

## Normal Meniscal Extrusion Using Ultrasonography during the Different Range of Motion Running Head: Sonography for Meniscal Extrusion

**Authors :** Arash Sharafat Vaziri, Leila Aghaghazvini, Soodeh Jahangiri, Mohammad Tahami, Roham Borazjani, Mohammad Naghi Tahmasebi, Hamid Rabie, Hesam Jelodari Mamaghani, Fardis Vosoughi, Maryam Salimi

**Abstract :** Aims: It is essential to know the normal extrusion measures in order to detect pathological ones. In this study, we aimed to define some normal reference values for meniscal extrusion in the normal knees during different ranges of motion. Methods: The amount of anterior and posterior portion of meniscal extrusion among twenty-one asymptomatic volunteers (42 knees) were tracked at 0, 45, and 90 degrees of knee flexion using an ultrasound machine. The repeated measures analysis of variance (ANOVA) was used to show the interaction between the amounts of meniscal extrusion and the different degrees of knee flexion. Result: The anterior portion of the lateral menisci at full knee extension ( $0.59 \pm 1.40$ ) and the posterior portion of the medial menisci during 90° flexion ( $3.06 \pm 2.36$ ) showed the smallest and the highest mean amount of extrusion, respectively. The normal average amounts of anterior extrusion were  $1.12 \pm 1.17$  mm and  $0.99 \pm 1.34$  mm for medial and lateral menisci, respectively. The posterior meniscal normal extrusions were significantly increasing in both medial and lateral menisci during the survey ( $F = 20.250$  and  $11.298$ ; both  $P$ -values  $< 0.001$ ) as they were measured at  $2.37 \pm 2.16$  mm and  $1.53 \pm 2.18$  mm in order. Conclusion: The medial meniscus can extrude  $1.74 \pm 1.84$  mm normally, while this amount was  $1.26 \pm 1.82$  mm for the lateral meniscus. These measures commonly increased with the rising of knee flexion motion. Likewise, the posterior portion showed more extrusion than the anterior portion on both sides. These measures commonly increased with higher knee flexion.

**Keywords :** meniscal extrusion, ultrasonography, knee

**Conference Title :** ICOS 2022 : International Conference on Orthopaedic Surgery

**Conference Location :** New York, United States

**Conference Dates :** December 09-10, 2022