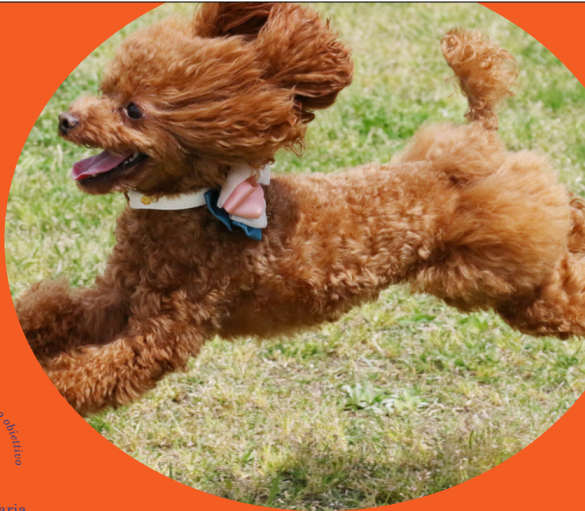
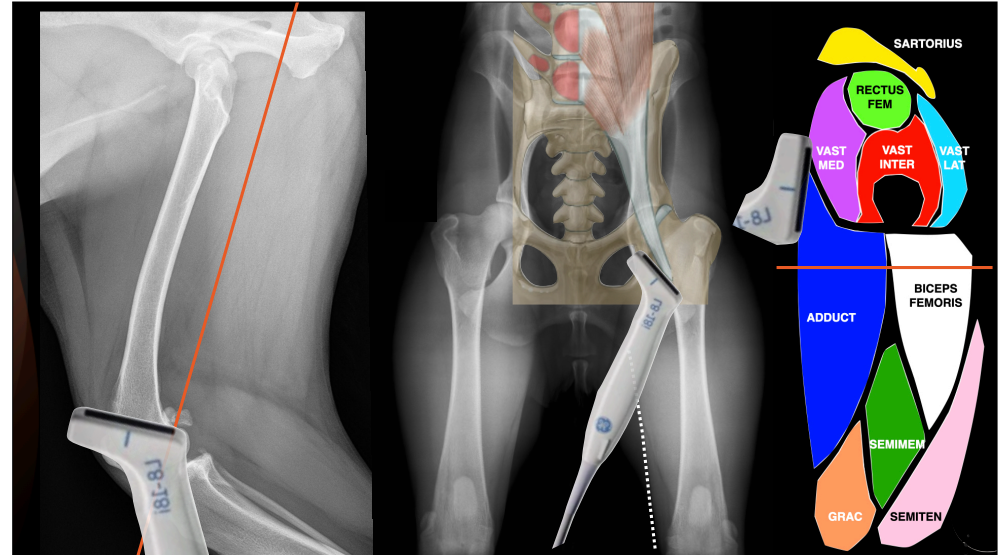


# Ultrasound of the medial aspect of the thigh and the iliopsoas

Giliola Spattini  
DVM, GP Cardio, CCRT, PhD, DECVDI



Thank to [www.imaios.com](http://www.imaios.com)



### Kim, Australian Kelpie, MI, 3 years

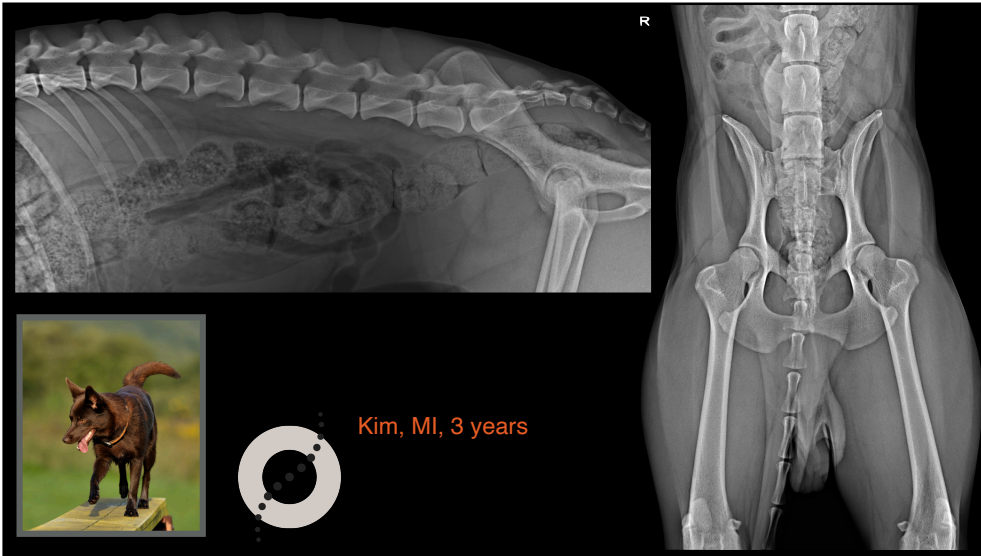
- Failing jumps during agility trial
- Slower than usual
- No evident lameness or discomfort after training



### 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



Relatively unremarkable radiographs

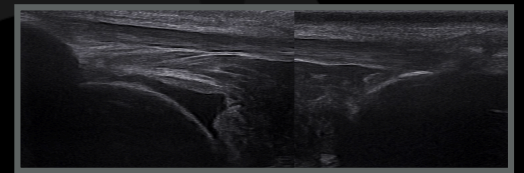


Kim, MI, 3 years

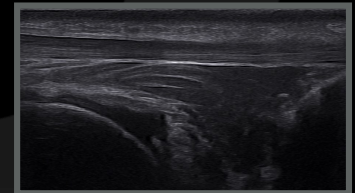
Left stifle

Cranial face longitudinal scan

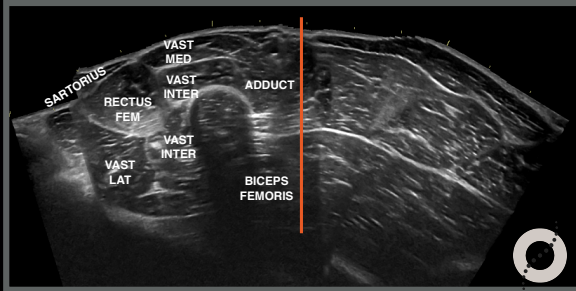
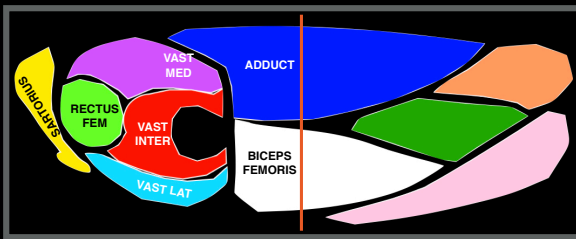
1-2-3



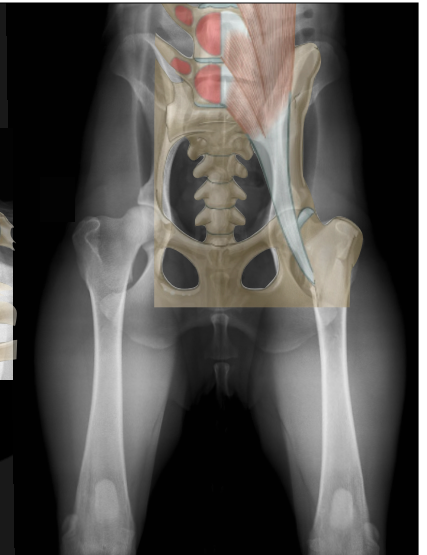
Right stifle



### Cranial part of medial thigh



### Ultrasonographic technique for iliopsoas muscle and tendon



**Normal anatomy ileopsoas insertion**

Medial face transverse scan -8

The ultrasound image shows a normal, well-defined muscle belly of the ileopsoas muscle. The muscle fibers are oriented vertically, and the insertion point on the femur is clearly visible as a bright, curved line. The surrounding soft tissue and bone structure are also visible.

www.imaio.com

**Kim, MI, 3 years**

Left thigh  
Sound limb

Medial face transverse scan -8

The ultrasound image shows a normal, well-defined muscle belly of the ileopsoas muscle. The muscle fibers are oriented vertically, and the insertion point on the femur is clearly visible as a bright, curved line. The surrounding soft tissue and bone structure are also visible.

Pectineus

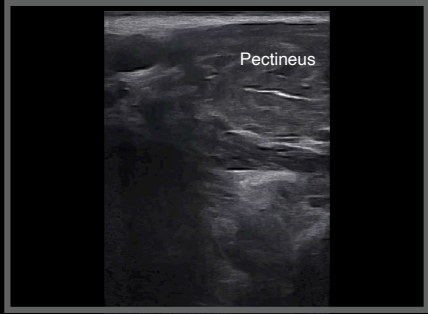
Adductor

www.imaio.com

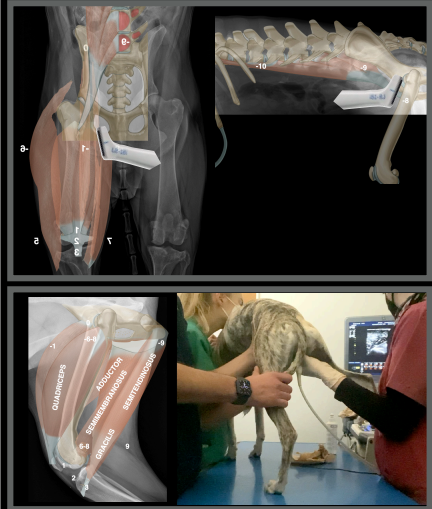
**Kim, MI, 3 years**

Right thigh  
Affected limb

Medial face transverse scan -8



Pectineus

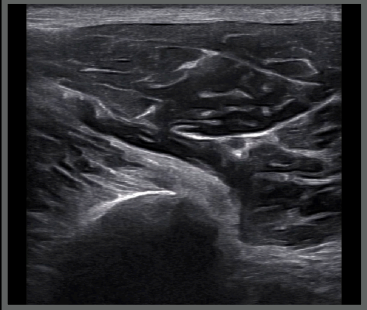
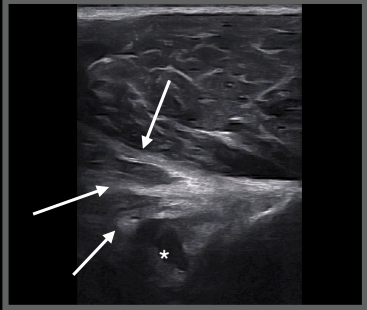


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**Kim, MI, 3 years**

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



PubMed®

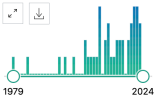
canine iliopsoas   [User Guide](#)

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RESULTS BY YEAR



TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- Associated data

ARTICLE TYPE

- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial

**Management of Injuries in Agility Dogs.**

1 Pechette Markley A.  
Cite 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: 36964029 [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. ...

**Iliopsoas muscle injury in dogs.**

2 Cabon Q, Bolliger C.  
Cite Compend Contin Educ Vet. 2013 May;35(5):E2.  
Share PMID: 23677782  
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. ...

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

3 Fry LM, Kievles NR, Shoben AB, Rychel JK, Pechette Markley A.  
Cite Front Vet Sci. 2022 Jul 8;9:930450. doi: 10.3389/fvets.2022.930450. eCollection 2022.  
Share PMID: 35873675 [Free PMC article](#).  
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 ...

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 1.5 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, 96.7% (30/31) 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 I. 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 2022 | Volume 9 | Article 930450

Lindsey M. Fry<sup>1</sup>, Nina R. Kieves<sup>2</sup>, Abigail B. Shoben<sup>3</sup>, Jessica K. Rychel<sup>1</sup> and Arielle Pechette Markley<sup>4\*</sup>

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

This panel displays the left thigh of a 3-year-old dog, identified as a 'Sound limb'. It includes anatomical diagrams of the thigh muscles (gluteus medius, gluteus superficialis, and gluteus profundus) and a photograph of the dog being examined. The central image is a transverse ultrasound scan of the medial face, showing a normal, organized muscle structure with distinct fascicles and a clear fascial layer.

**Kim, MI, 3 years**  
 Right thigh  
 Affected limb

Medial face transverse scan -8

www.imaios.com

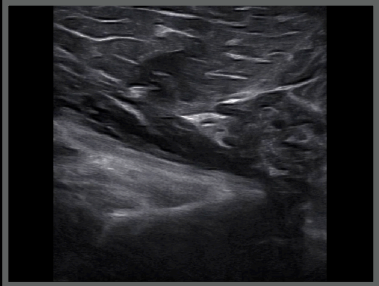
This panel displays the right thigh of the same 3-year-old dog, identified as an 'Affected limb'. It includes anatomical diagrams of the thigh muscles and a photograph of the dog being examined. The central image is a transverse ultrasound scan of the medial face, showing significant pathological changes, including muscle fiber disruption, increased echogenicity, and a thickened fascial layer, which are characteristic of a muscle injury or disease.

## Kim, MI, 3 years

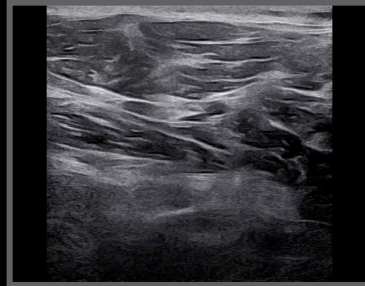
Four months later



Left thigh



Right thigh

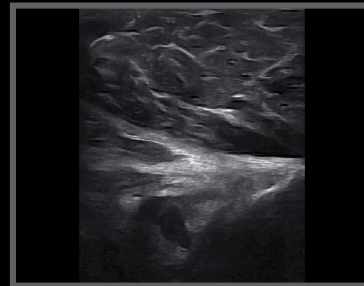


## Kim, MI, 3 years

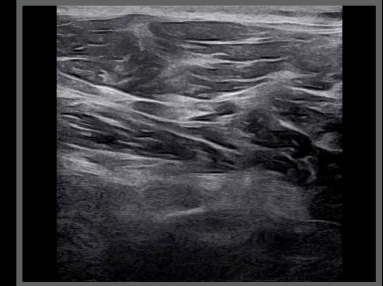
Acute VS Chronic lesions



Right thigh Time 0



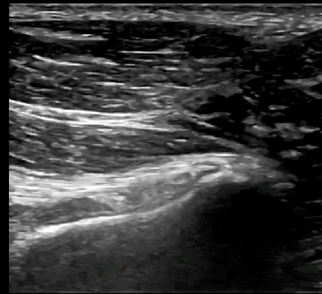
Right thigh Four months later



## Iliopsoas tendon injuries personal grading

WNL

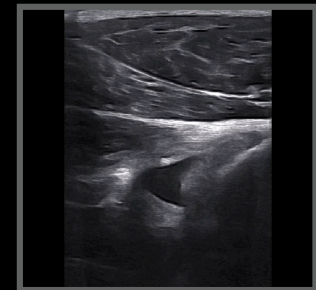
1. Fine fibrillar pattern
2. Well-defined from the surrounding tissues
3. Well-defined bony surface
4. No hyperechoic surrounding tissues
  - No mineralisation



## 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

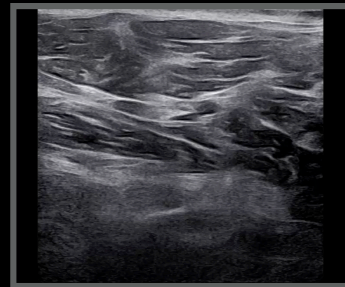


## Iliopsoas tendon injuries personal grading



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



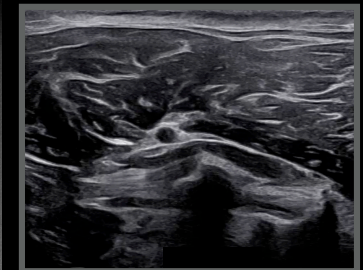
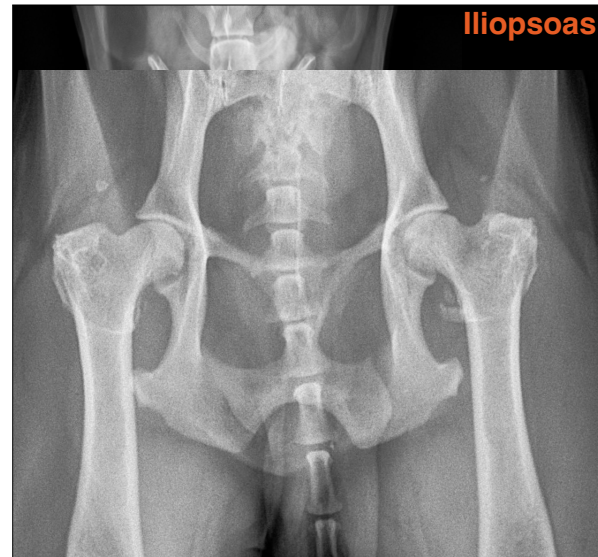
## Iliopsoas tendon injuries personal grading

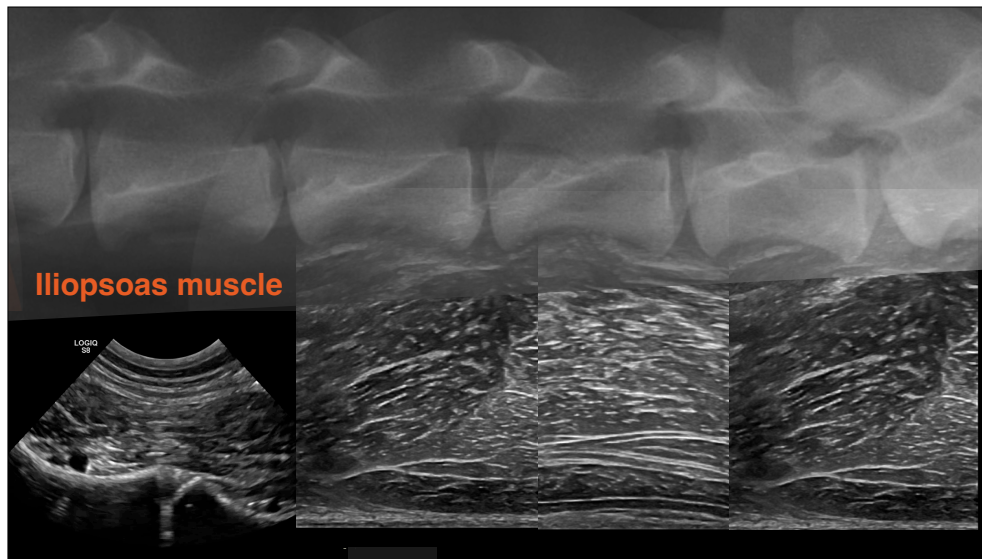


Chronic injuries


Omuk, MI, 4 years

Shortening gait, pain hip extension and internal rotation





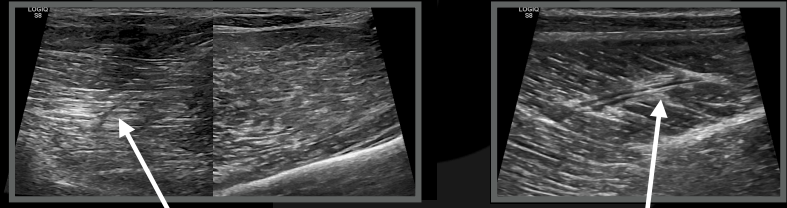
Consensus statement

 OPEN ACCESS

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

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

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

The bottom section of the slide features two side-by-side ultrasound images. The left image shows a 'First degree muscle rupture' with a white arrow pointing to a small, localized area of fiber discontinuity. The right image shows a 'Second degree muscle rupture' with a white arrow pointing to a larger, more significant gap in the muscle fibers. Both images include the 'LOGIQ S9' logo in the top left corner.

Thank you



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