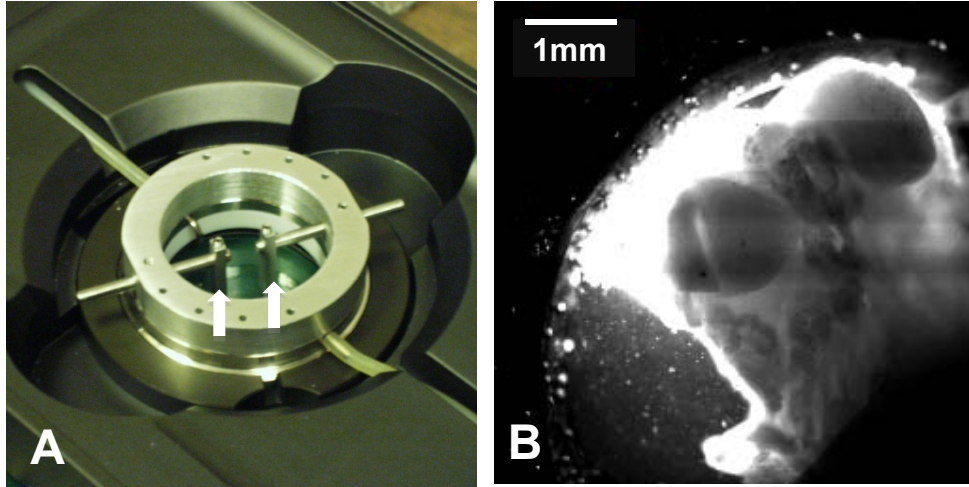


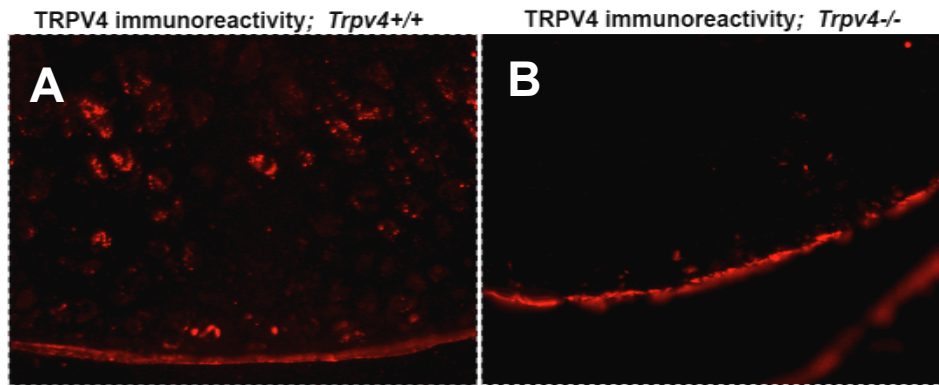
Supplemental Figure S1. A schematic diagram showing the six parts of each medial or lateral aspect of the knee analyzed by μ CT. The scale bar (1mm) is representative for the whole knee on the left of the diagram, the extrapolated parts of the medial aspect are approximately twice that magnification.

Supplemental Figure 1

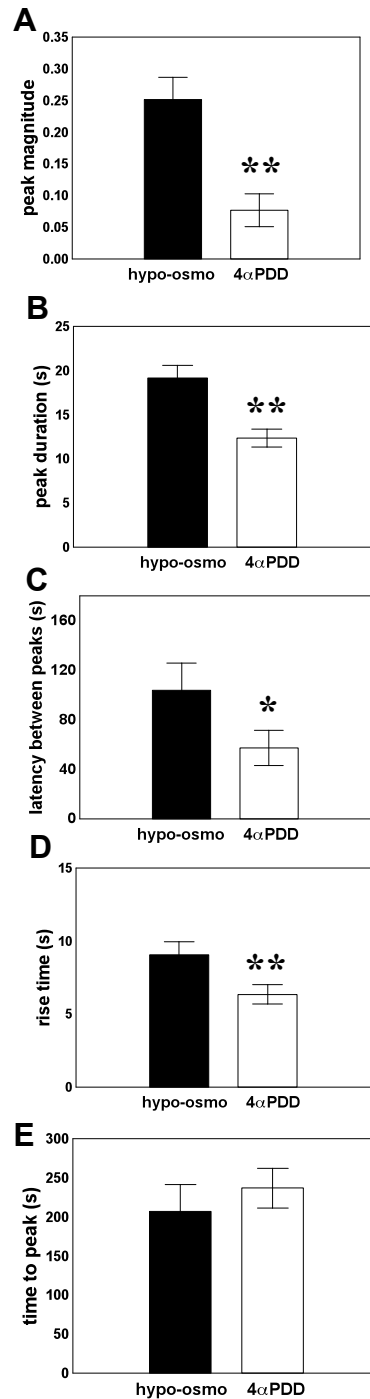


Supplemental Figure S2. (A) the heated perfusion chamber and platens (arrows) for holding the isolated femur against the cover slip. (B) Transmitted light image of the cartilage of the femoral condyles imaged from below within the heated perfusion chamber.

Supplemental Figure 2



Supplemental Figure S3. Immunohistochemistry demonstrating the presence or absence of TRPV4 protein in articular cartilage chondrocytes from wildtype (A) and *Trpv4*^{-/-} (B) mice respectively.



Supplemental Figure S4. Differences in the characteristic responses of chondrocytes in femoral condyles to stimulation by hypo-osmolarity (hypo-osmo) or 10 μ M 4 α -PDD. (A) Normalized peak magnitude of $[Ca^{2+}]_i$ (arbitrary units). (B) Duration of the peak increase of $[Ca^{2+}]_i$. (C) Latency between peaks in $[Ca^{2+}]_i$. (D) Rise time to peak $[Ca^{2+}]_i$. (E) No differences were observed in the time to peak $[Ca^{2+}]_i$ between the two groups. ** $p < 0.001$ versus 4 α -PDD; * $p < 0.01$ versus 4 α -PDD.

Supplemental Figure 4