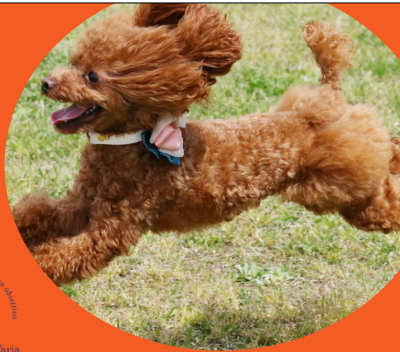
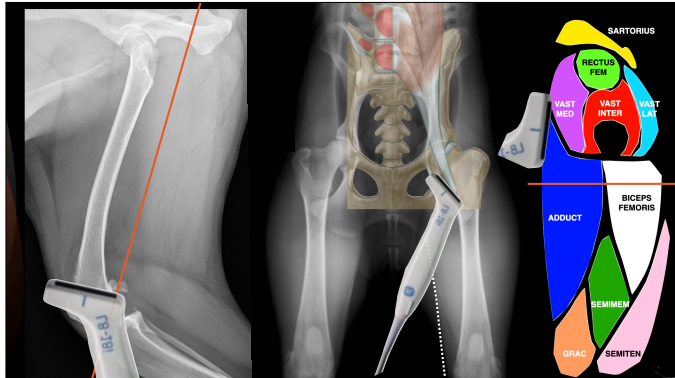


Ultrasound of the medial aspect of the thigh and the iliopsoas

Gliola Spattini
DVM, GP Cardiol, CCRT, PhD, DECVI



Thank to www.imaios.com



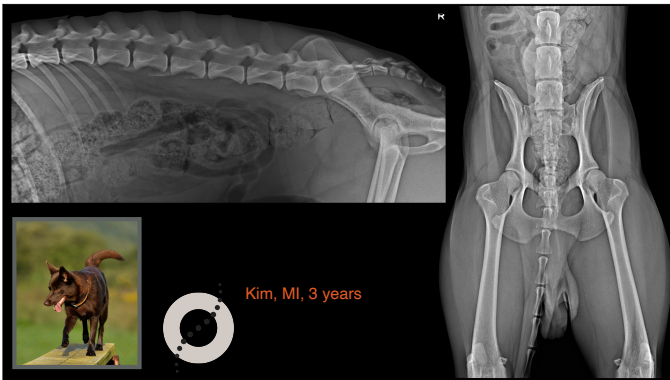
Kim, Australian Kelpie, MI, 3 years

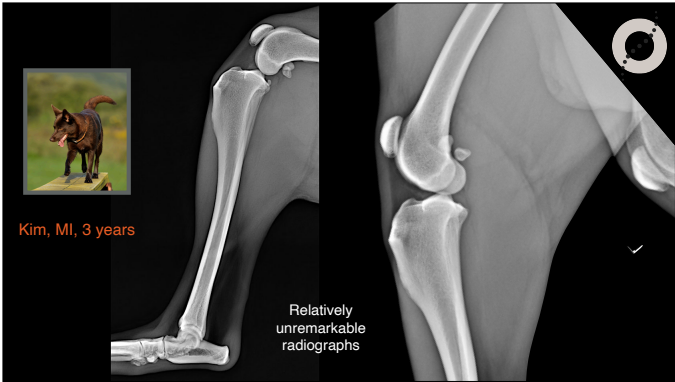
- Failing jumps during agility trial
- Slower than usual
- No evident lameness or discomfort after training



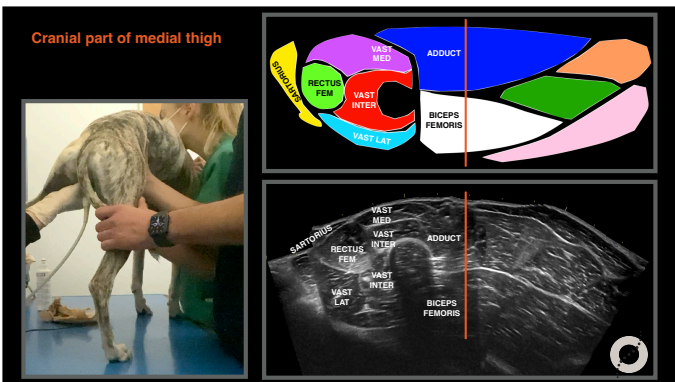
Kim, Australian Kelpie, MI, 3 years

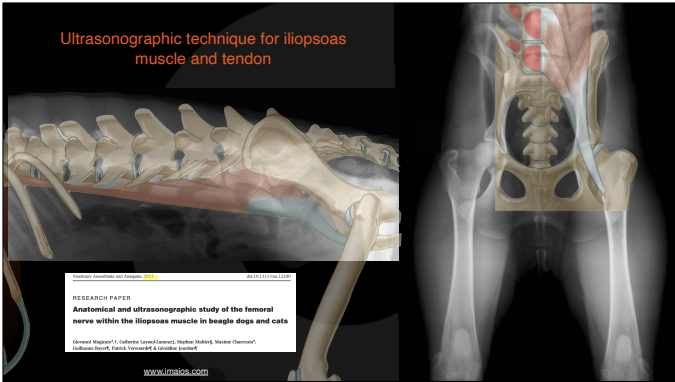
- The following day 3rd degree of lameness in the right hindlimb
- Pain on extension and extra rotation of the hip
- No neurological signs

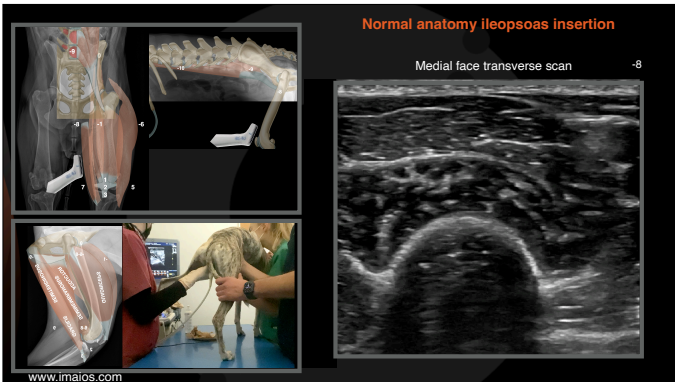


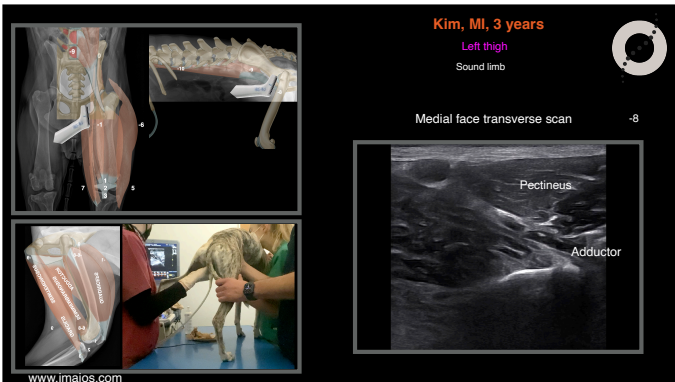












Kim, MI, 3 years
Right thigh
Affected limb

Medial face transverse scan -8

Pectineus

www.imaios.com

Kim, MI, 3 years

Left thigh

Right thigh

Kim, Australian Kelpie, MI, 3 years

Ultrasonographic diagnoses:

- Partial rupture of the right iliopsoas teno-junction

Conclusions

Physiotherapy and change in training

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- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial

1 Management of Injuries in Agility Dogs.
 Pechette Marley A.
 Vet Clin North Am Small Anim Pract 2023 Jul;53(4):829-844. doi: 10.1016/j.cvsm.2023.02.012. Epub 2023 Mar 22.
 Share PMID: 36984029 Review
 Shoulder injuries and other soft tissue injuries including **iliopsoas** muscle strains are commonly seen. The Border Collie seems to be at higher risk of developing agility-related injuries. ...

2 **Iliopsoas muscle injury in dogs.**
 Cabon G, Boffier C.
 Compend Contin Educ Vet. 2013 May;35(5):82.
 PMID: 2387392
 Share The **iliopsoas** muscle is formed by the psoas major and iliacus muscles. Due to its length and diameter, the **iliopsoas** muscle is an important flexor and stabilizer of the hip joint and the vertebral column. ...

3 Internet Survey Evaluation of **Iliopsoas** Injury in Dogs Participating in Agility Competitions.
 Fry JM, Kawaie HB, Strouen AB, Byrnes JK, Pochette Marley A.
 Front Vet Sci. 2022 Jul 8;9:930450. doi: 10.3389/fvets.2022.930450. eCollection 2022.
 Share PMID: 35875075 Free PMC article.
 RESULTS: Of the 4101 dogs in the sample, 327 (7.9%) reported **iliopsoas** injury. The final model identified six risk factors for **iliopsoas** injury. A higher risk of **iliopsoas** injury was observed for the Border Collie breed, dogs with handlers who ...

Article
 The Canadian Journal of Veterinary Research 2023; 87:196-201

Iliopsoas strain demographics, concurrent injuries, and grade determined by musculoskeletal ultrasound in 72 agility dogs

Danny Sack, Debra Canapp, Sherman Canapp, Stephanie Majeski, Jeff Curry, Angela Sutton, Robert Cullen

Abstract

The objective of this study was to describe patient demographics associated with iliopsoas strains, frequency of common concurrent injuries, and associated strain grades based on musculoskeletal ultrasound.

The medical records of 72 client-owned agility dogs that had an iliopsoas musculoskeletal ultrasound (MSK-US) between 2009 and 2015 were retrospectively reviewed. Analyses included patient signalment, physical examination, and diagnostic findings. Twenty-four breeds of canine athletes from 15 to 10 y old (median 5 y, SD 2.2 y) were included in the study. Of the 72 records reviewed, border collies were the most common breed (27.8%, 20/72) reported. Isolated iliopsoas strains occurred in 26.4% (19/72) of cases. Concurrent pathology was noted in 73.6% (53/72) of cases. Cranial cruciate ligament (CCL) instability was the most common concurrent pathology, representing 27.8% (20/72) of all cases, with hip (8.3%, 6/72), lumbosacral (23.6%, 17/72), other non-CCL hind limb (6.9%, 5/72), and forelimb (6.9%, 5/72) pathologies making up the remainder of cases with concurrent pathology. In patients with a concurrent hind limb injury, 86.7% (59/51) of dogs had their most severe iliopsoas strain grade on the same limb.

MSK-US revealed Grade I strains in 54.2%, Grade II strains in 22.2%, Grade III strains in 5.2%, and chronic changes in 18.1% of cases. There were no statistically significant associations between iliopsoas strain grade and age, body weight, sex, breed, concurrent pathology, anatomic location of concurrent pathology, or sidedness of concurrent pathology.

Iliopsoas strains are one of the most common agility dog injuries; however, patient demographics, prevalence of concurrent injury and correlation with MSK-US findings have not been previously reported. To the authors' knowledge, this is the first retrospective analysis reporting iliopsoas strain demographics, concurrent injury frequency and correlation with MSK-US evaluation in agility dogs. Although 26.4% of iliopsoas strains occurred as isolated injuries, 73.6% had concurrent injuries, with CCL instability present most commonly, occurring in 27.8% of cases.

Dogs should be thoroughly evaluated for concurrent injuries when presenting with an iliopsoas strain.

Table 1. Musculotendinous grading scheme for dogs.

Grade	Description
I	"Mild strain," < 5% muscle involvement, focal edema/hemorrhage
II	"Moderate strain," > 5% muscle involvement, mild fiber tearing, increased edema/hemorrhage
III	"Severe strain," significant fascial tearing, marked to complete muscle fiber disruption, marked edema/hemorrhage
Chronic	Hyperechoic fiber pattern, hyperechoic changes and/or debris within bursa, > 5% muscle involvement, mild fiber tearing

Internet Survey Evaluation of Iliopsoas Injury in Dogs Participating in Agility Competitions

Frontiers in Veterinary Science | www.frontiersin.org | 1 | July 2021 | Volume 9 | Article 692462

Lindsey M. Fry¹, Nina R. Kieves², Abigail B. Shoben³, Jessica K. Rychel¹ and Arielle Pechette Markley^{4*}

¹ Red Sage Integrative Veterinary Partners Rehabilitation Clinic, Fort Collins, CO, United States, ² Department of Veterinary Clinical Sciences, College of Veterinary Medicine, The Ohio State University, Columbus, OH, United States, ³ College of Public Health, Division of Biostatistics, The Ohio State University, Columbus, OH, United States, ⁴ Veterinary Medical Center, The Ohio State University, Columbus, OH, United States

Results: Of the 4,197 dogs in the sample, 327 (7.8%) reported iliopsoas injury. The final model identified six risk factors for iliopsoas injury. A higher risk of iliopsoas injury was observed for the Border Collie breed, dogs with handlers who are veterinary assistants, dogs competing on dirt, dogs competing on artificial turf 6+ times a year, and dogs that trained with the 2 x 2 method for weave poles. Dogs that were not acquired with agility in mind were observed to have a decreased risk of injury. Factors like number of competition days and jump height were not significantly associated with risk of iliopsoas injury. Owners sought veterinary care for 88% of dogs with iliopsoas injury, including specialty care for 63%. Treatment most often included rest, home rehabilitation, formal rehabilitation, and/or oral medications. Most dogs (80%) were able to return to sport within 6 months, while 20% were out for longer than 6 months, or retired.

Kim, Australian Kelpie, MI, 3 years

Four months later

- Back to work
- Performing at the same level than before the injury



Kim, MI, 3 years

Left thigh
Sound limb

Medial face transverse scan -8

www.imaios.com

Kim, MI, 3 years
Right thigh
Affected limb

Medial face transverse scan -8

The slide contains three images: an anatomical diagram of a dog's hindquarters with red dots on the right thigh, a photograph of a dog's hindquarters with red dots on the right thigh, and a grayscale ultrasound scan of the medial face of the right thigh at a transverse scan level -8. The ultrasound shows a dark, irregular area. A small circular icon with a white dot is in the top right corner. The URL www.imaios.com is at the bottom left.

Kim, MI, 3 years
Four months later

Left thigh Right thigh

The slide shows two grayscale ultrasound scans side-by-side. The left scan is labeled 'Left thigh' and the right scan is labeled 'Right thigh'. Both scans show a dark, irregular area. A small circular icon with a white dot is in the top right corner.

Kim, MI, 3 years
Acute VS Chronic lesions

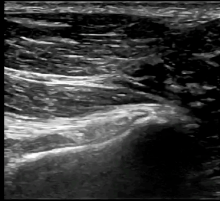
Right thigh Time 0 Right thigh Four months later

The slide shows two grayscale ultrasound scans side-by-side. The left scan is labeled 'Right thigh Time 0' and the right scan is labeled 'Right thigh Four months later'. Both scans show a dark, irregular area. A small circular icon with a white dot is in the top right corner.

Iliopsoas tendon injuries personal grading

WNL

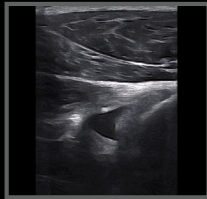
1. Fine fibrillar pattern
2. Well-defined from the surrounding tissues
3. Well-defined bony surface
4. No hyperechoic surrounding tissues
 - No mineralisation



Iliopsoas tendon injuries personal grading

Acute injury

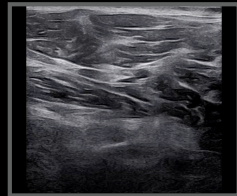
1. Focal loss of the fibrillar pattern
2. Effusion
3. Scattering artifact
4. Reduced distinction with the surrounding tissues



Iliopsoas tendon injuries personal grading

Chronic injuries

1. Less fine and defined fibrillar pattern
2. Markedly reduced distinction with the surrounding tissues
3. No scattering artifact, no effusion
4. +/- Mineralisation


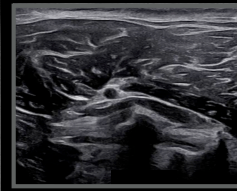


Iliopsoas tendon injuries personal grading


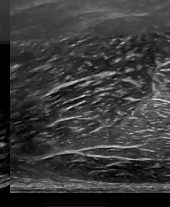
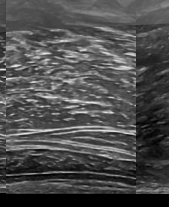
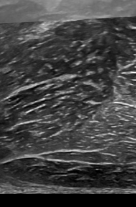
Chronic injuries

Omuk, MI, 4 years

Shortening gait, pain hip extension and internal rotation

Iliopsoas muscle

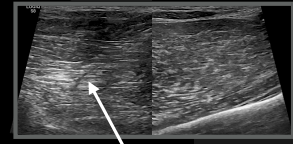
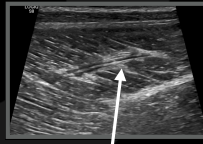
Consensus statement

Terminology and classification of muscle injuries in sport: The Munich consensus statement

OPEN ACCESS

Hans-Wilhelm Mueller-Wohlfahrt,¹ Lutz Haensel,¹ Kai Mithoefer,² Jan Ekstrand,³ Bryan English,⁴ Steven McNally,⁵ John Orchard,^{6,7} C Niek van Dijk,⁸ Gino M Kerckhoffs,⁹ Patrick Schamasch,¹⁰ Dieter Blottner,¹¹ Leif Swaerd,¹² Edwin Goedhart,¹³ Peter Uebliacker¹

Mueller-Wohlfahrt H-W, et al. *Br J Sports Med* 2013;**47**:342–350. doi:10.1136/bjsports-2012-091448

First degree muscle rupture

Second degree muscle rupture

Thank you



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