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One-leg flexion view for assessing tibiofemoral joint space in OA knee

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**Disclosures: No conflict of
interests from the authors**

Background and Rationale

- Knee osteoarthritis: common orthopedic disease
- Knee radiographs for evaluating knee arthritis
- Joint space width
 - Used to determine disease severity (e.g., Kellgren-Lawrence classification)
- Many techniques to obtain knee radiographs for measuring joint space width, usually with weight-bearing.



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Kellgren et al. Radiological assessment of osteo-arthritis. *Ann Rheum Dis.* 1957

Leach et al. Weight-bearing radiography in osteoarthritis of the knee. *Radiology.* 1970

Literature Review

- Some of the common techniques
 - Both-leg standing
 - One-leg standing
 - 45-degree flexion PA view (Rosenberg)
 - Schuss view
- “One-leg flexion view”



Rosenberg et al. The forty-five-degree posteroanterior flexion weight-bearing radiograph of the knee. J Bone Joint Surg. 1988

Mason et al. The posteroanterior 45-degree flexion weight-bearing radiograph of the knee. J Arthroplasty. 1995

Vignon et al. Measurement of radiographic joint space width in the tibiofemoral compartment of the osteoarthritic knee: comparison of standing anteroposterior and Lyon schuss views. Arthritis Rheum. 2003



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Objective

- Evaluate and compare tibiofemoral joint width between these:
 - **one-leg flexion view**
 - Rosenberg view
 - one-leg standing AP view
 - both legs standing AP view



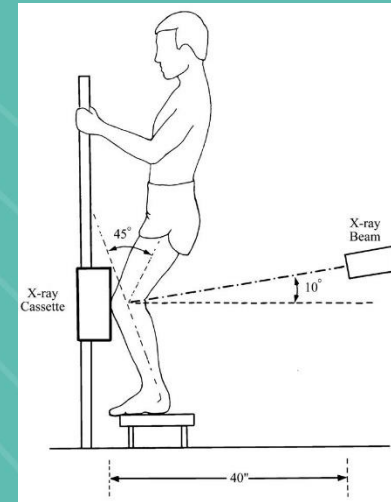
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Materials and Methods

- 200 osteoarthritic knees -> 160 knees
- Radiography



both legs standing AP view



one-leg standing AP view



Rosenberg view



one-leg flexion view



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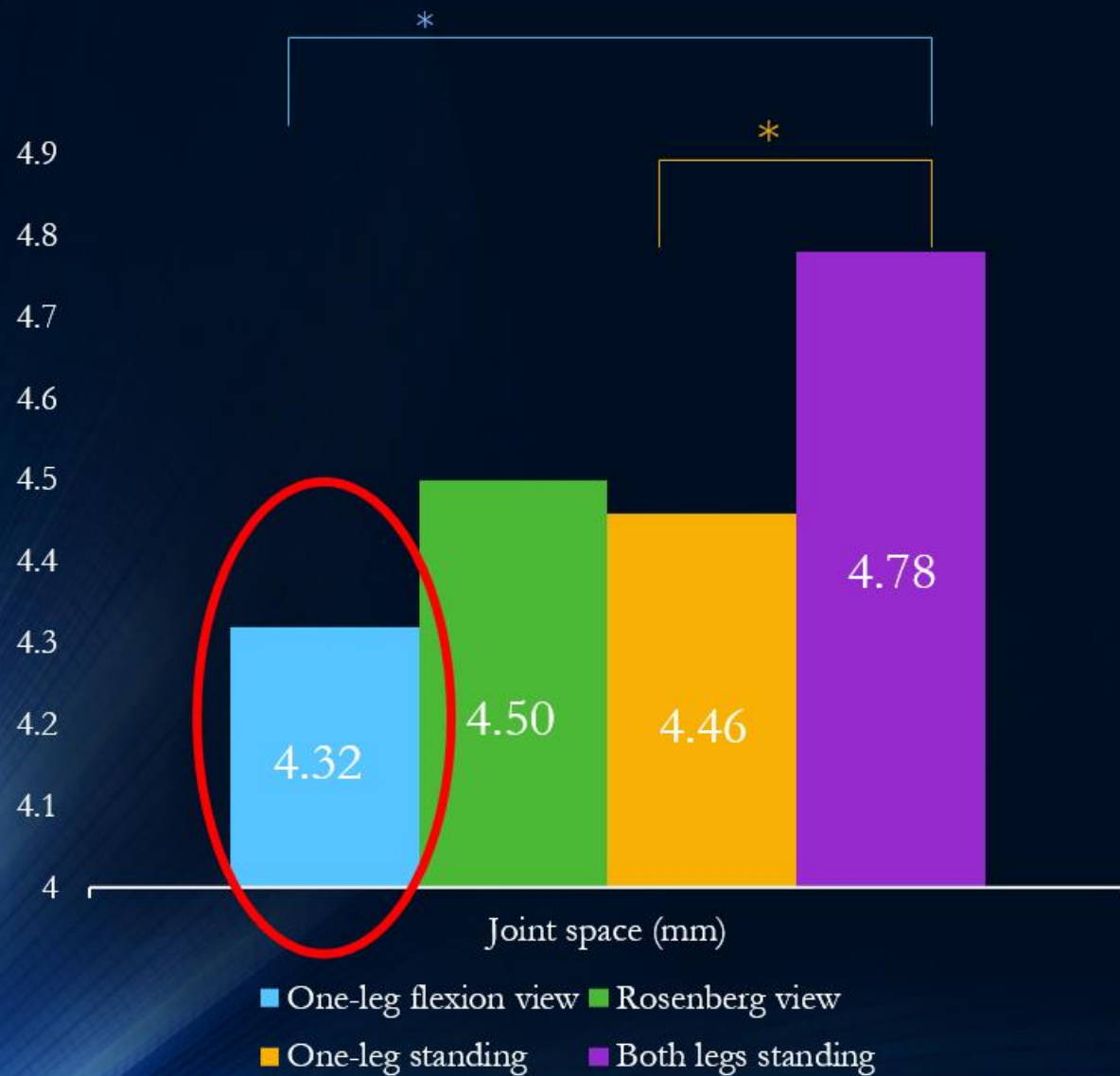
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Results

* p < 0.05
** p < 0.01

Medial TF joint



Lateral TF joint



Discussion

- Narrower tibiofemoral joint
 - Medial: **one-leg flexion** and one-leg standing
 - Compared to both-leg standing
 - Lateral: **one-leg flexion** and Rosenberg view
 - Compared to both-leg and one-leg standing
- Duncan et al 2015
 - Systematic review
 - Standing knee radiographs, especially the 45 flexion PA view, are sensitive for detecting severe osteoarthritis of the tibiofemoral joint.
 - Either medial or lateral TF joint



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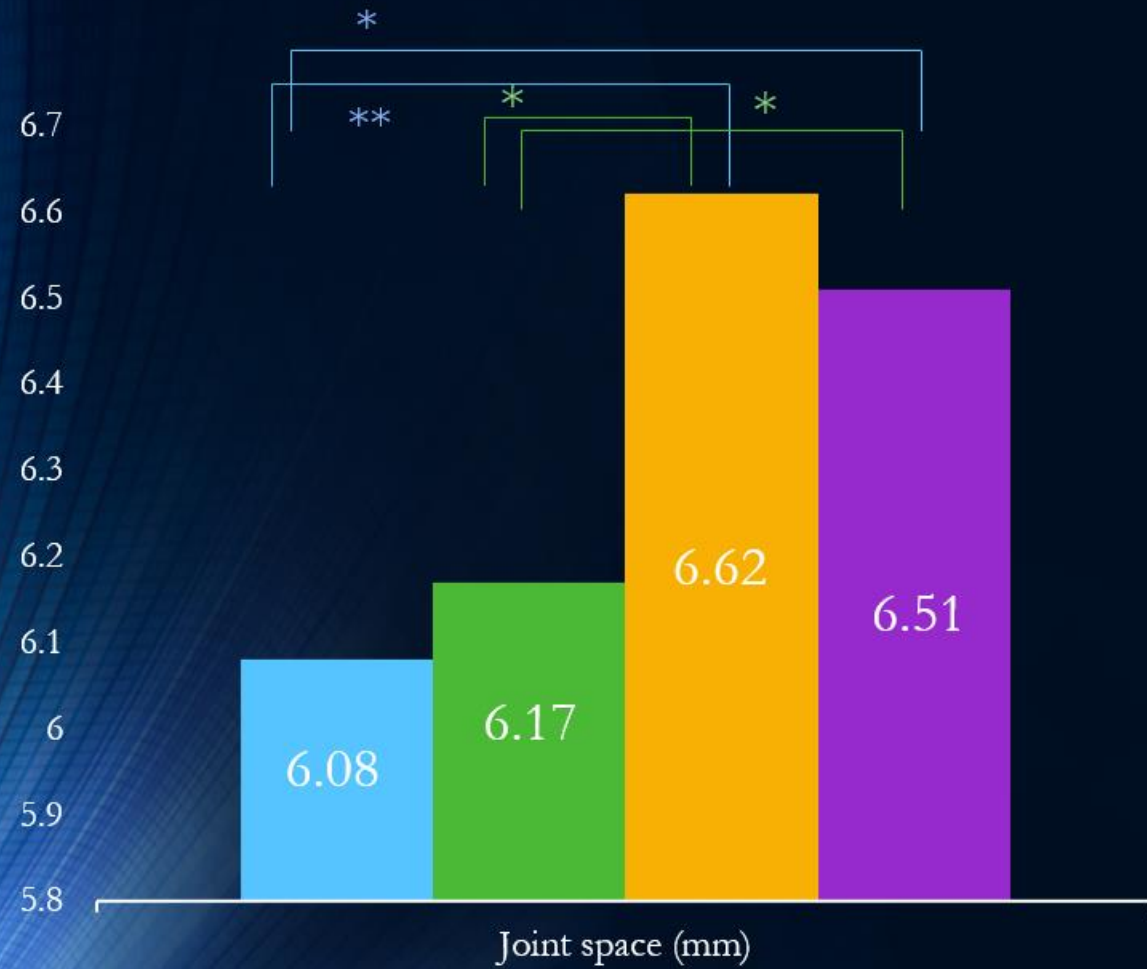
Duncan et al. Sensitivity of Standing Radiographs to Detect Knee Arthritis: A Systematic Review of Level I Studies. Arthroscopy. 2015.

Discussion

- Pinsornsak et al (2016)
 - One-leg standing
 - better represent joint space narrowing than both-legs standing radiographs.
 - showed increased lateral joint space.
 - » Must aware when evaluating lateral TF joint space in one-leg-standing position.
 - **One-leg flexion view** showed decreased lateral joint space.



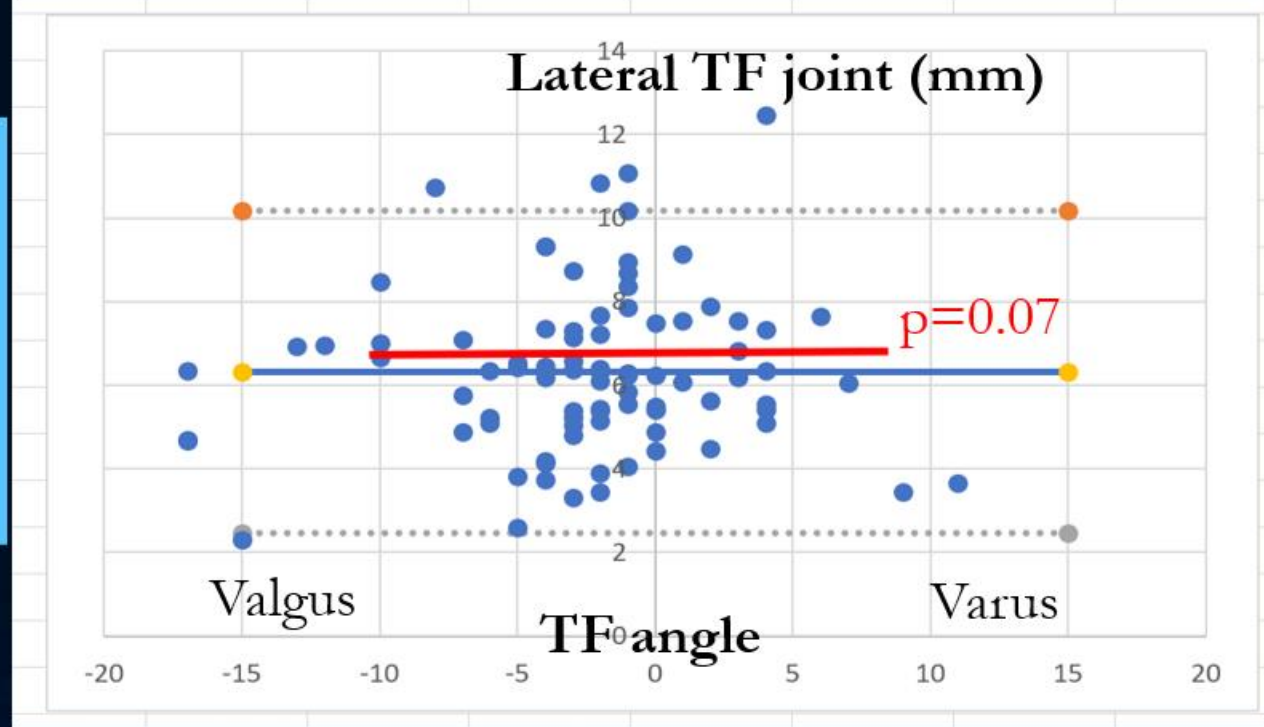
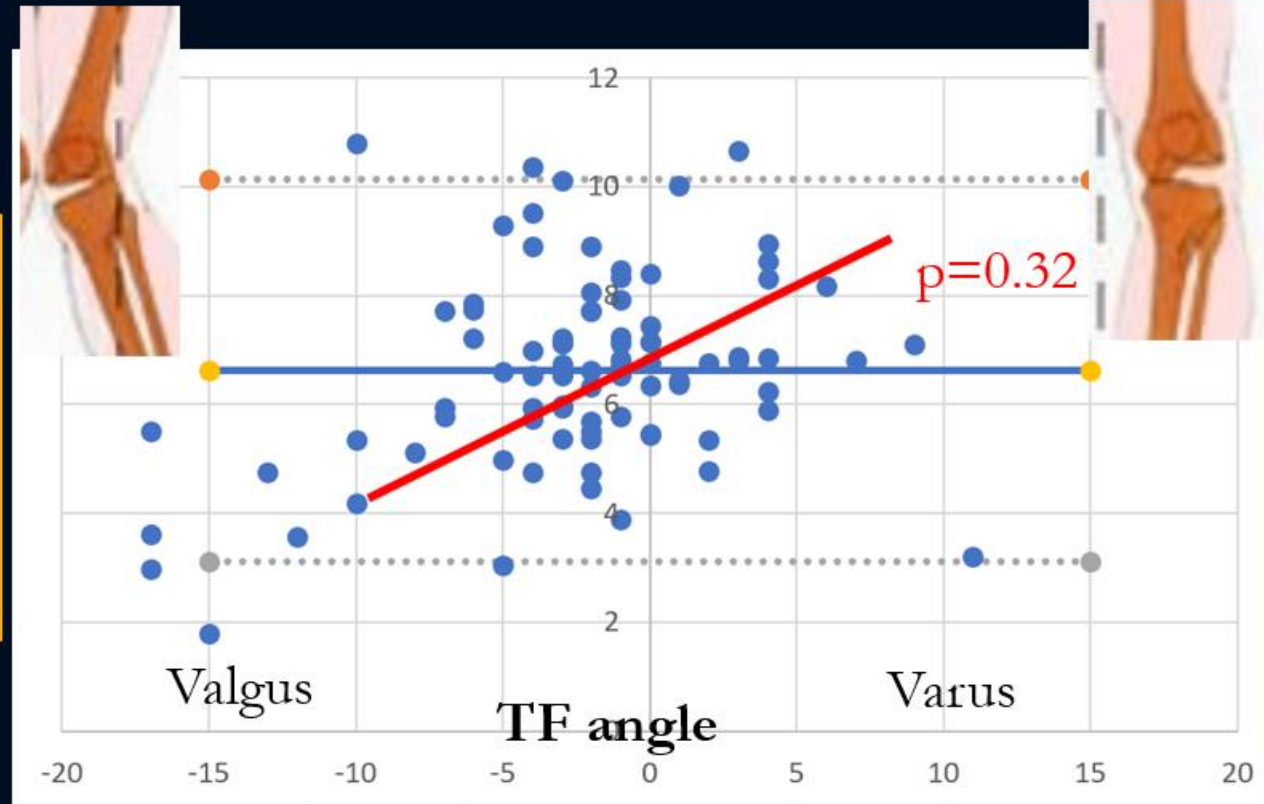
Lateral TF joint



- One-leg flexion view
- Rosenberg view
- One-leg standing
- Both legs standing

One-leg standing

One-leg flexion



Conclusion

- The **one-leg flexion view** expresses more medial and lateral tibiofemoral narrowing when compared to other views.
- This view could be useful for detecting early joint space narrowing of the knee.



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