



Anatomical Risk Factors for Patellofemoral Instability Differ Among Patients with Trochlear Dysplasia Depending on their Dejour Classification

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The authors have nothing to disclose



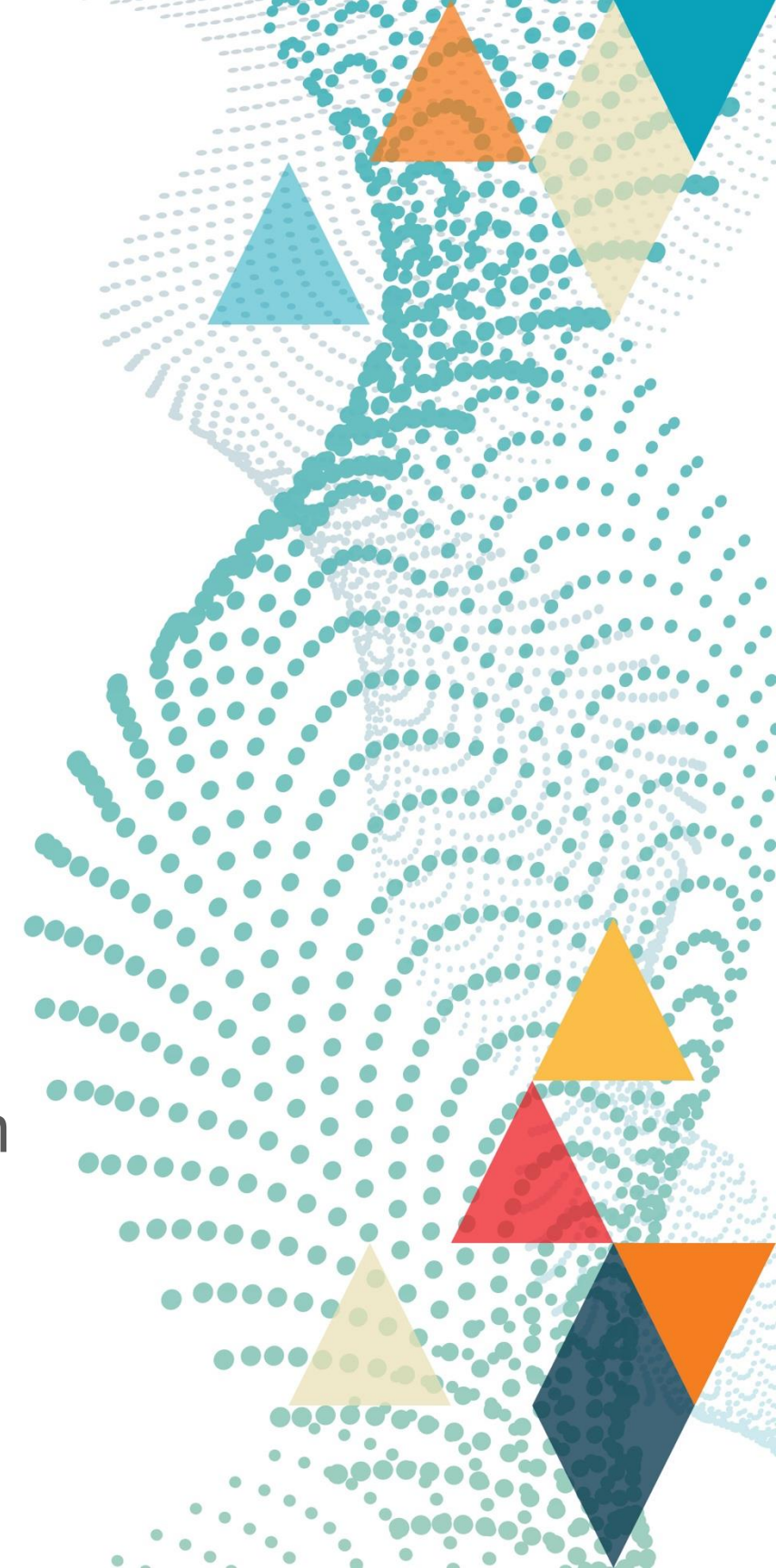
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BACKGROUND

- Trochlear dysplasia is classified according to Dejour in four distinct types (A, B, C, and D)¹
- Type B and D seem to have a greater effect on patellofemoral kinematics compared to type A and C²
- Surgical correction of trochlear dysplasia is recommended in patients with trochlear dysplasia type B and D¹⁻³
- Previous studies reported that trochlear dysplasia is generally associated with other common patellofemoral anatomical risk factors¹⁻³
- There is paucity in the literature regarding the differences seen when stratified by Dejour type



HYPOTHESES

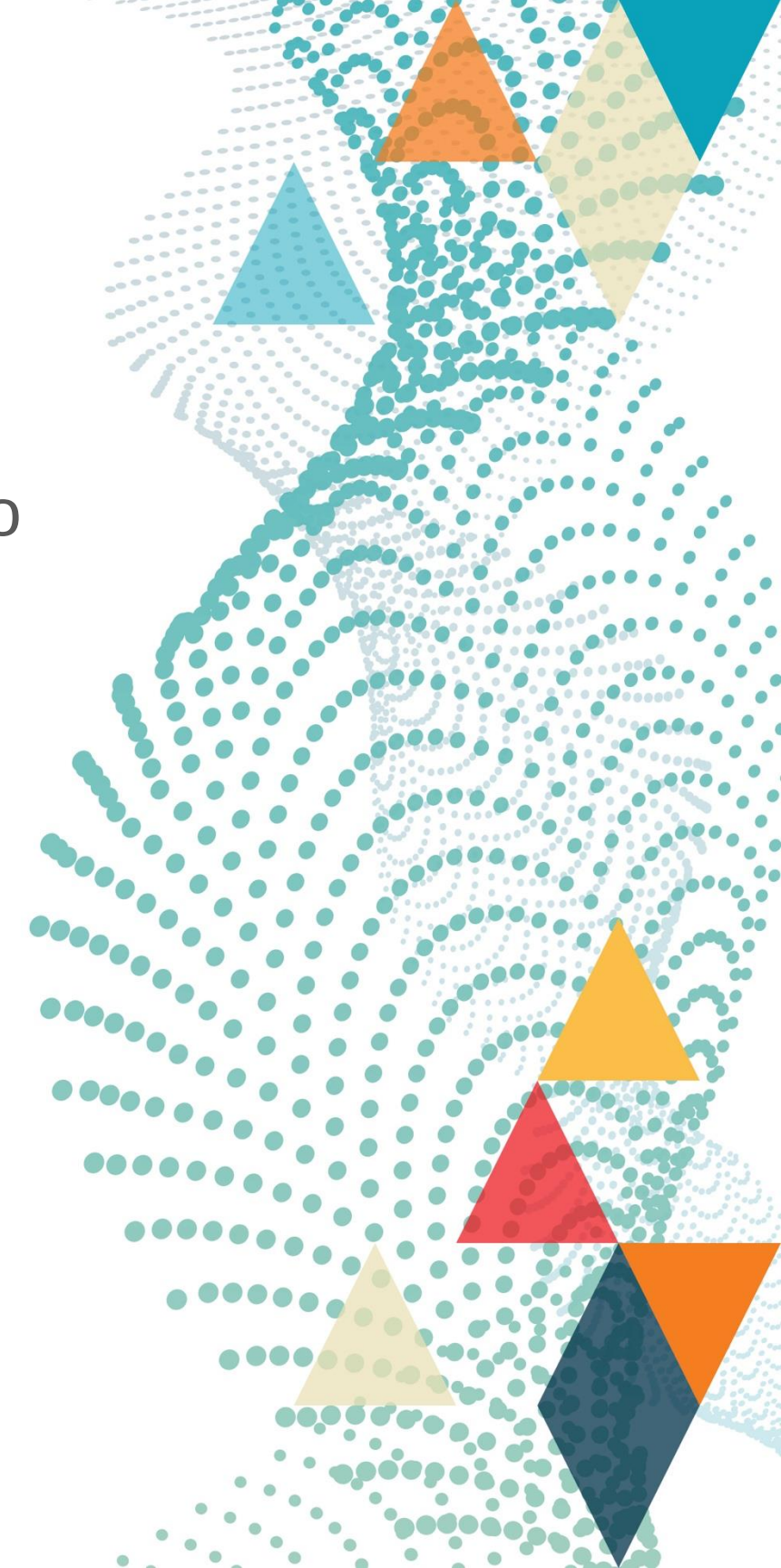
- Severe trochlear dysplasia shows a stronger association with other patellofemoral anatomical parameters when compared to mild trochlear dysplasia



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METHODS

Retrospective analysis

- All patients with patellar stabilizing surgery
- January 2010 - December 2020
- True lateral radiograph and preoperative MRI
- No previous bony procedures

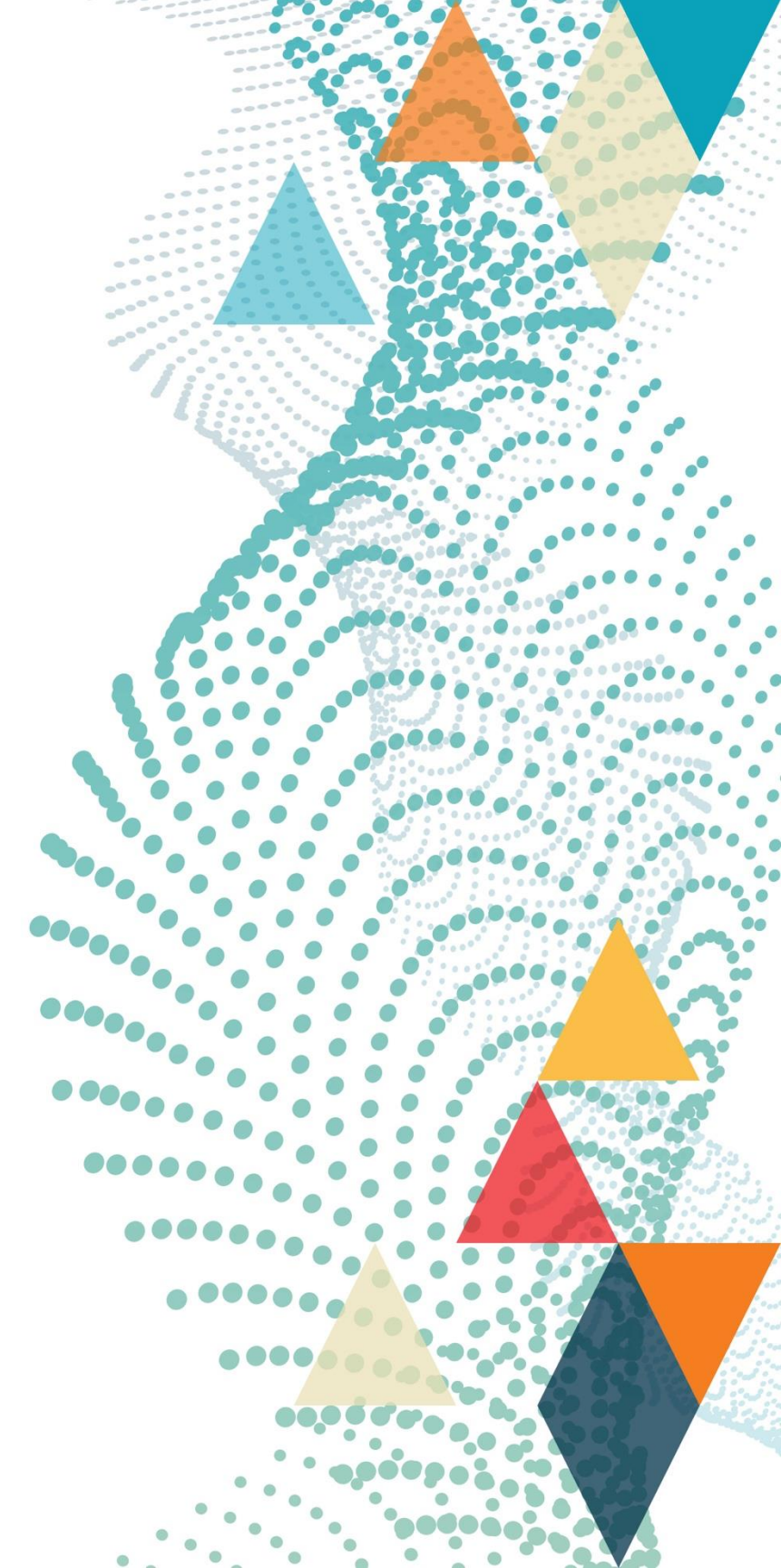
→363 knees



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RADIOGRAPHIC ASSESSMENT

- Trochlear dysplasia type according to Dejour
- Caton-Deschamps index (CDI)¹
- Tibial-tubercle-trochlear-groove distance (TTTG)²
- Tibial tubercle-to-posterior cruciate ligament distance (TT-PCL)³
- Tibiofemoral rotation⁴
- Sagittale (s)TTTG⁵

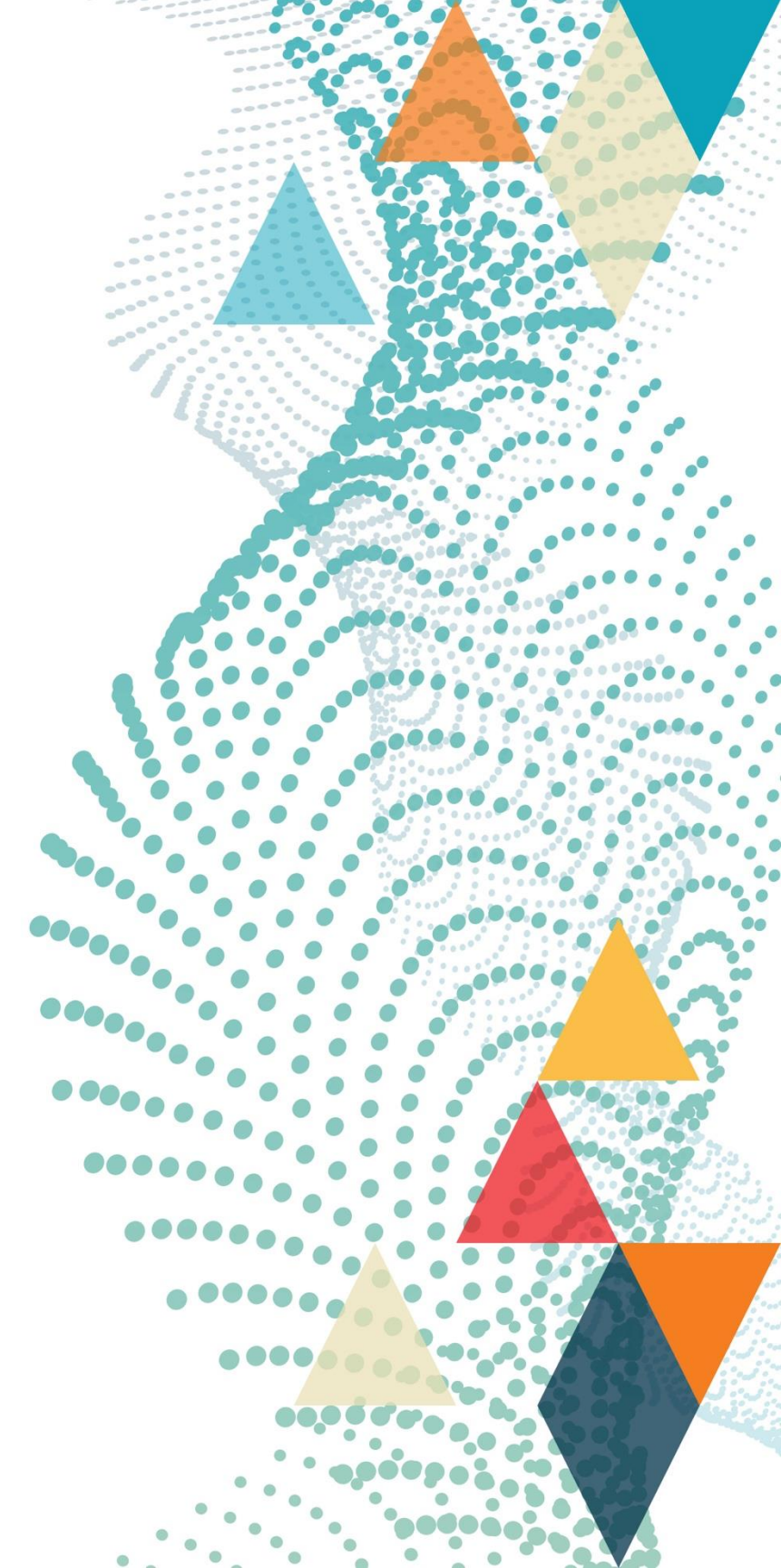
1 Caton J, Acta Orthop Belg 1989

2 Schoettle PB, Knee 2006

3 Seitlinger G, Am J Sports Med 2012

4 Bernholt D, Orthop J Sports Med 2018

5 Ackermann J, Arthroscopy 2024



RADIOGRAPHIC ASSESSMENT

- Sulcus depth¹, supratrochlear spur height²
- Merchants congruence angle³
- Trochlea sulcus angle⁴
- Patellotrochlea index⁵
- Patella tilt, patella angle, patella thickness, patella width⁴

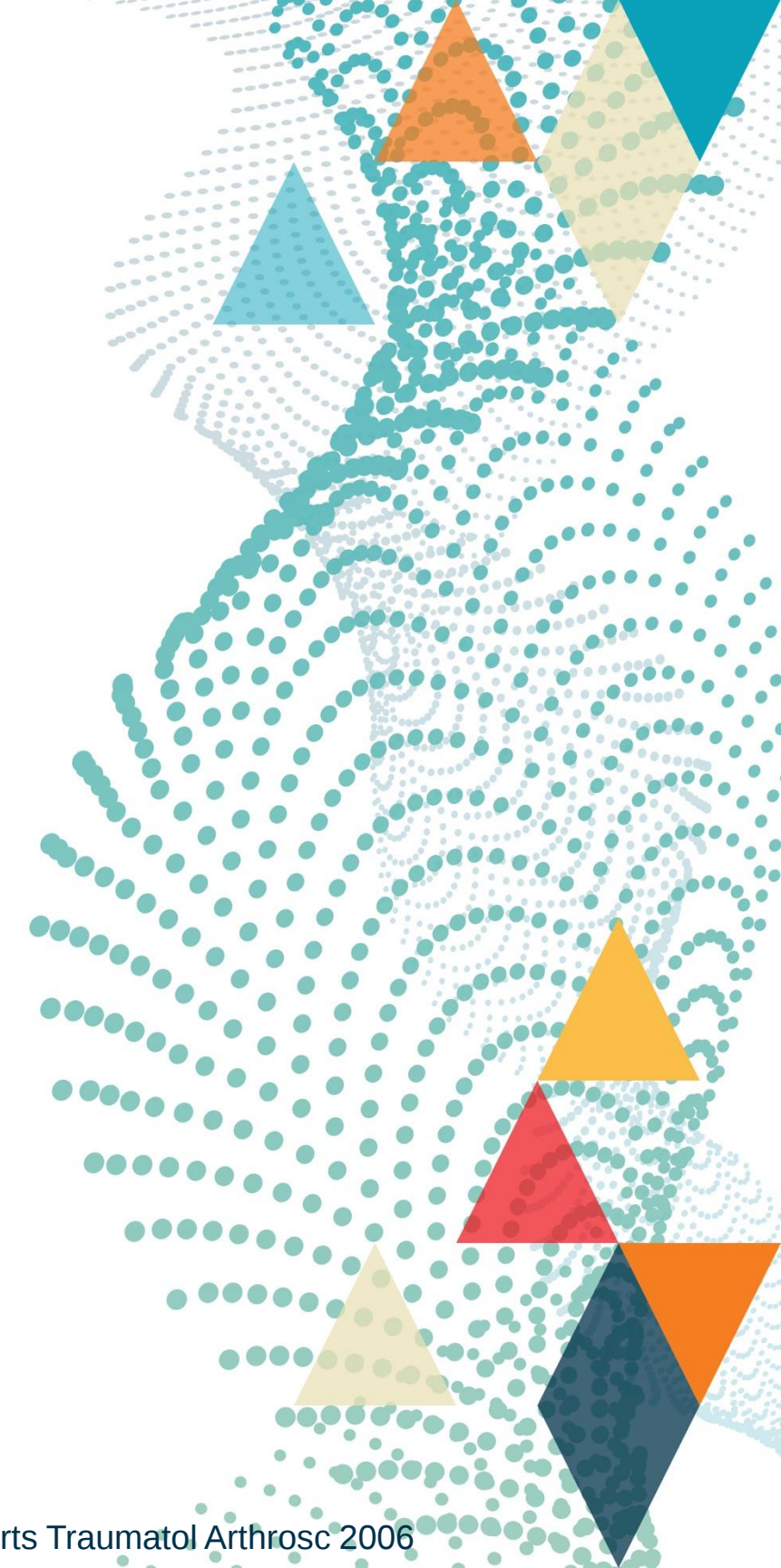
1 Nacey NC, Am J Roentgenol 2020

2 Giovannetti de Sanctis E, Mesnard G, Clin Sports Med 2022

3 Fabricant PD, Arthroscopy 2022

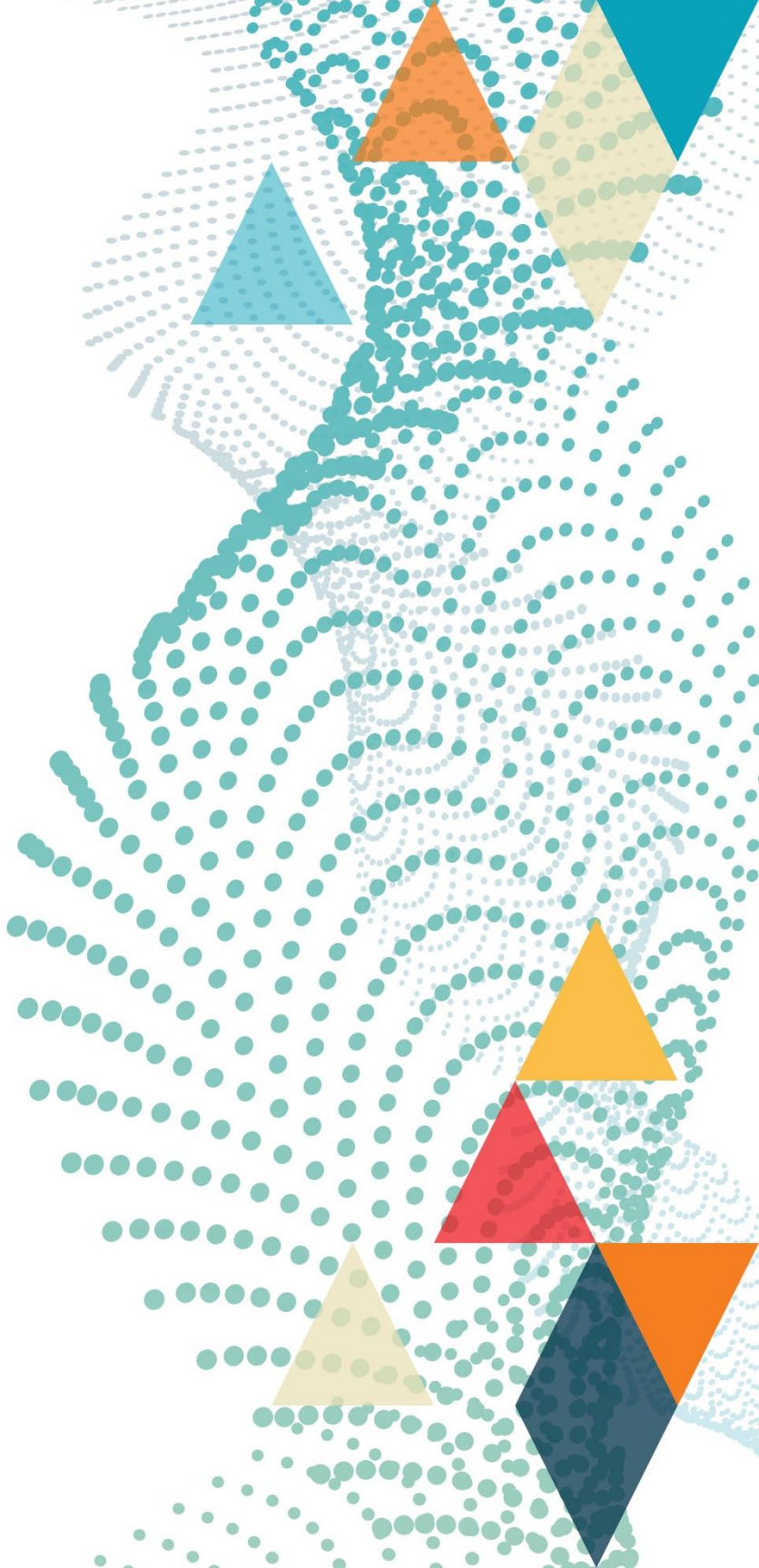
4 Tanaka MJ, Am J Sports Med 2023

5 Biedert RM Knee Surg Sports Traumatol Arthrosc 2006



RESULTS

Parameter	Dejour A (n=62)	Dejour B (n=122)	Dejour C (n=94)	Dejour D (n=85)
Age (years)	22.2 ± 7.1	21.7 ± 7.3	23.2 ± 8.7	23.2 ± 8.4
BMI	24.9 ± 5.3	25.2 ± 5.6	24.4 ± 5.6	25.0 ± 5.1
Patella Width (mm)	39.8 ± 3.5	39.4 ± 3.8	38.5 ± 4.4	39.5 ± 3.7
Patella Thickness (mm)	17.6 ± 2.5	17.6 ± 2.3	17.3 ± 2.5	17.4 ± 2.3
Patella Angle (°)	123.2 ± 11.9	125.4 ± 11.8	122.6 ± 14.0	126.4 ± 12.8
Patella Tilt (°)	20.0 ± 8.4	28.8 ± 12.0	23.3 ± 10.1	32.9 ± 12.3
CDI	1.2 ± 0.2	1.2 ± 0.2	1.2 ± 0.2	1.2 ± 0.2
PTI, %	38 ± 14	41 ± 14	38 ± 15	44 ± 18
Trochlear Sulcus Angle (°)	156.8 ± 6.3	162.1 ± 7.0	160.7 ± 7.5	163.7 ± 7.1
Merchant's Congruence Angle (°)	34.4 ± 26.3	40.3 ± 28.3	34.5 ± 22.7	45.6 ± 32.6
Sulcus Depth (mm)	2.4 ± 0.8	2.0 ± 0.8	2.1 ± 1.0	1.8 ± 0.8
Trochlear Spur Height (mm)	4.2 ± 0.9	5.4 ± 1.6	4.7 ± 1.3	5.8 ± 1.8
TTTG Distance (mm)	12.4 ± 4.7	13.9 ± 4.3	13.9 ± 4.1	16.8 ± 6.0
TT-PCL Distance (mm)	18.9 ± 4.0	19.8 ± 4.0	19.5 ± 3.1	20.0 ± 4.0
sTTTG Distance (mm)	6.5 ± 5.1	10.0 ± 5.4	7.6 ± 4.9	10.5 ± 5.9
FT Rotation (°)	1.3 ± 7.7	5.1 ± 6.8	3.0 ± 7.5	7.7 ± 7.3



RESULTS

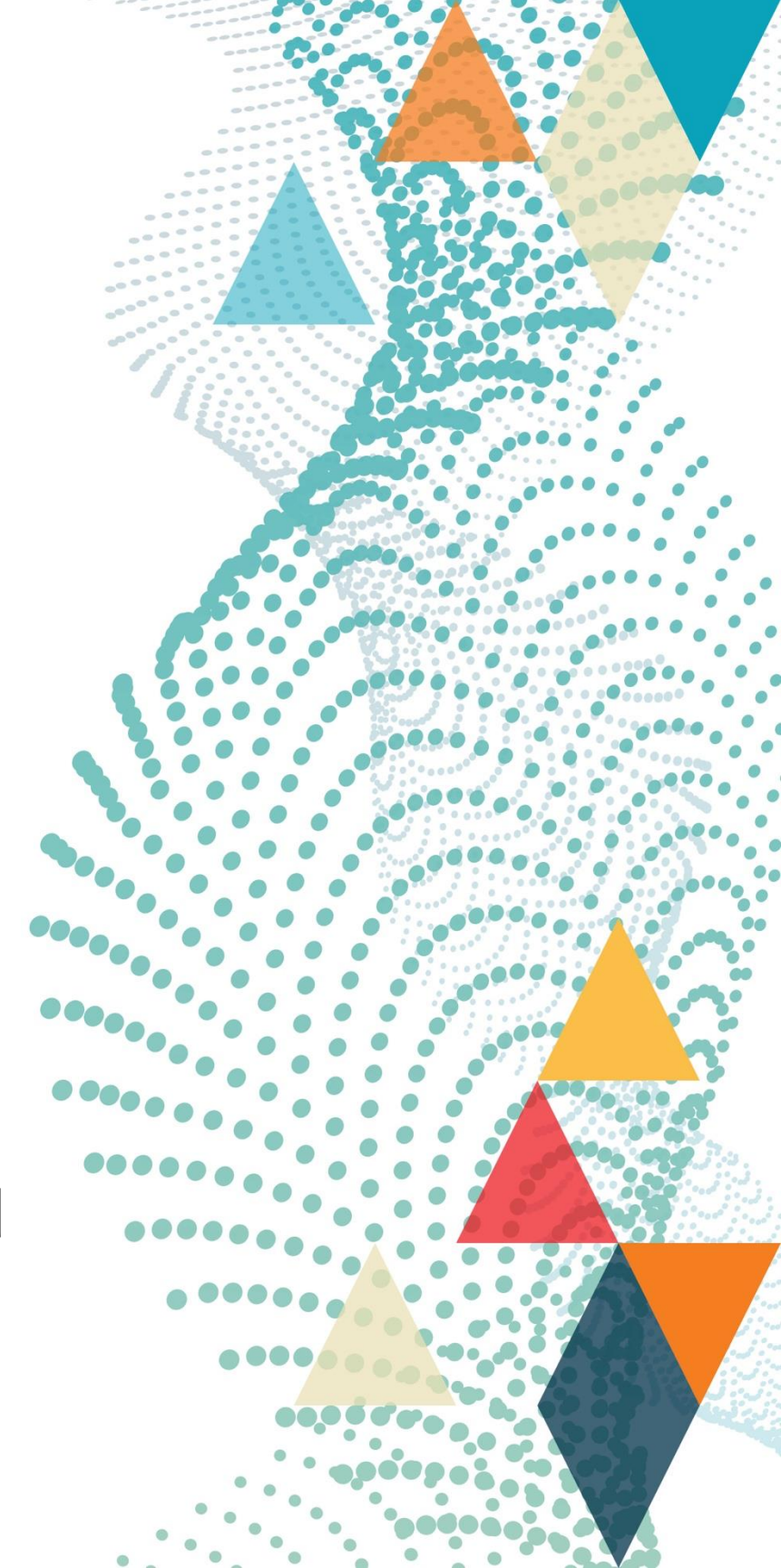
- 363 knees in 330 patients (66.7% female)
- Age of 22.5 ± 7.9 , BMI of 24.9 ± 5.4 .
- Trochlea dysplasia Type A: 62 (17.1%)
- Trochlea dysplasia Type B: 122 (33.6%)
- Trochlea dysplasia Type C: 94 (25.9%)
- Trochlea dysplasia Type D: 85 (23.4%)
- No statistically significant differences were observed for sex, BMI, patellar width, patellar angle, patellar thickness, CDI, and TT-PCL



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RESULTS

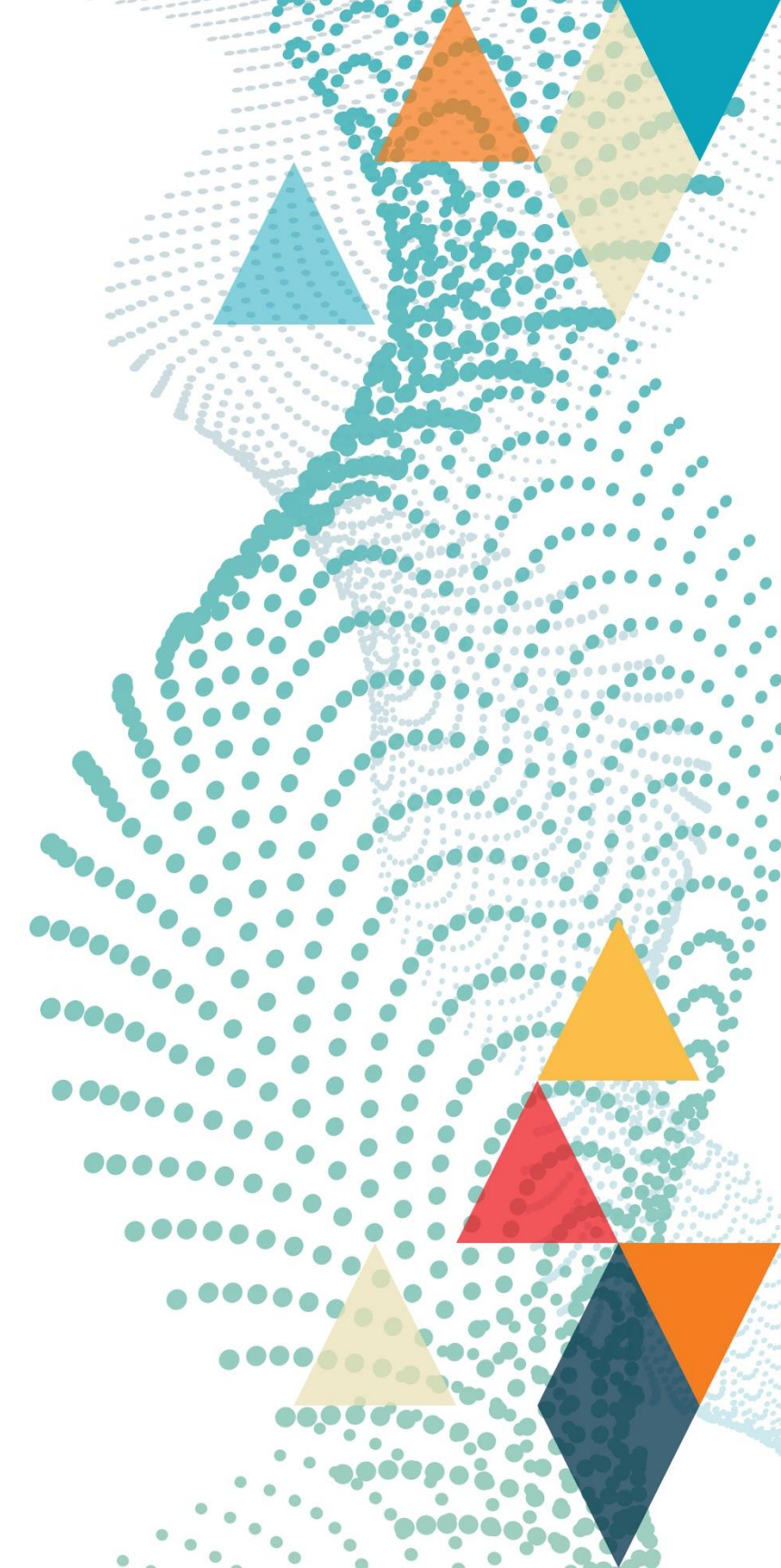
- Patients with Dejour types B and D had consistently greater values compared to patients with Dejour types A and C in
 - Merchants congruence angle ($p=0.019$)
 - Patellar tilt ($p<0.001$)
 - Patellotrochlar index ($p=0.035$)
 - TTTG ($p<0.001$), sTTTG ($p<0.001$)
 - Femoro-tibial rotation ($p<0.001$)



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CONCLUSION

- Patients with trochlear dysplasia show distinct bony patellofemoral pathology
- Trochlear dysplasia type B and D shows increased values in other patellofemoral instability risk factors, when compared to type A and C
- Patients with trochlear dysplasia type B and D should undergo thorough diagnostic assessment



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