

Figure S1. Pectoralis muscle area (PMA) cut-offs predict cachexia. A)

Boxplot of PMA (mm²) from 38 young males, 97 old males, 34 young females, and 42 old females. **B)** Boxplot of the same measurements from panel A z-score normalized for gender and age. **C)** Decision tree generated using Classification And Regression Trees (CART) and Kaplan-Meier survival analyses for down-sampling models. The bottom boxes indicate hazard ratios, the number of patients at risk in each leaf, and the percentage of patients in each leaf. Red-curve: PMA>cut-off and low-risk group; Black-curve: PMA<cut-off and high-risk group. **D)** Area under the ROC curve (AUC-ROC) that demonstrates the specificity and sensitivity of the PMA skeletal muscle index (PMA cm²/height²) in indicating sarcopenia (determined by the PMA cut-offs generated in Figure 1A). Male (n = 66) and female (n = 23) groups included both young and older patients that had height information available.

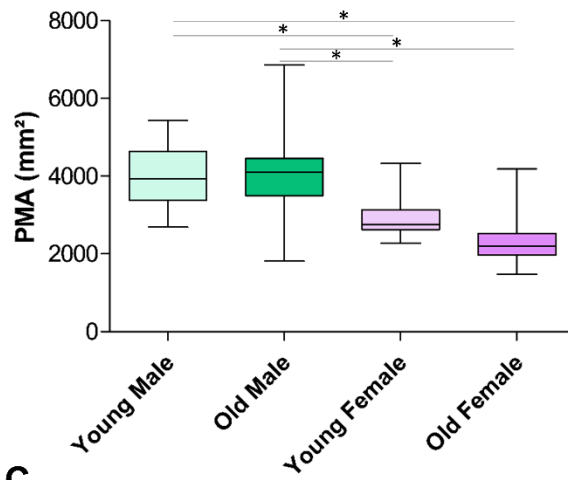
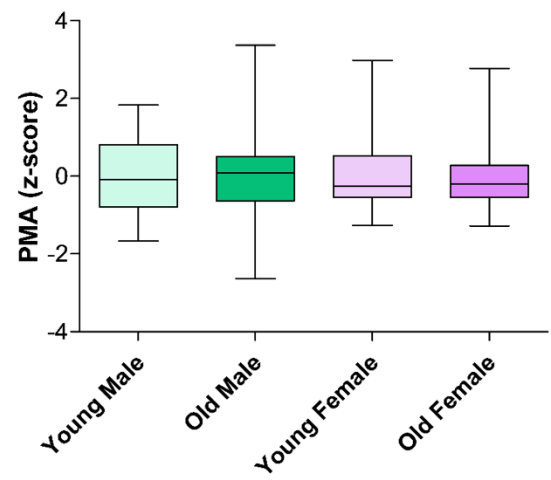
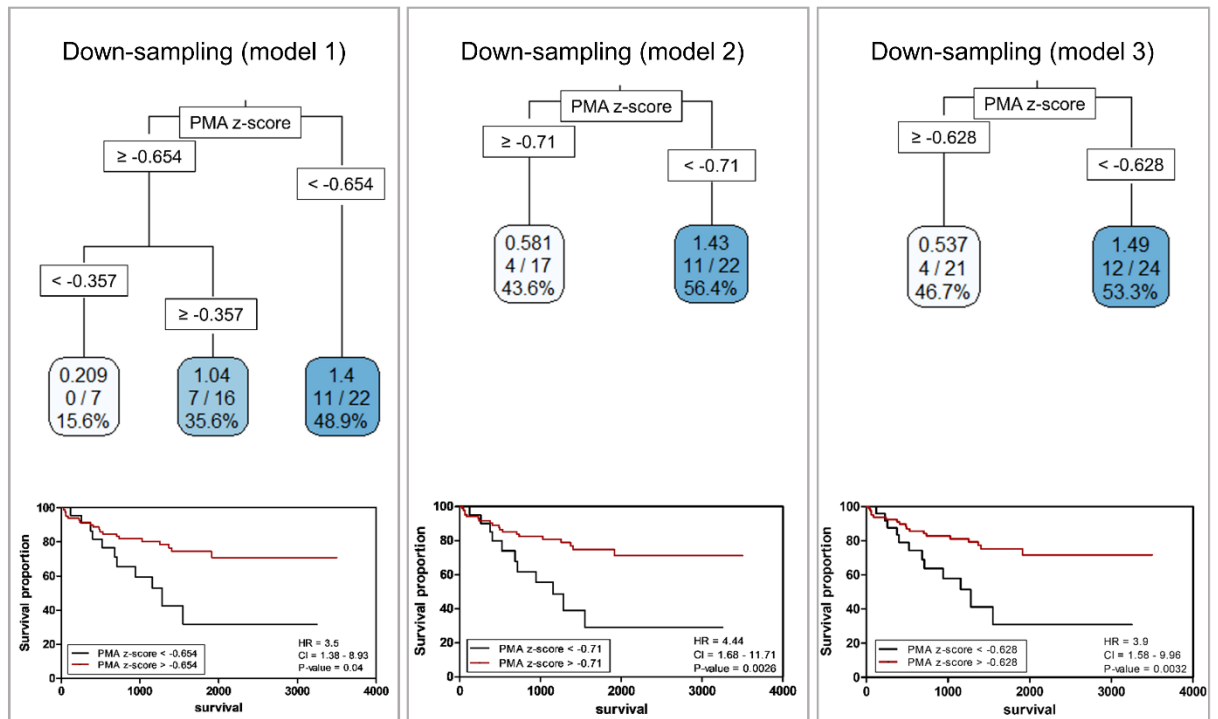
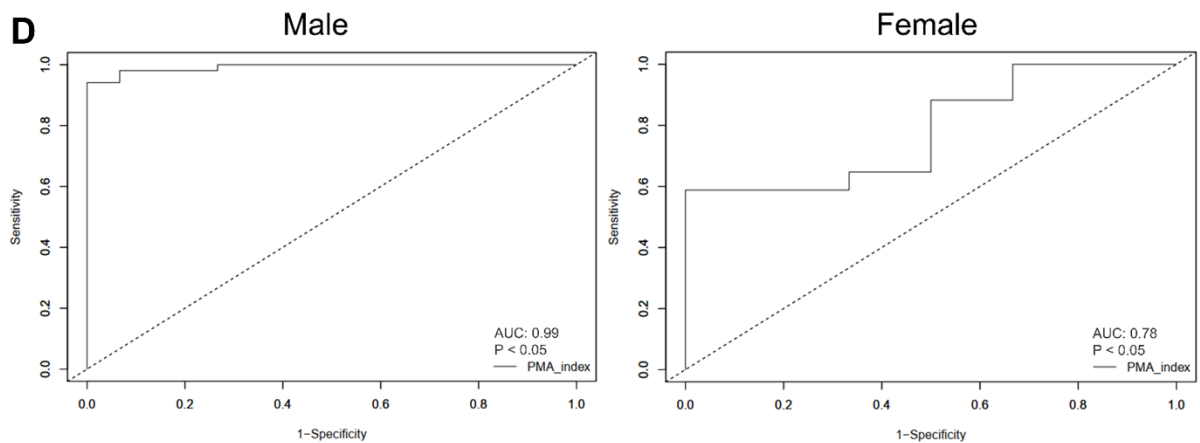
A**B****C****D**

Figure S2. Exhausted CD8+T cells interact with pre-exhausted CD8+T cells through tumor-derived factors identified in low-muscularity patients and negatively correlate with pectoralis muscle areas (PMA). **A)** Heatmap demonstrating the number of interactions between each CD8 cell subset. CD8_C6-LAYN is the exhausted subtype, while CD8_C4-GZMK corresponds to the pre-exhausted subtype. Analysis was performed using CellPhoneDB using the single-cell RNAseq data publicly available at GSE99254. **B)** Pearson correlation plot showing a negative correlation between CD8 and exhaustion scores (identified in the digital cytometry analysis) and PMA. BMI: body mass index.

