

**MacDessi SJ, Griffiths-Jones W, Harris IA, Bellemans J, Chen DB.** Coronal Plane Alignment of the Knee (CPAK) classification: a new system for describing knee phenotypes. *Bone Joint J.* 2021;103-B(2):329-337.

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Does windswept deformity of the knee exist in the Coronal Plane Alignment of the Knee (CPAK) classification based on 500 knees from 250 healthy young adults?

*Sir,*

We read this article with great interest.<sup>1</sup> The authors proposed a new Coronal Plane Alignment of the Knee (CPAK) classification and stated that it provided a simple and comprehensive system for describing knee alignment in the arthritic and healthy knee. Their proposal was based on a radiological analysis of 500 healthy and 500 osteoarthritic knees.

We are interested in the windswept deformity (WSD) of the knee, in which one knee is in varus and the other in valgus, particularly its aetiology and progression. The WSD was first described by Smyth<sup>2</sup> in 1980 as a deformity that usually occurs in a healthy child with normal developmental milestones. Since then, there have been some reports of patients with arthritis of the knee and a WSD who have undergone total knee arthroplasty (TKA).<sup>3-5</sup> Notably, Meding et al<sup>3</sup> analyzed preoperative knee alignment, patella position, and lateral joint line height. Shetty et al<sup>4</sup> also evaluated the hip–knee–ankle (HKA) angle and femoral valgus correction angle (VCA). Choi et al<sup>5</sup> examined knee alignment and femoral and tibial morphology in greater detail using the HKA angle, VCA, lateral distal femoral angle (LDFA), medial proximal tibial angle (MPTA), and joint line convergence angle. However, given that their interests lay in the strategies and outcomes of TKA only, no description of the aetiology or progression of the deformity were reported.

We also measured the LDFA and MPTA on standing full-length, hip-to-ankle, anteroposterior radiographs of 15 patients with osteoarthritis of the knee (Kellgren–Lawrence grade III or IV) and a WSD. The mean LDFA was 84.9° (81.6° to 89.2°) on the valgus side and 87.0° (83.5° to 92.2°) on the varus side, whereas the mean MPTA was 88.0° (83.0° to 91.9°) on the valgus side and 83.8° (76.7° to 88.2°) on the varus side. The LDFA and MPTA on the valgus side were significantly lower and higher, respectively, than those on the varus side. Our results of the LDFA and MPTA measurements were similar to those reported by Choi et al<sup>5</sup> and suggested that the valgus and varus deformities in WSD have the same characteristics as typical osteoarthritic valgus and varus knees.

In relation to side differences in the anatomy of the human knee, Dargel et al<sup>6</sup> and Jang et al<sup>7</sup> found a good correlation or remarkable similarity between the morphology of the right and left human knee joint. Therefore, we hypothesized that there existed two possible reasons for the development or progression of WSD. First, the right and left knees had a constitutionally similar anatomy or

morphology and progressed to WSD over time. Second, the right and left knees had a constitutionally different anatomy or morphology and progressed to WSD while retaining such differences. To confirm the second possibility, we would like to ask Dr MacDessi and colleagues whether some of the 250 healthy young adults studied<sup>1</sup> had a valgus deformity in one knee and varus deformity in the other.

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Conflict of Interest: None