



# Letter to the Editor concerning "Alterations of 3D acetabular and lower limb parameters in adolescent idiopathic scoliosis" by Karam M, et al. (Eur Spine J [2020]; 29(8):2010–2017): Does windswept deformity of the knee exist in 274 participants with adolescent idiopathic scoliosis?

Takehiko Sugita<sup>1</sup> · Toshimi Aizawa<sup>2</sup> · Akira Sasaki<sup>1</sup> · Seiya Miyamoto<sup>1</sup> · Naohisa Miyatake<sup>1</sup> · Masayuki Kamimura<sup>2</sup> · Kenichirou Yahata<sup>2</sup>

Received: 2 June 2023 / Accepted: 8 July 2023 / Published online: 13 September 2023  
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2023

To the Editor:

With great interest we read the recent article entitled “Alterations of 3D acetabular and lower limb parameters in adolescent idiopathic scoliosis” by Karam et al. [1]. They assessed alterations in 3D acetabular and lower limb parameters in 274 participants with adolescent idiopathic scoliosis (AIS) using full body biplanar radiographs (EOS Imaging®, Paris, France) with subsequent 3D reconstructions.

Recently, knee surgeons have focused on the relationship between spinal and knee deformity. We are particularly interested in the aetiology of the knee windswept deformity (WSD) accompanied by osteoarthritis, where one knee is in varus and the other in valgus. The knee WSD was first described in 1980 as a deformity that occurs in healthy children with normal developmental milestones [2]. Since then, there have been some reports of patients who developed knee arthritis and WSD [3, 4]. In Japan, almost all patients with knee arthritis and WSD have shown the right knee in valgus and left knee in varus with 15 out of 17 patients with the WSD showing right knees having valgus deformity across five articles written in Japanese. Indeed, valgus deformity was observed in the right knee in 11 of 15 patients with WSD in our experience. Moreover, the orthopaedic

textbooks highlight the much higher prevalence of dextroscoliosis in thoracic spine than levoscoliosis. Therefore, researchers have discussed the aetiology of the knee WSD and the reason why valgus deformity is usually observed in the right knee. A possible explanation is that the right side of the pelvis is lowered on the coronal plane in patients with dextroscoliosis in thoracic spine, leading to valgus and varus deformity of the right and left knee, respectively.

To further investigate this topic, we would like to raise some questions for Dr. Karam and colleagues: first, out of 274, how many participants with AIS had dextroscoliosis in thoracic spine? Second, how many participants whose right-side pelvis was lowered existed among those with dextroscoliosis in thoracic spine? Third, how many participants whose right knee showed valgus deformity existed among those whose right-side pelvis was lowered? Finally, was a knee WSD observed in any of the 274 participants with AIS?

## References

1. Karam M, Bizdikian AJ, Khalil N et al (2020) Alterations of 3D acetabular and lower limb parameters in adolescent idiopathic scoliosis. *Eur Spine J* 29:2010–2017
2. Smyth EHJ (1980) Windswept deformity. *J Bone Joint Surg Br* 62:166–167
3. Meding JB, Anderson AR, Ritter MA et al (2000) Windswept deformity in bilateral total knee arthroplasty. *J Arthroplast* 15:562–566
4. Choi YS, Kim TW, Song SC et al (2022) Asymmetric transepicondylar axis between varus and valgus osteoarthritic knees in windswept deformity can be predicted by hip–knee–ankle angle difference. *Knee Surg Sports Traumatol Arthrosc* 30:3024–3031

✉ Toshimi Aizawa  
t-sugita@tohokuseikei.com

<sup>1</sup> Department of Orthopedic Surgery, Tohoku Orthopedic and Dental Clinic, 4-9-22 Kamiyagari, Izumi-Ku, Sendai-City 981-3121, Japan

<sup>2</sup> Department of Orthopedic Surgery, Tohoku University Graduate School of Medicine, 1-1 Seiryō-Machi, Aoba-Ku, Sendai-City 980-8574, Japan