Impact of long-Term Swimming Exercise on Rat Femur Bone Quality

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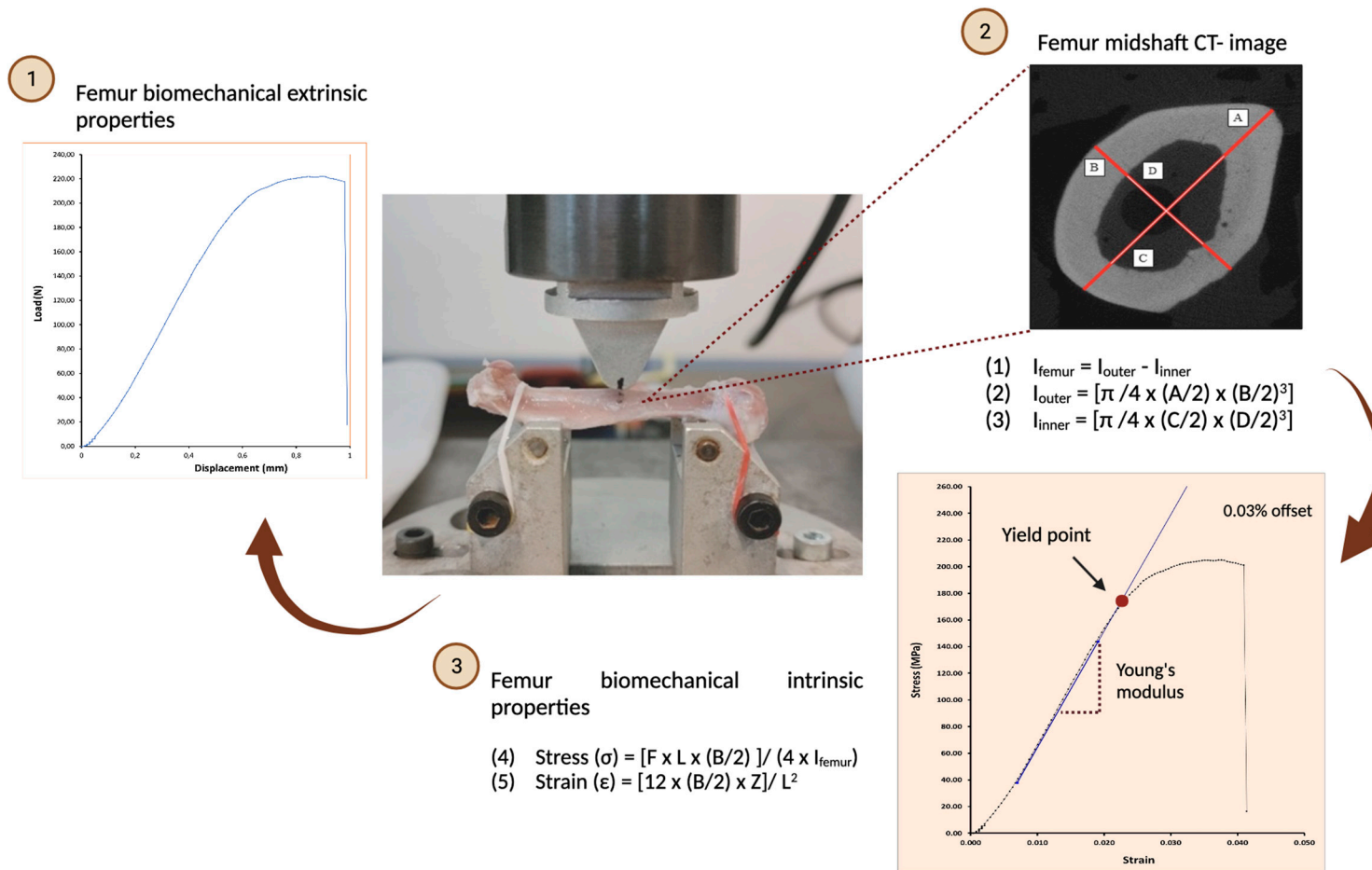
Supplementary Materials

Figure S1: Preparation of the right femur in antero-posterior position for the three-point bending test and the assessment of the load-displacement and stress-strain curves with respective equations. 1: The application of the three-point bending test to obtain load-displacement curve. 2: The calculation of moment of inertia through femoral midshaft dimensions from micro-computed tomography image to assess stress-strain curve. 3: The stress-strain curve measured by stress and strain respective equations. The illustration was developed using BioRender software. Lateromedial femur diameter (A); craniocaudal bone diameter (B); distance from the load application to the bone neutral axis (B/2); Lateromedial marrow diameter (C); craniocaudal marrow diameter (D); load applied (F); moment of inertia (I); distance between the supports (L); displacement (Z).

Equations S1 and S2 related to the calculation of uncoupling index and Z-score

Equation (S1):

Uncoupling index= Z-score$_{\text{Osteocalcin}}$ / Z-score$_{\text{CTX}}$

Equation (S2):

Z-score= (Animal value - Mean$_{\text{baseline}}$)/Standard Deviation$_{\text{baseline}}$
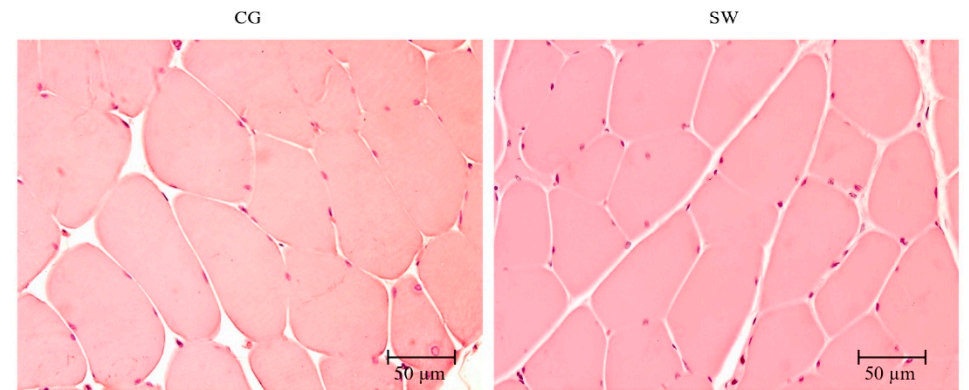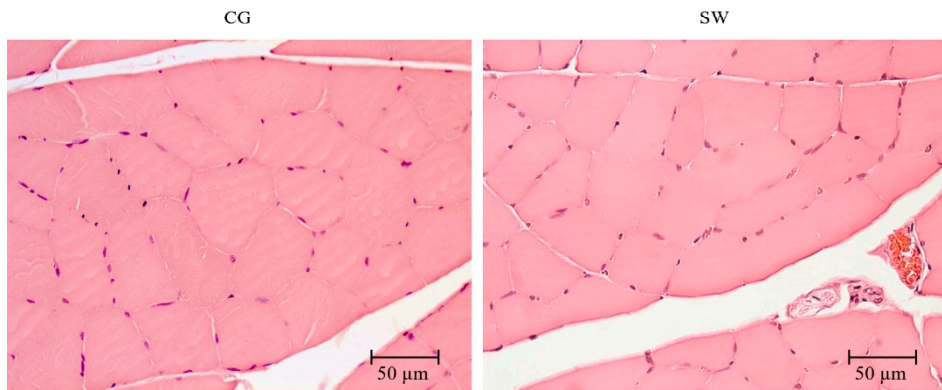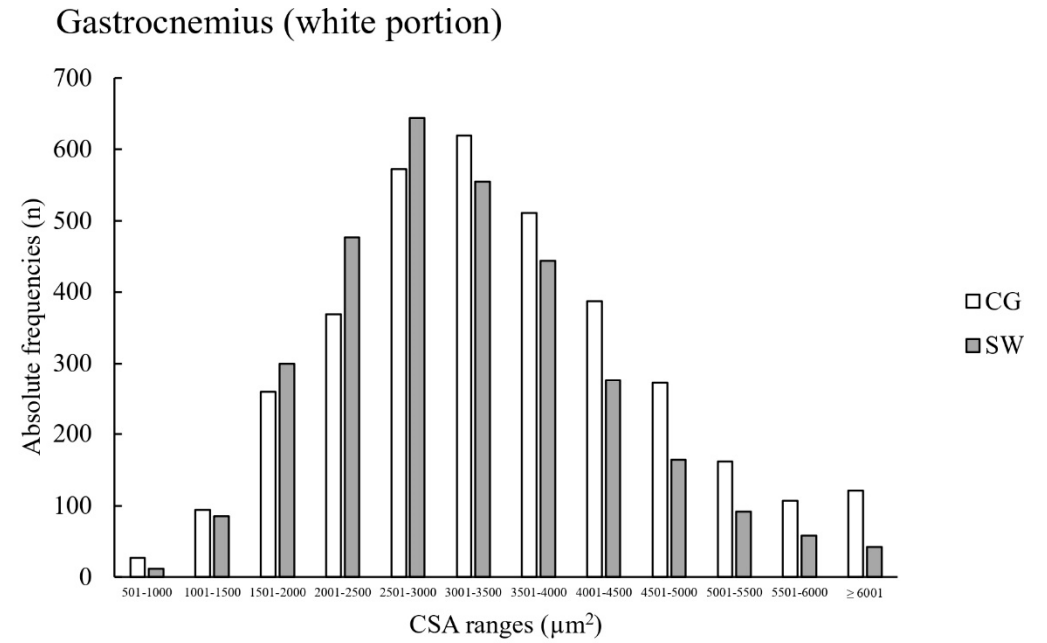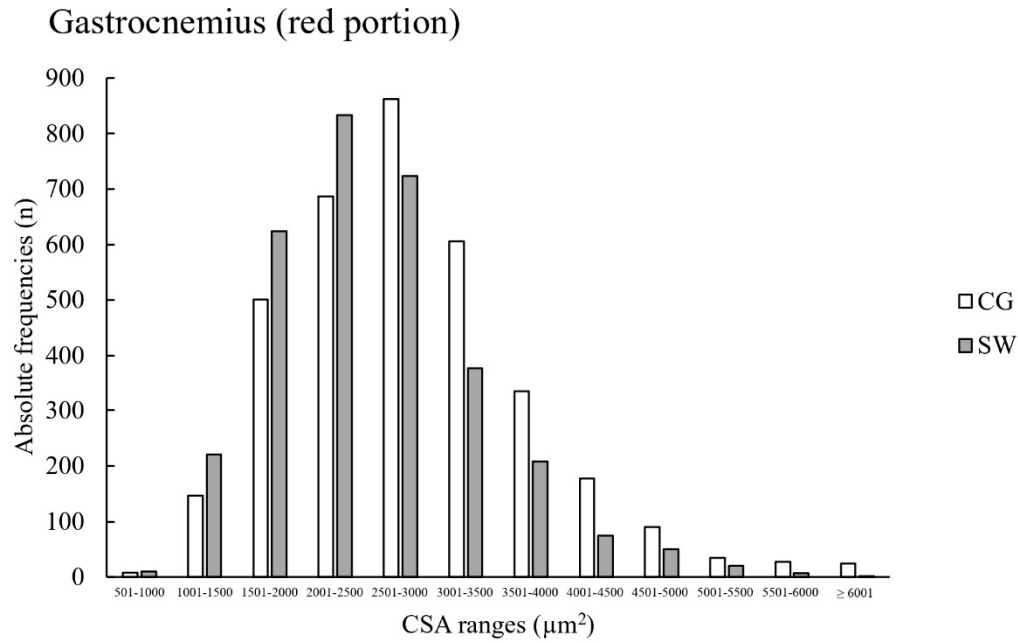
Figure S2: Fibre cross-sectional area of gastrocnemius red and white portions in growing rats between control (n= 10) and swimming (n= 9) groups after eight months of experiment (upper panel), with representative images of hematoxylin and eosin staining of transversal sections of previous muscles (lower panel). Data are displayed in n (absolute frequencies). Cross-sectional area (CSA); control group (CG); swimming group (SW).