

Osteoarthritis and Cartilage



Corrigendum

Corrigendum to “Multimodality scoring of chondral injuries in the equine fetlock joint ex vivo” [Osteoarthritis Cartilage 25 (5) (2017 May) 790–798]



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The authors have found a systematic error in the Young's modulus values in the manuscript “Multimodality scoring of chondral injuries in the equine fetlock joint ex vivo” published in the May 2017 issue of Osteoarthritis and Cartilage; 25(5):790–98. The formula used to calculate the instantaneous modulus values ($E_{Artscan}$) was for shear modulus (G), and not for Young's modulus (E) as intended. As a result of this error, the Artscan modulus values ($E_{Artscan}$) presented in Table 1 are exactly one third of the correct values. This also scales the y-axes of the figures 3C and 3D. This systematic error has no effect on the conclusions, discussion, or any other results/statistics presented in the article.

The correct form of the equation with the corrected descriptions is as follows:

“Young's modulus was determined based on the Hayes' elastic model of indentation:

$$E = \frac{F(1 - \nu^2)RX}{2a^3\kappa},$$

where F is the measured indenter force, ν is the Poisson's ratio ($\nu = 0.5$), R is the indenter radius of curvature, a is the radius of the indenter, and X and κ are theoretical correction factors.”

Table I (Corrected). Average ICRS scores ($N = 43$) and instantaneous moduli ($E_{Artscan}$) for both surgeons, including SD and 95% CI of each round. Corresponding gold standard values for average histology-based ICRS score and laboratory mechanical testing system based instantaneous modulus (E_{Lab}) are presented.

ICRS	Surgeon 1		Surgeon 2	
	Round 1	Round 2	Round 1	Round 2
	Mean \pm SD (95% CI)	Mean \pm SD (95% CI)	Mean \pm SD (95% CI)	Mean \pm SD (95% CI)
Arthroscope	0.65 \pm 0.13 (0.39, 0.91)	0.86 \pm 0.16 (0.55, 1.17)	0.79 \pm 0.14 (0.51, 1.07)	1.02 \pm 0.14 (0.74, 1.30)
US	0.63 \pm 0.14 (0.36, 0.90)	0.84 \pm 0.16 (0.52, 1.16)	0.72 \pm 0.13 (0.47, 0.98)	0.93 \pm 0.13 (0.68, 1.18)
OCT	0.65 \pm 0.13 (0.39, 0.91)	0.84 \pm 0.16 (0.53, 1.14)	0.91 \pm 0.14 (0.62, 1.19)	1.28 \pm 0.13 (1.03, 1.53)
Software	0.86 \pm 0.14 (0.59, 1.13)	0.91 \pm 0.14 (0.62, 1.19)	1.05 \pm 0.14 (0.76, 1.33)	1.33 \pm 0.12 (1.08, 1.57)
Histology	1.14 \pm 0.05 (1.04, 1.24)			
Biomechanics				
$E_{Artscan}$ (MPa)	23.86 \pm 5.53 (13.03, 34.69)	9.17 \pm 0.86 (7.48, 10.86)	17.57 \pm 1.38 (14.85, 20.28)	8.35 \pm 0.63 (7.12, 9.59)
E_{Lab} (MPa)	4.63 \pm 0.56 (3.53, 5.73)			

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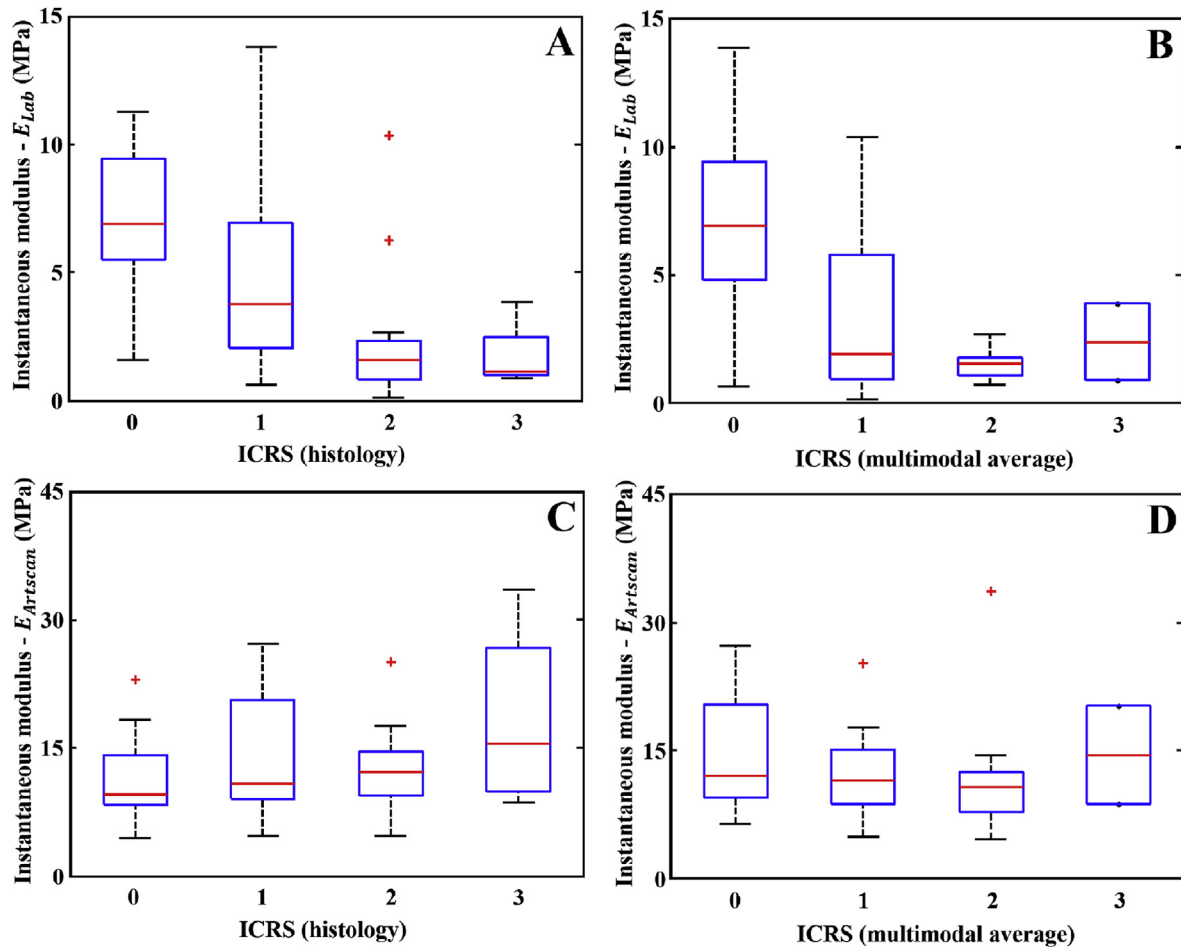


Figure 3 (Corrected). Biomechanical response of equine cartilage as a function of ICRS score. (A) An expected decrease of cartilage stiffness (E_{Lab}) is observed with higher ICRS score (histology). (B) Notable difference in cartilage stiffness (E_{Lab}) is observed between ICRS grades 0 and 1 based on the average score of multimodal scorings. (C-D) A similar trend is not apparent with Artscan measurements ($E_{Artscan}$) and ICRS scores (histology) or the average score of multimodal scorings. A single measurement point is not visible (83.1 MPa, at ICRS 1 and ICRS 0) in subfigures C and D, respectively.