69	10	4	1	3	0	2
TPLO	1473	571	250	142	88	52	39
TTA/MMP	94	56	15	17	7	9	8
All	2,164	844	324	226	137	84	73



RCVS Knowledge would like to thank all the veterinary teams and owners who have contributed data to the Canine Cruciate Registry.

GLOSSARY

A

Arthrotomy: Incision into a joint to allow examination

C

CBLO: CORA (Centre of Rotation of Angulation) Based Levelling Osteotomy

CCR: RCVS Knowledge Canine Cruciate Registry

CCWO: Cranial Closing Wedge Osteotomy

COI: Canine Orthopaedic Index questionnaire

CROM: Client-reported outcome measure

D

Delegates: Users of the registry who are linked with a registered user. This is often veterinary nurses or non-clinical team members who can access and input data on the registry on behalf of the veterinary surgeon. A veterinary surgeon can also act as a delegate for another veterinary surgeon.

L

LOAD: Liverpool Osteoarthritis in Dogs questionnaire

M

Meniscus: A cartilage shock absorber inside the knee

Meniscectomy: Removal of part of the meniscus, usually because it is damaged

MMP: Modified Maquet Procedure

O

Osteotomy: A cut made in a bone

P

Pathways: A pathway is equivalent to a cruciate rupture on the Canine Cruciate Registry. Patients can have two pathways to indicate two cruciate ruptures (one of each stifle).

Pathway owners: The veterinary surgeon that has opened the pathway for the patient

R

Registered users: Veterinary surgeons and their delegates who have registered for an account on the Canine Cruciate Registry

S

Stifle: Canine equivalent of the knee joint

T

TPLO: Tibial Plateau Levelling Osteotomy

TTA: Tibial Tuberosity Advancement

For more information about these terminologies, or cruciate ligament rupture and common surgical procedures, visit caninecruciateregistry.org.

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RCVS Knowledge would like to thank all the veterinary professionals and owners who have contributed data to the Canine Cruciate Registry.

With your continued help we hope to improve the outcomes for dogs with cranial cruciate ligament ruptures.

If you have signed up, but haven't enrolled any patients yet, please get involved. Your data will make a difference, not only to your own patients but to all dogs undergoing cruciate surgery in the future.

Help us, help you, help your patients: caninecruciateregistry.org.

The RCVS Knowledge Canine Cruciate Registry uses two validated client-reported outcome measures (CROMs) that have been specifically developed to assess outcomes in canine orthopaedics. These are the Liverpool Osteoarthritis in Dogs instrument, developed at the University of Liverpool, and the Canine Orthopaedic Index, developed by the American College of Veterinary Surgeons.

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The RCVS Knowledge Canine Cruciate Registry is endorsed by the British Veterinary Orthopaedic Association.

The RCVS Knowledge Canine Cruciate Registry is managed on a day-to-day basis by Amplitude Clinical Outcomes, a global leader in online registry software.



RCVS Knowledge is a charity with a mission to advance the quality of veterinary care for the benefit of animals, the public and society.

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