



The most common injuries in Mixed Martial Arts

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2/3/18

Mixed Martial Arts

- Mixed Martial Arts is a full combat sport that allows grappling, wrestling, boxing, striking and other martial art techniques between two athletes.
- The objective is to achieve victory either through knock-out, submission, or through ruling of the judges if time runs out.
- The fight can also be stopped by referee or the athletes doctor if injuries sustained are too dangerous to continue the sport.

MMA and more





MMA and other martial arts

- The study below is a retrospective study in which injuries sustained per 1000 fights in different martial art sports were compared:

TABLE 2

Comparative Injury Rates per Exposure in Martial Arts Competitions

Sport	Injury Rate per 1000 Athlete-Exposures	References
Brazilian jiu-jitsu (BJJ)	9.2	Present study
Mixed martial arts (MMA)	236-286	Ngai et al (2008), ¹⁸ Scoggin et al (2010), ²⁷ Bledsoe et al (2006) ⁵
Judo	25.3-130.6	James and Pieter (2003), ⁹ Barrault et al (1983), ² Pieter et al (2001), ²³ Green et al (2007), ⁷ Kujala et al (1995) ¹⁵
Taekwondo	20.5-139.5	Beis et al (2001), ³ Pieter et al (1995), ²⁴ Zemper and Pieter (1989), ³³ Kazemi and Pieter (2004), ¹² Kazemi et al (2005), ¹³ Pieter et al (1998), ²¹ Ziaee et al (2010), ³⁴ Pieter (2009) ²⁰
Wrestling	9.0-30.7	Pasque and Hewett (2000), ¹⁹ Yard et al (2008), ³² Jarret et al (1998), ¹⁰ Myers et al (2010), ¹⁷ Strauss and Lanese (1982), ²⁹ Shadgan et al (2010), ²⁸ Kersey and Rowan (1983), ¹⁴ Rechel et al (2008) ²⁵

Most common locations

- Since the objective is to win through knock-out or submission and not as focused on points like boxing, most athletes aim for the head for an easy knock-out.
- Therefore, upper body injuries are most common in MMA.
- A study in 2015 looked at 455 MMA athletes through different competitions and were able to compare different locations of the injuries sustained:

Table 2.

Injury locations

Location	Frequency	%
Arm	253	30.4
Neck	146	17.6
Head	118	14.2
Hand	71	8.5
Wrist	65	7.8
Shoulder	37	4.5
Thigh	30	3.6
Forearm	25	3.0
Foot	17	2.0
Finger	15	1.8

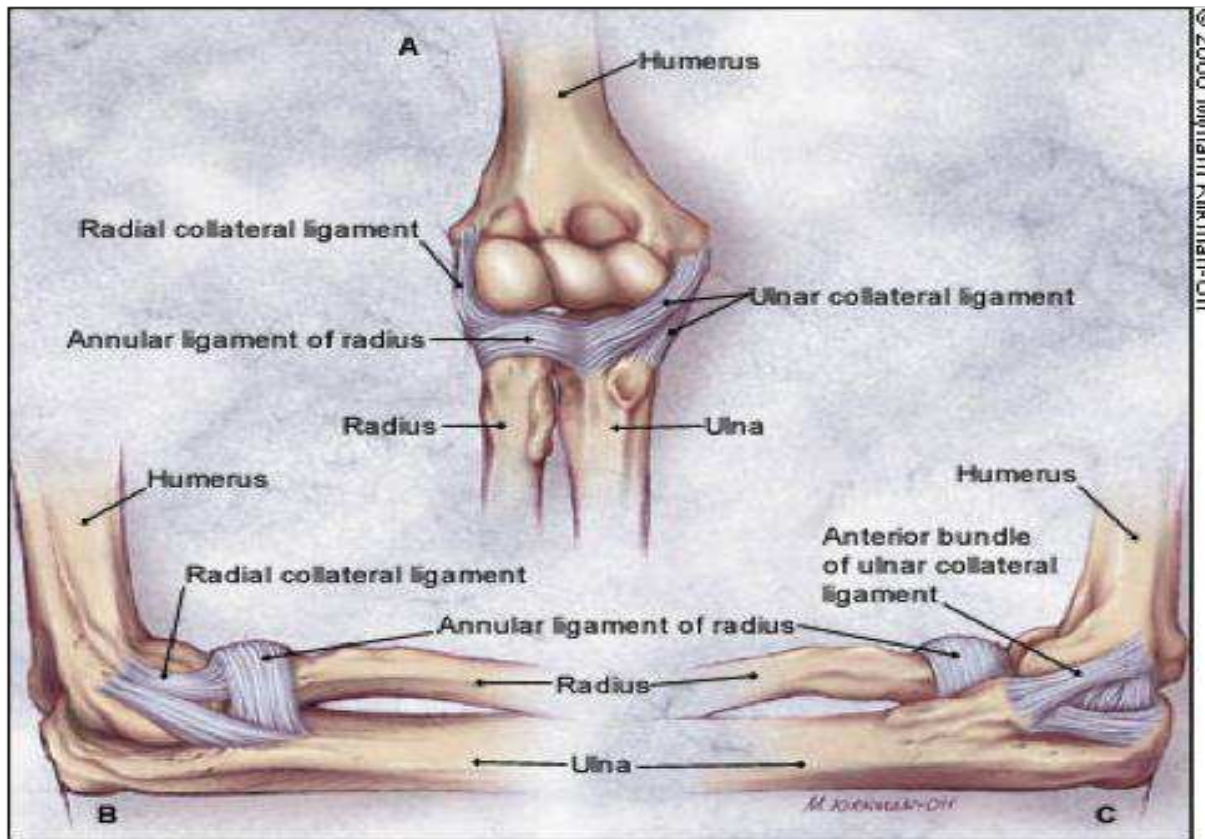
The Armbar

- The arm is the most commonly injured body part.
- A study that looked at Jiu-Jitsu fights resulted to show that the armbar was the main reason of arm related injuries.
- The armbar is a common move to elicit a submission from the opponent. It is used predominantly by wrestlers.



The Armbar

- Armbar causes hyperextension of the elbow joint



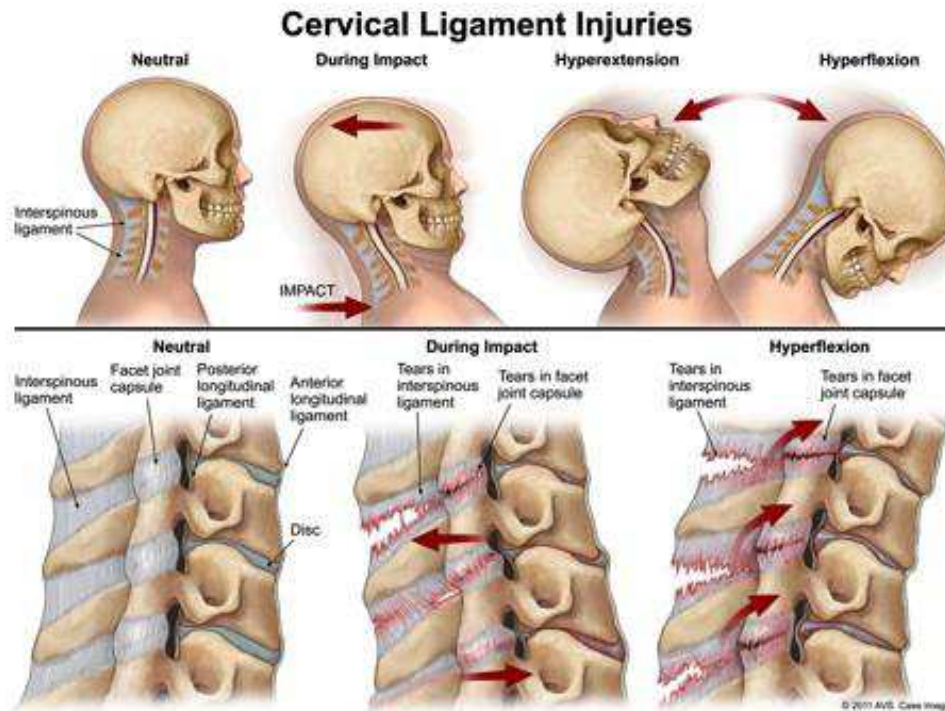
The Triangle Choke

- The triangle choke is another move to elicit a submission from the opponent.

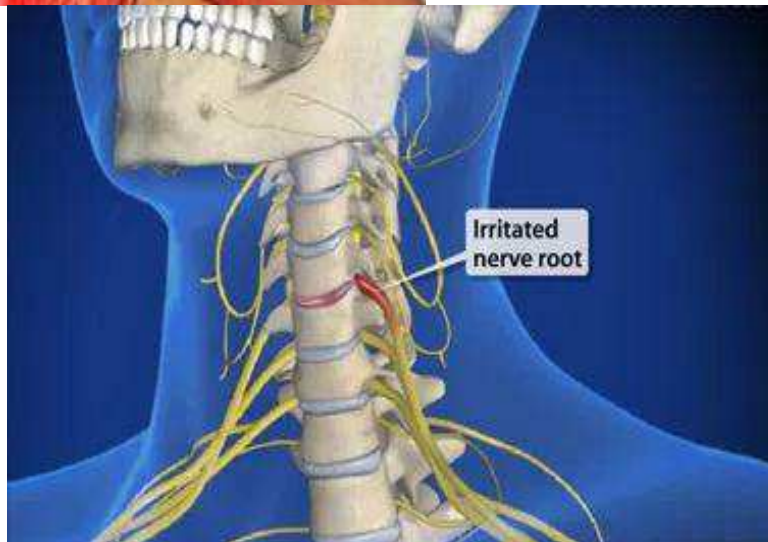
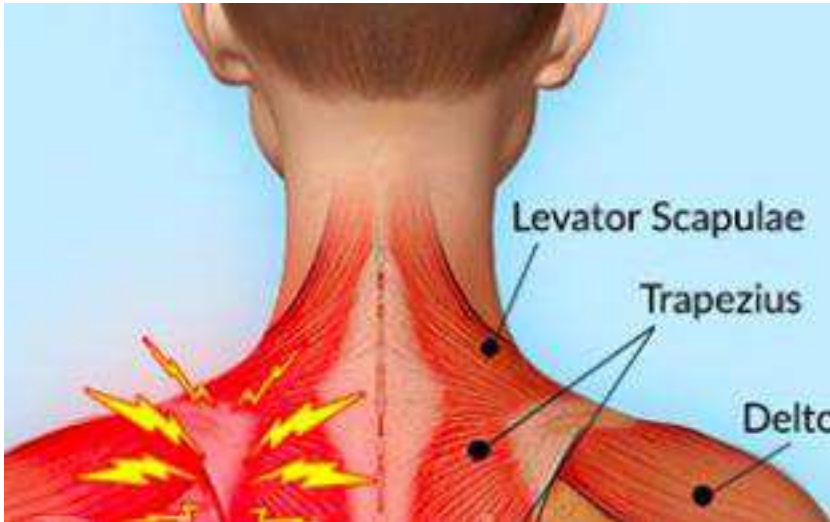


The Triangle Choke

- The choke can cause stress on the cervical spine causing multiple injuries.
- These injuries include cervical radiculopathy, herniated discs, vertebral fractures, and various neck muscle strains



The Triangle Choke



Head Trauma

- MMA includes a lot of boxing and strikes to the head and face.
- One of the most common injuries are lacerations, however, they also include blowout fractures, hematomas, nasal fractures, dental injuries, and concussions.



Concussion

- MMA is a fairly new sport and the long term effects of the injuries sustained have not been studied.
- Studies have shown that repeated trauma to the head in sports such as football can cause CTE.

- A correlation could be made with Football and MMA and the amount of head trauma each athlete suffers per exposure.

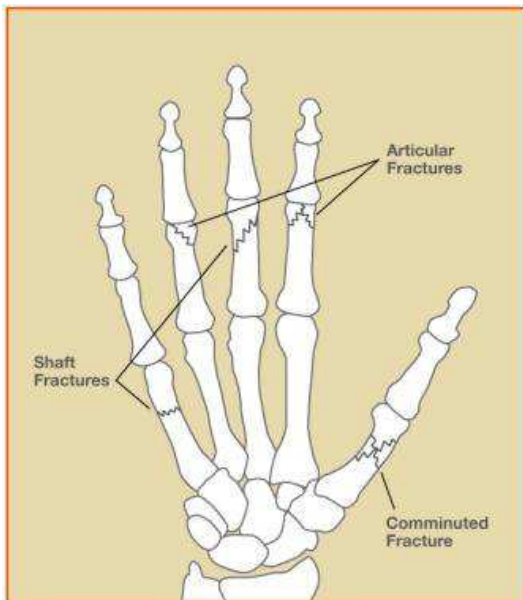
Table 3.

Injury diagnoses

Diagnosis	Frequency	%
Laceration	321	37.3
Concussion	179	20.8
Contusion	142	16.5
Fracture	53	6.2
Strain	51	6.0
Joint dysfunction	45	5.2
Sprain	25	2.9
Dislocation	20	2.3
Epistaxis	15	1.8
Other	9	1.0

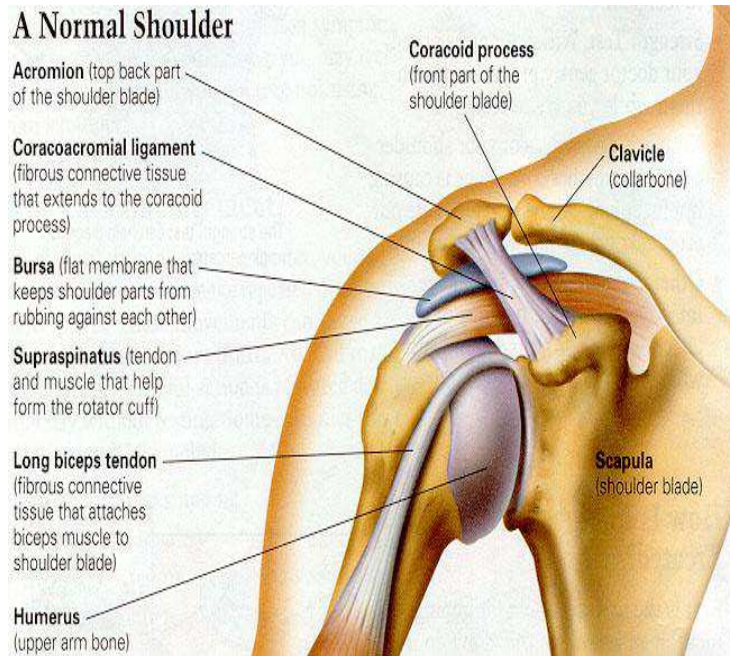
Hands, fingers and wrists

- Hands and wrists are mostly injured while striking/punching the opponent. Therefore, the most common injury sustained are fractures of the different interphalangeal joints and wrists.

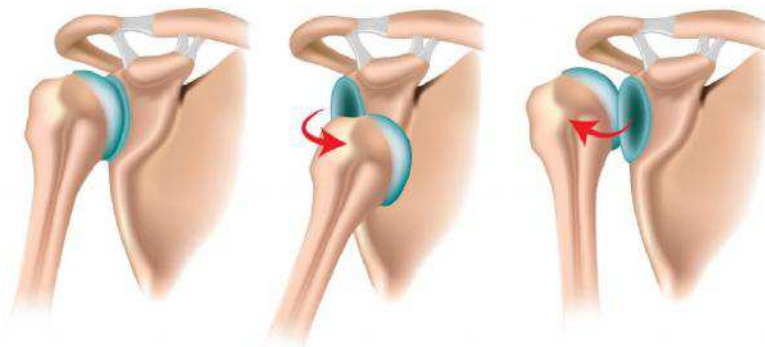


Shoulders

- The shoulder joint is mostly injured during grappling, however, muscle strains are evident after overuse.
- Anterior and posterior dislocations occur occasionally.



Shoulder Dislocation

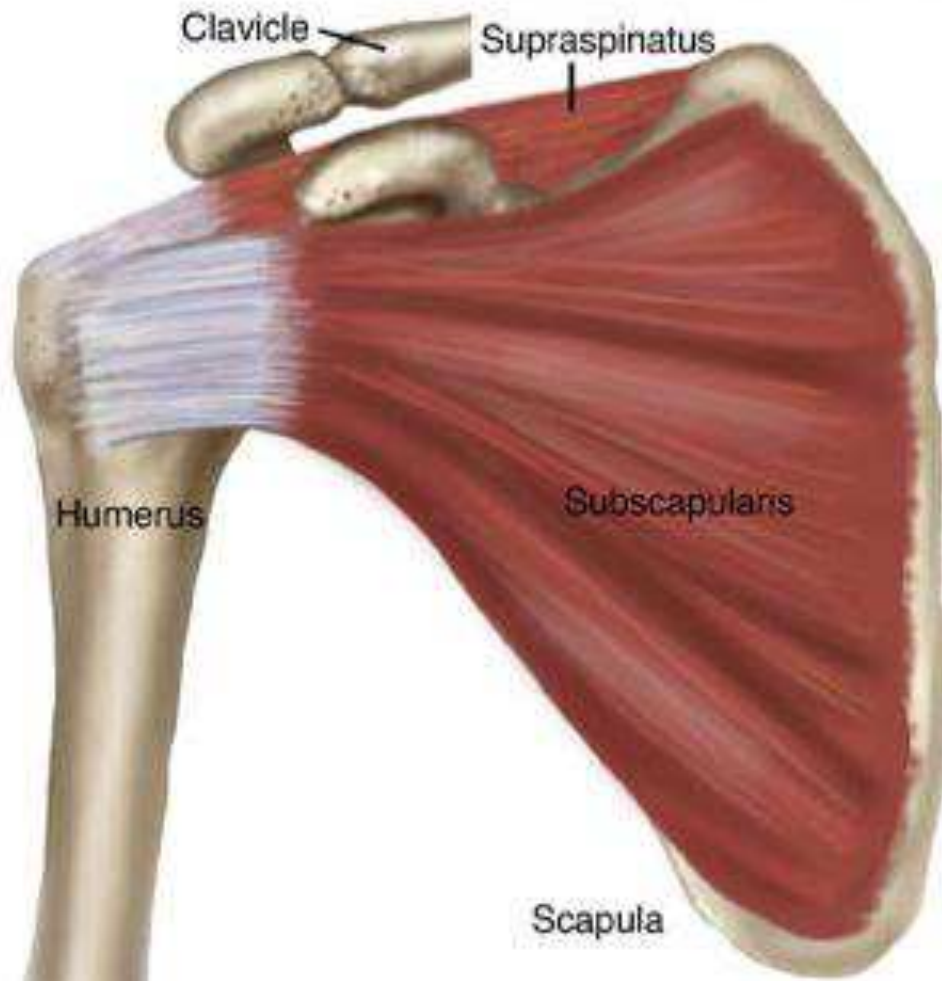


Normal anatomy

Anterior dislocation

Posterior dislocation

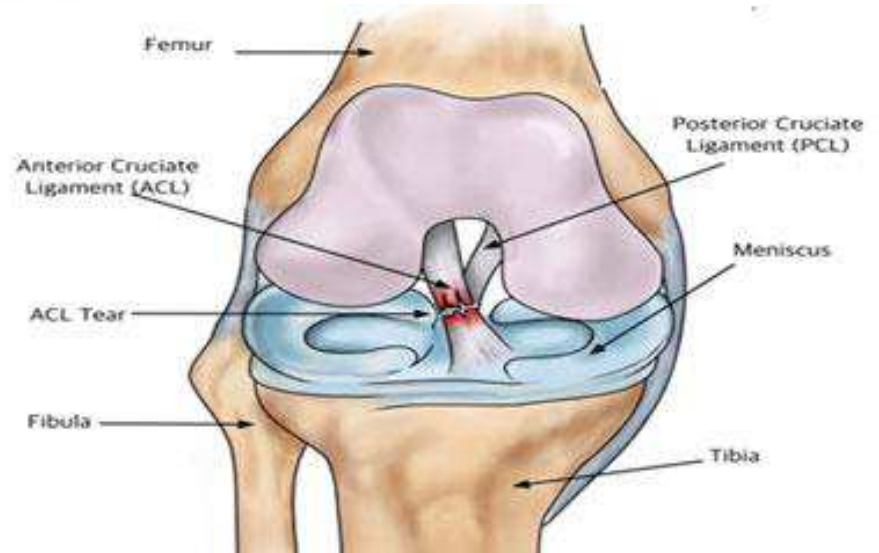
Rotator Cuff Tear



Knee

- The knee joint is exposed in every sport and is trained to absorb a large amount of force.
- However, a blunt direct impact to the knee joint or sudden directional movements that are compulsory in MMA can cause ligament tears.
- ACL tears are common in many sports and PCL tears are rare.
- MMA also follows the same trend, however, PCL tears are seen often as well.

Knee



Anderson Silva vs Chris Weidman

- UFC 168 was a fight that is hard to forget.
- It was a multimillion dollar Middleweight Championship fight, however, it did not go exactly as planned.
- In Round 2, Anderson Silva suffered a severe leg injury.



Rare Injuries

- Anderson Silva suffered from a tibial shaft fracture which is uncommon.
- MMA is a full combat sport in which severe life threatening or debilitating injuries occur in more than 1 out of every 4th fight.



References

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2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4555620/>
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Thank You