

Load-sharing biomechanics of lumbar fixation and fusion with pedicle subtraction osteotomy

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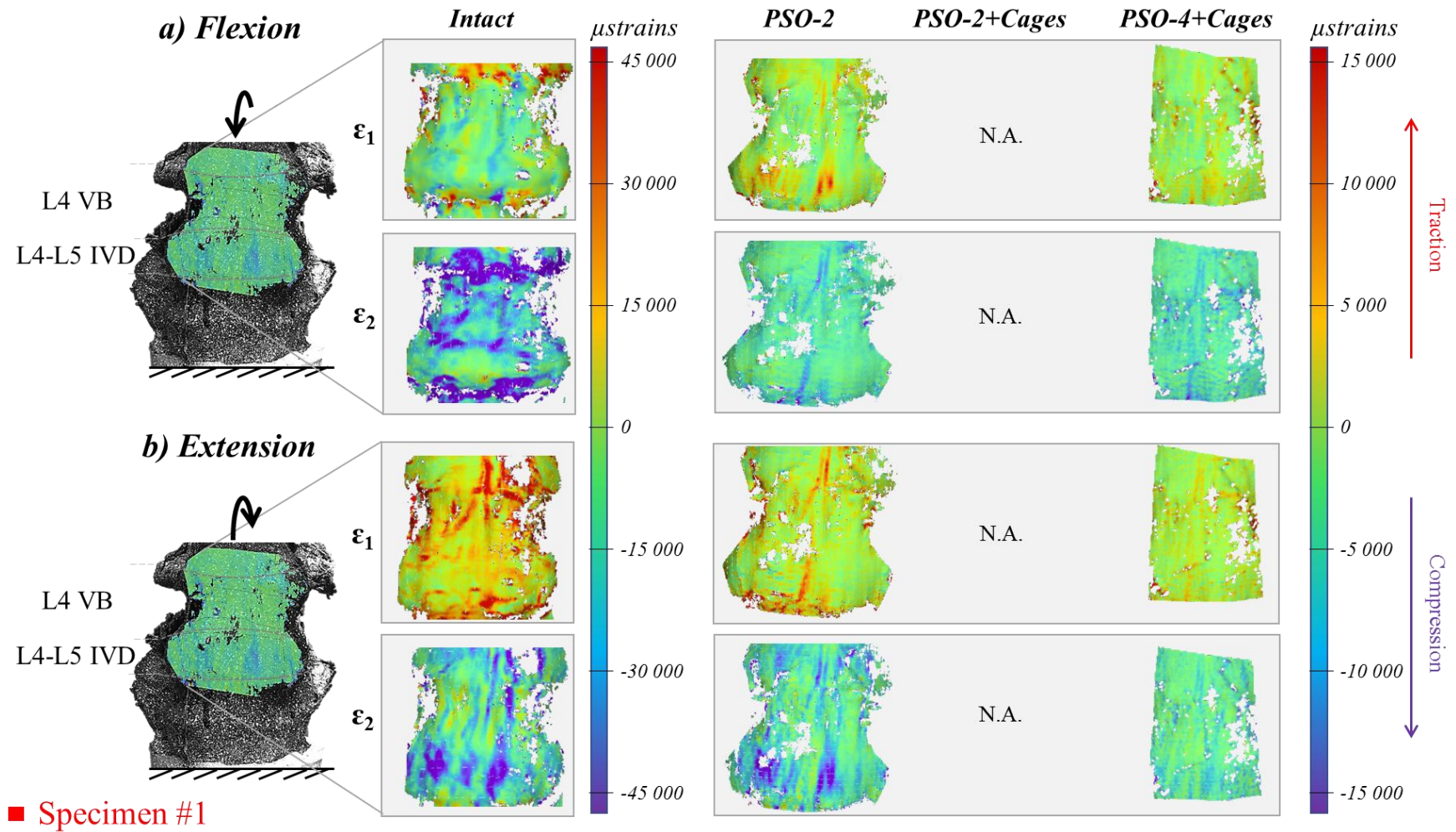
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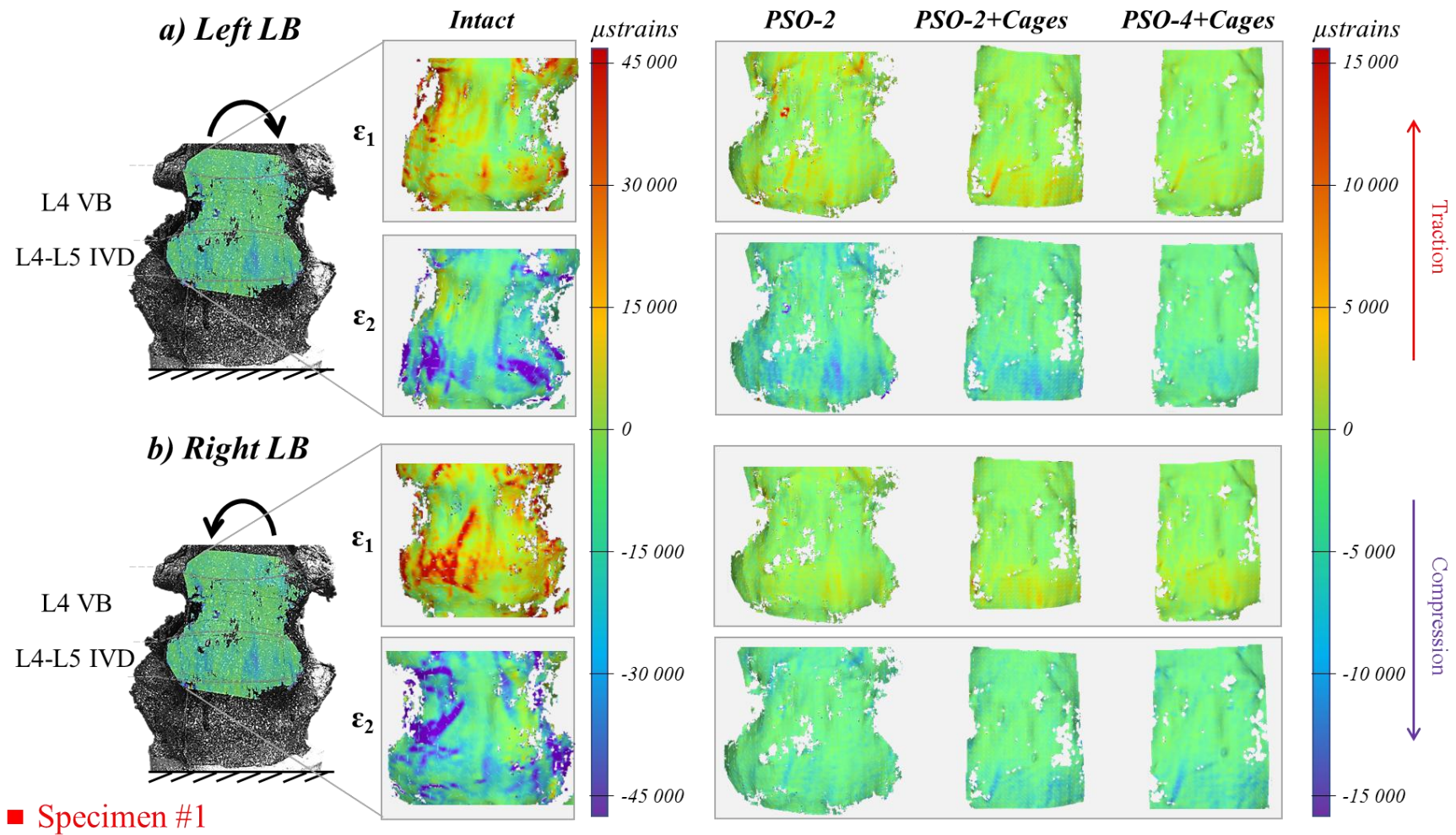
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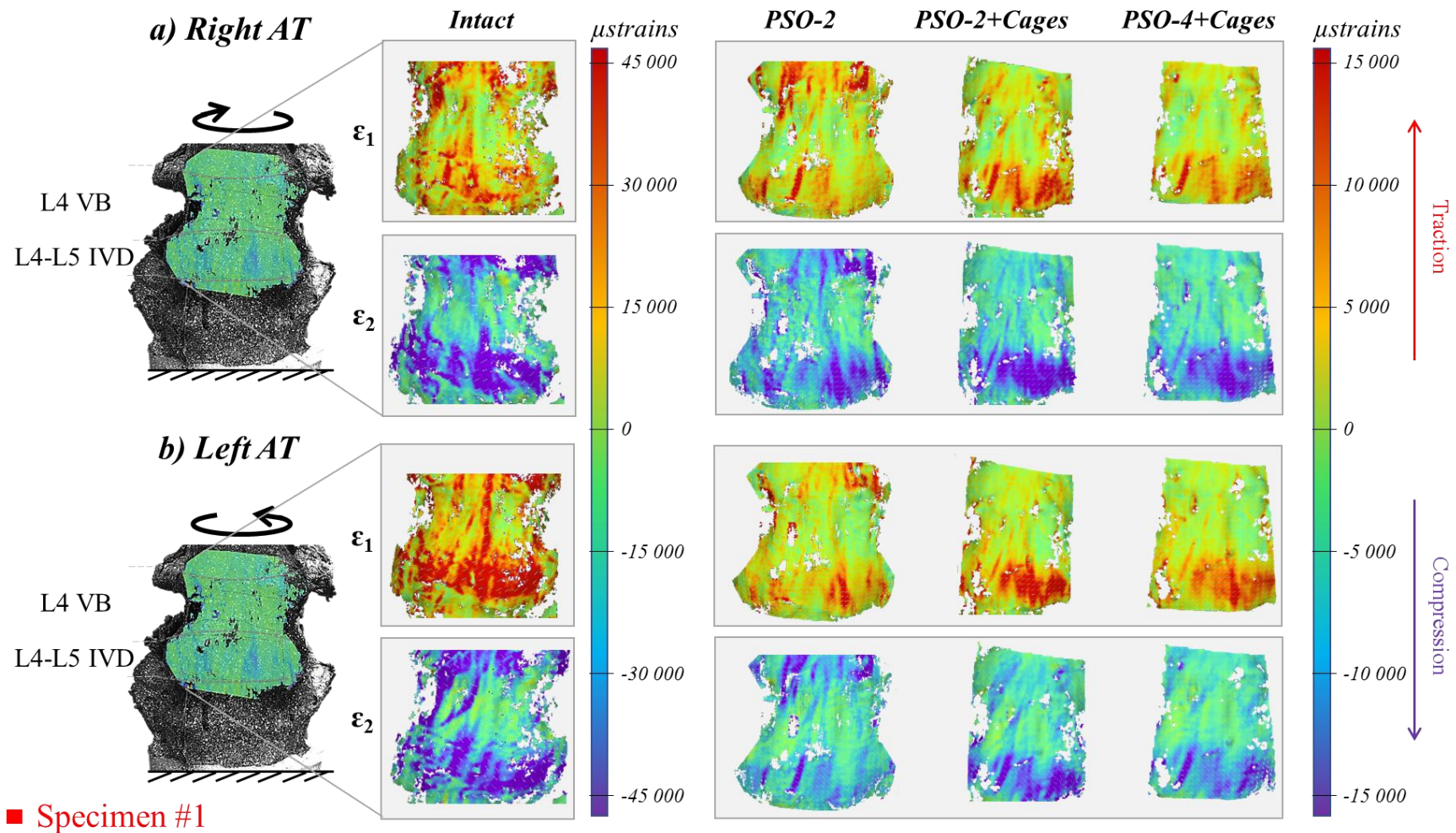
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Supplementary Figure 1: Specimen #1 – Flexion (a) and extension (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).

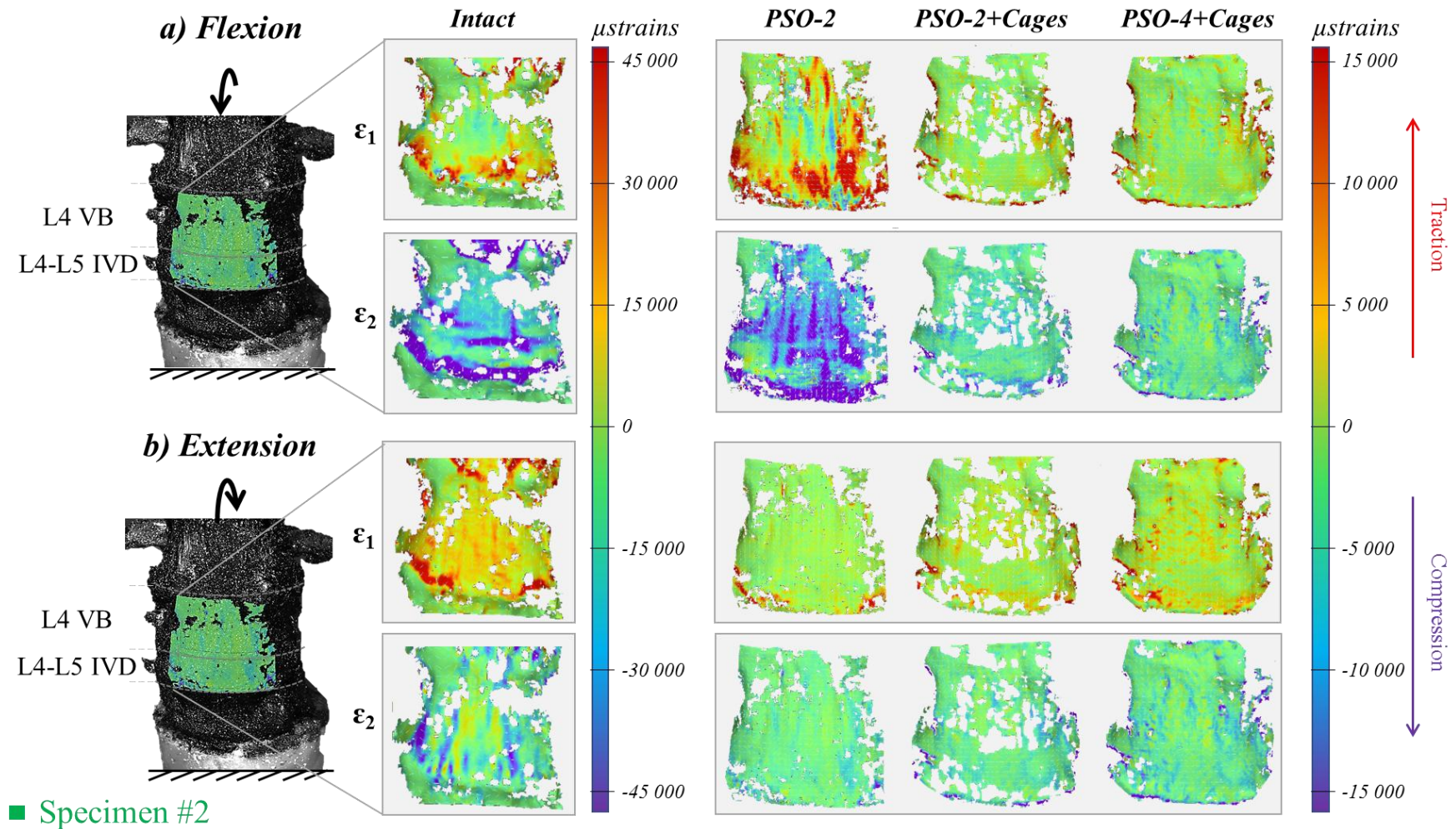


Supplementary Figure 2: Specimen #1 – Lateral bending (LB) left (a) and right (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).

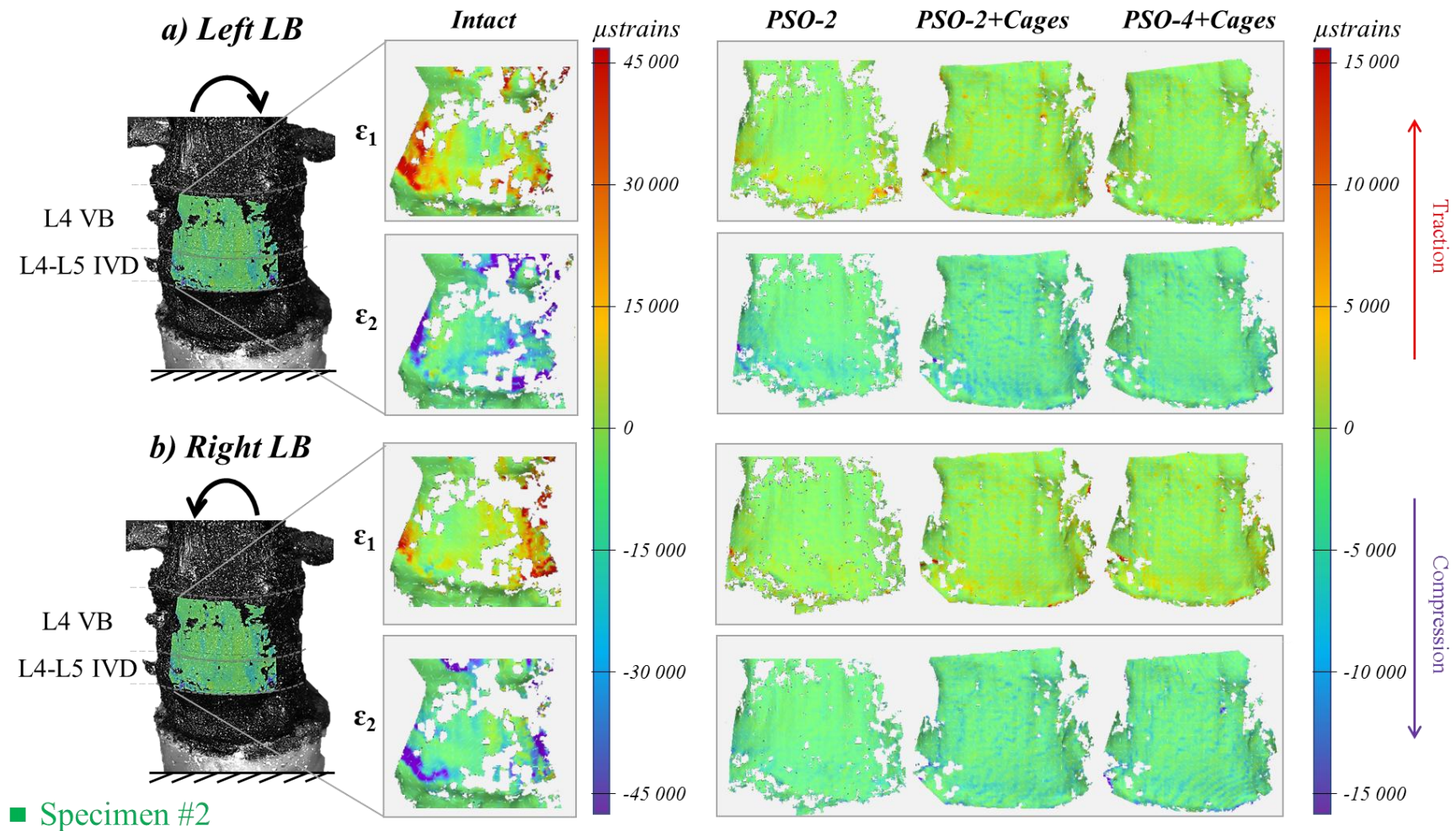


■ Specimen #1

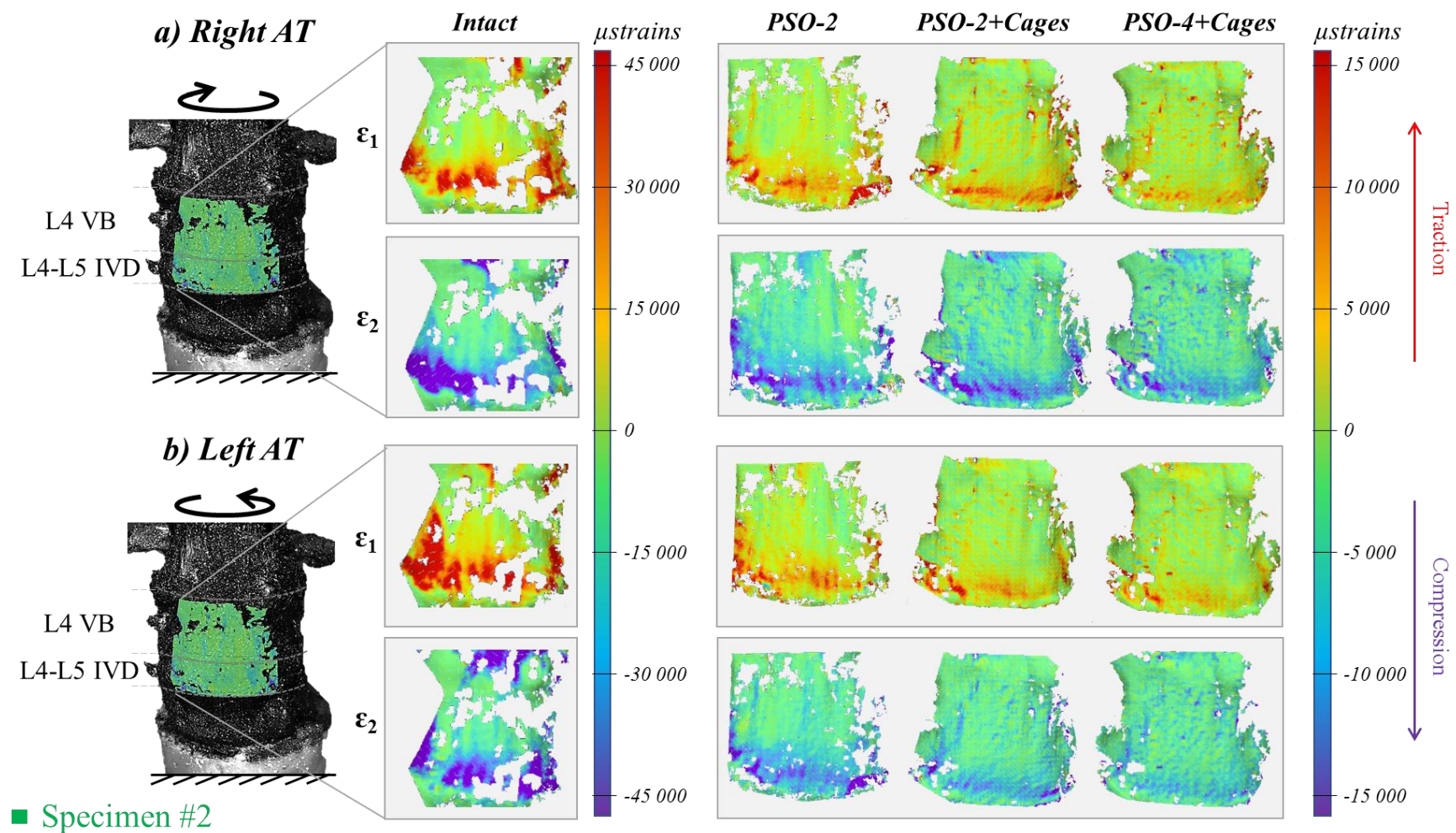
Supplementary Figure 3: Specimen #1 – Axial torsion (AT) right (a) and left (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



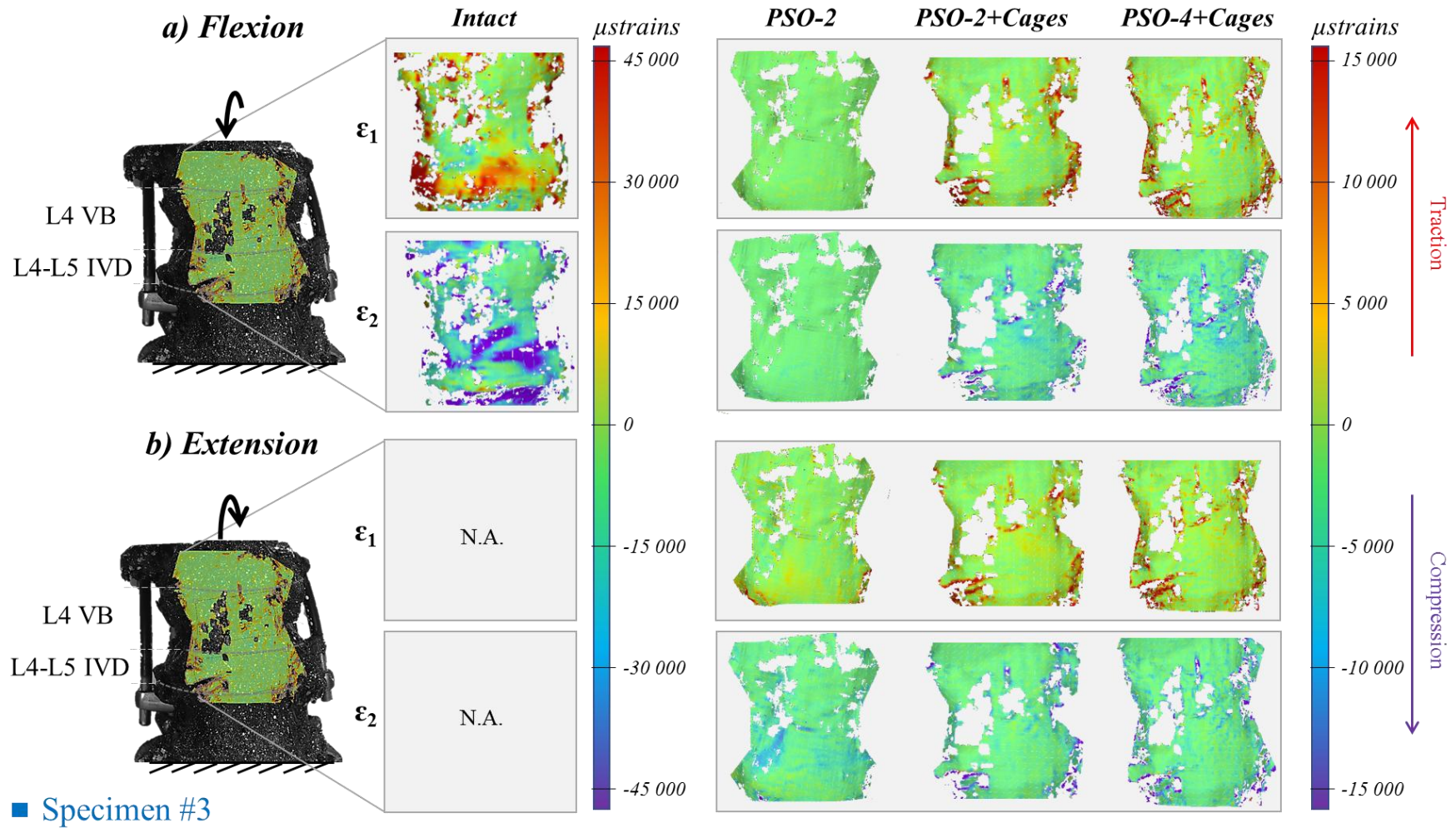
Supplementary Figure 4: Specimen #2 – Flexion (a) and extension (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



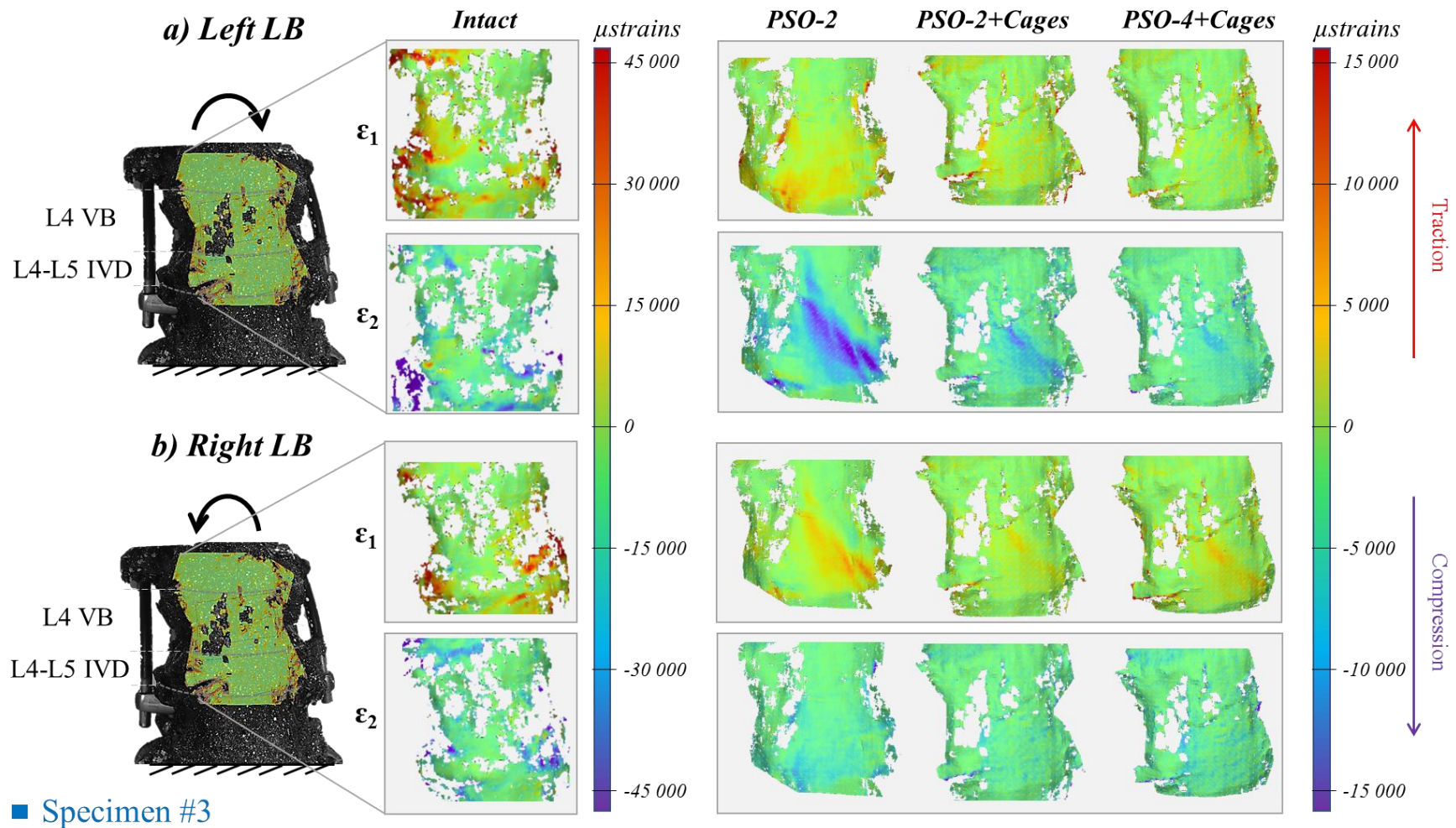
Supplementary Figure 5: Specimen #2 – Lateral bending (LB) left (a) and right (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



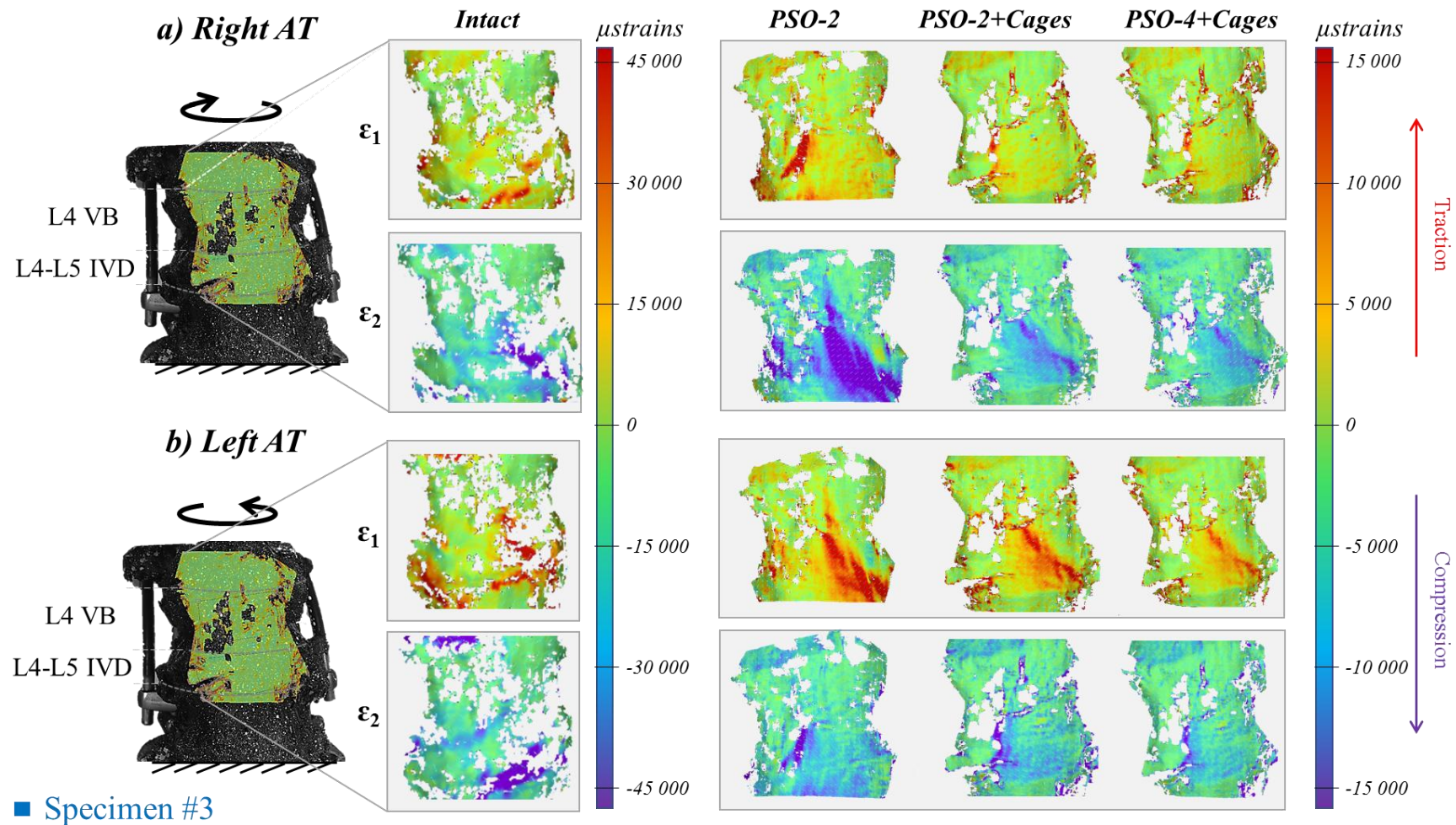
Supplementary Figure 6: Specimen #2 – Axial torsion (AT) right (a) and left (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



Supplementary Figure 7: Specimen #3 – Flexion (a) and extension (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



Supplementary Figure 8: Specimen #3 – Lateral bending (LB) left (a) and right (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).



Supplementary Figure 9: Specimen #3 – Axial torsion (AT) right (a) and left (b): tensile (ϵ_1) and compressive (ϵ_2) strain maps measured on the “Intact” condition and following PSO at L4 and posterior instrumentation with 2 primary-rods (“PSO-2”), with 2 rods and supplementary intervertebral cages (“PSO-2+Cages”), and with supplementary accessory rods and intervertebral cages (“PSO-4+Cages”). A picture of the specimen with the correlated areas are reported on the left, indicating the treated level (L4) and the caudal IVD (L4-L5). The DIC strain maps have been obtained using the proprietary software Istra 4D (v4.3.1, Dantec Dynamics, Denmark; URL: <https://www.dantecdynamics.com/>).