**S1 Table.** Main SAENO software parameter used for TFM acquisition.

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| NAME  | VALUE | DESCRIPTION |
| MODE  | Regularization  | Unconstrained force reconstruction |
| BEAMS  | 300  | Number of fibers per tetrahedron |
| K0  | 300 (C, CM), 900 (CM+) | Linear stiffness parameter |
| D0  | 0.0008 | Buckling coefficient of the fibers |
| Ls | 0.02 (C, CM), 1 (CM+)  | Onset of fiber strain-stiffening |
| Ds | 0.3 (C, CM), 1 (CM+) | Strain-stiffening coefficient of the fibers |
| DRIFT CORRECTION | 1 | Performs drift correction |
| DRIFT STEP  | 2.0 e-06  | Initial step width with which the optimal drift value is searched (m) |
| DRIFT RANGE | 30 e-06 | Maximum search range for drift correction |
| ALLIGNSTACK  | 1 | Perform a z-dependent drift correction |
| FIBER PATTERN MATCHING | 1 | Calculate deformations |
| SUBPIXEL  | 0.0005  | Convergence criterion in voxels of the fiber matching algorithm. |
| VB MINMATCH  | 0.7 | Only sections, which are matched with a higher cross-correlation than this value, are considered valid for force reconstruction |
| VB SX  | 12  | Size of cross-correlated sections in x direction (voxels) |
| VB SY  | 12  | Size of cross-correlated sections in y direction (voxels) |
| VB SZ  | 12  | Size of cross-correlated sections in z direction (voxels) |
| BOXMESH  | 1  | Build a mesh |
| BM\_GRAIN  | 7.5 e-06  | Grid constant of the regular cubic finite element mesh (m) |
| BM\_N  | 54  | Number of nodes in every dimension (x,y,z). |
| BM\_MULOUT  | 1.2  | Stretch the outer nodes away from the centerby this factor |
| BM\_RIN  | 160e-6  | Stretch only nodes that are farther away fromthe center than this value (m) |
| ALPHA  | 3.0e9  | Regularization parameter in squared Newton per square meter |
| REG\_ITERATIONS  | 50  | Maximum number of iterations |
| REG\_CONV\_CRIT  | 0.01  | The algorithm stops if the relative standarddeviation of L in the last 6 iterations falls belowthis value |
| REG\_SOLVER\_STEP  | 0.33  | Step width parameter of the regularization |
| FM\_RMAX  | 100e-6  | Only forces that lie within this range (m) from the center are considered for the analysis |