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Uncommonly Considered Predisposing Anatomic Risk Factor For Anterior Cruciate Ligament (ACL) Injury: Recognition And Possible Rehabilitation Potential For Prevention.

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Disclosures:
No disclosure / nothing to declare



Uncommonly Considered Predisposing Anatomic Risk Factor For Anterior Cruciate Ligament (ACL) Injury: Recognition And Possible Rehabilitation Potential For Prevention.

- Anterior Cruciate ligament (ACL) are among the most common sports medicine procedures performed in the United States, 100,000 – 150,000 /year
- UK surgery numbers increased 12 folds since 1997-2023.
- In Military Personnel and Civilian athletes' incidence of ACL injury is 10 times more than general population.
- Only 48-60 % military men return to military duty and 30% are dismissed from the service even after ACL reconstruction
- Numerous anatomic and neuromuscular control risk factors have been highlighted.



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- **Anatomically** certain measures of bony geometry including decreased intercondylar femoral notch size, type and alpha angle ; shallow medial tibial plateau , increased slope of lateral tibial plateau , meniscal height, the intercondylar notch width index and height index, the β angle, Patella alta, ACL Volume (size) Anterior-posterior knee laxity as a predisposing risk.
- **Age, certain sports requiring** cutting and pivoting maneuvers and landing after a jump are said to contribute towards ACL injury .
- Review of the literature is equivocal and perhaps apply differently to males and female genders hence one can conclude that above risk factors most **likely act in combination under different intrinsic and extrinsic conditions** to influence the risk of ACL injury.
- Understanding of these factors has led to **biomechanics- centered prevention programs.**
- ***We present Patellofemoral (trochlear) Dysplasia(PFD) (mild to moderate) to be considered as a risk factor ACL injury.***



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- A three-year data collected on 487 consecutive isolated ACL Injury patients both Civilian and Military requiring reconstruction.
- MRI scan were reviewed by sports surgeons performing ACL reconstructions.
- There were 295 Military and 192 Civilians.
- All male patients. Ages from 21-44 years.

MRI classification 4 Grades D. Dejour.

Oswestry-Bristol Classification.

MRI Parameters

1.Lateral Trochlear Inclination. 2.Trochlear Depth . 3.Facet Asymmetry

In our cohort 63.4 % had some form of dysplasia

The **absolute MRI values** of established dysplasia showed slightly higher values
5.3% of Severe

Oswestry-Bristol Classification.
55.2% dysplasia. Normal; 44.8
Mild 30.9 % Moderate 21.4 %
Severe 2.9 %.

D.Dejour four Grades.

A= 31.2 %. B= 19.5%. C= 9.6
% and D 3.1%.

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- A Very high proportion **5563.4% of patients** who had ACL rupture requiring surgical reconstruction in our cohort had associated patellofemoral pathology.
- We conclude that it is a significant risk factor for ACL injury.
- This observation is in accordance with previous studies and one recent study from China in 2020 using computerized tomography (CT) scan.

Proper rehabilitation and strengthening exercises for quadriceps and vastus medialis obliquus may reduce the incidence of ACL injury.

The importance of prevention methods is well highlighted by National Collegiate Athletic Association (NCAA) Injury Surveillance Program (ISP) compared the rate of ACL ruptures during the period 1988-2004 with 2004-2013; whereby prevention programs were instituted, there was an 88% decrease in ACL ruptures among female gymnasts, a 64% decrease among female soccer players and modest decreases among male soccer players and female basketball players.

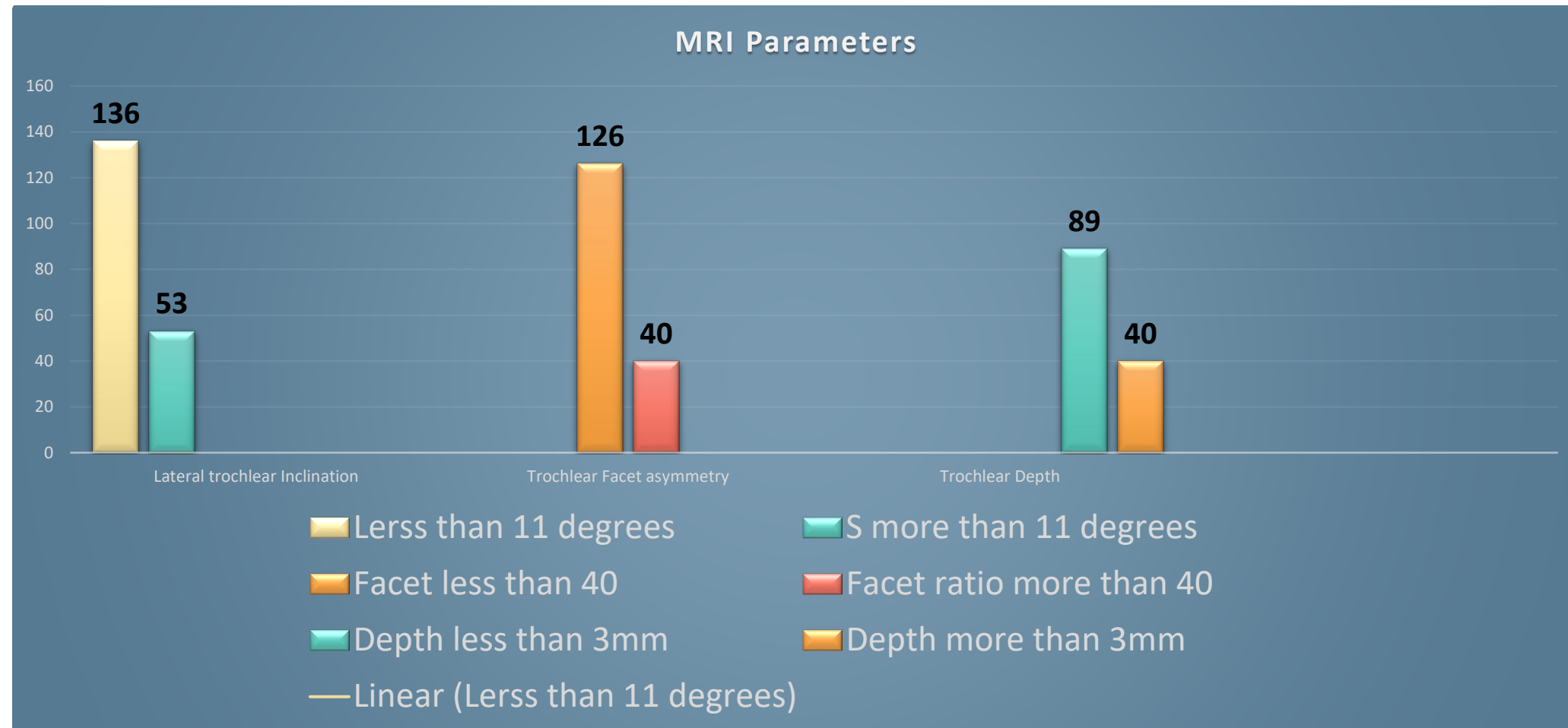


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