

MRI Findings vs. Clinical Outcomes: Do MRI Measurements Reflect Clinical Status in Patients After ACL Reconstruction?

Maciej Biały^{1,2}, Wojciech Szewczyk³, Michał Marek³

¹Functional Diagnostics Laboratory, Sport-Klinika, Scanmed Sport, Żory, Poland

²Institute of Physiotherapy and Health Sciences, The Jerzy Kukuczka Academy of Physical Education, Katowice, Poland

³Helimed Diagnostic Imaging, Żory, Poland

Faculty Disclosure Information



Nothing to disclosure



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Objectives

This study aimed to evaluate the correlations between selected angular and linear measures with clinical outcomes one year after ACL reconstruction.



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Material and Methods

Study Group:

50 patients (24.2 ± 6.4 years, general population)
Evaluation at 12 months post-op (12.4 ± 0.49 months)

Procedure:

Primary single-bundle ACL reconstruction
Autogenous hamstring tendon graft, no additional procedures

MRI Imaging:

1.5T scanner, T2-weighted turbo spin echo
Sagittal and coronal oblique planes

Observers:

Radiologist – MRI
Clinician – physical evaluation

Material and Methods

Clinical Assessment:

Range of Motion (ROM)

Stability tests: Lachman (LT), Pivot Shift (PST)

Anterior tibia translation (ATTOP, ATTD)

Lysholm scale – patient-reported outcome

Correlations

MRI Variables:

PCL angle (PCLA)

ACL graft–joint line angles (ACLGO, ACLGS)

Anterior tibia translation (ATTMRI)

Statistics:

Spearman correlation test ($\alpha = 0.05$)

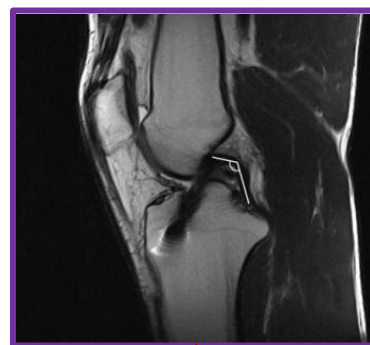
Results

MRI measurements

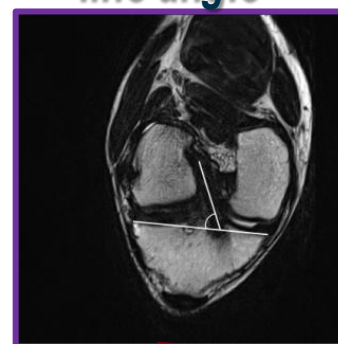
rSpearman
significant
correlations

Clinical assessment

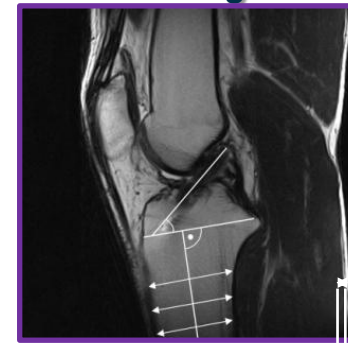
PCL angle



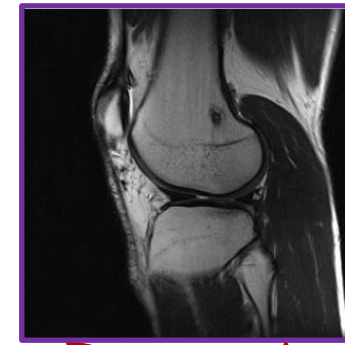
ACL graft-joint line angle



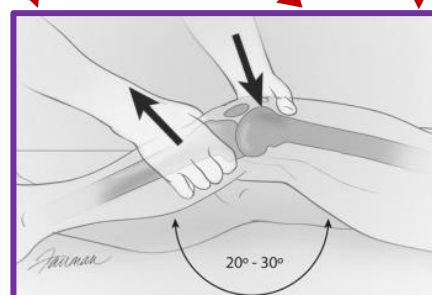
ACL graft-joint line angle



Anterior tibia translation



Range of motion



Lachman test



Pivot Shift test



Anterior tibia translation



Tegner
Lysholm

With some exceptions moderate, **negative and significant correlations** ($p < 0.05$) were found between PCL angle and: LT ($r = -0.54$), PST ($r = -0.38$), ATTOP ($r = -0.46$), ATTD ($r = -0.55$). A weak positive and significant correlation was found between ACLGO, LT ($r = 0.37$), and ROM ($r = 0.38$). ATTMRI was significantly correlated with LT ($r = 0.49$) and ATTOP ($r = 0.36$). Patient subjective questionnaire Lysholm scale and ACLGS showed no significant correlations with other variables.



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Conclusions

- *We've found evidence to support the hypothesis that radiographic measurements can predict clinical status in patients after ACL reconstruction*
- *The PCL angle value is the most valuable variable that can predict anterior knee instability determined by clinical maneuvers like Lachman or pivot shift tests*
- *A lower PCL angle value correlates with the magnitude of anterior tibia translation in the operated extremity and increased side-to-side differences*
- *Patient-reported outcomes measured by the Lyscholtz scale show no correlations with selected angular or linear measurements*

References

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