

Supplemental Figure 1: Overview of subgroup analysis. This figure schematically presents our approach to subgroup analysis. **A)** Initially, model AP5_mu and AP5_bi (including all 304 variables), were assessed on various subgroups from the hold-out validation set. A *post-hoc* interpretability analysis was performed for these subgroups using the comprehensive AP5_mu and AP5_bi models. **B)** This was followed by the evaluation of models AP1_mu and AP1_bi (including clinical data) and our streamlined models AP5_top5_mu and AP5_top5_bi, on three distinct subgroups within the external validation set: 1) under-60 participants from the POMA study; 2) patients with early-stage OA (KLG 0-1); 3) patients without initial radiographic OA signs (KLG 0). (Created with BioRender.com).

