Table S1. Multiple regression analysis between corneal surgical parameters and absolute and relative changes in biomechanical parameters after FS-LASIK, stratifying the sample into the subgroups, based on ablation depth and preoperative central corneal thickness.

| Model fit | **1.A F = 9.14, p <0.0001** | | | | | **1.B F = 12.72, p <0.0001** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Independent Variable | Parameter Estimate | T-value | p-value | (95% CI) | Overall model $R^2$ | Parameter Estimate | T-value | p-value | (95% CI) | Overall model $R^2$ |
| | **Dependent Variable - CH drop** | | | | | **Dependent Variable - CH change** | | | | |
| **FT** | 0.02525 | 4.53 | <.0001 | (0.0143 - 0.0362) | 0.21 | 0.26134 | 5.96 | <.0001 | (0.1754 - 0.3473) | 0.24 |
| **AWBI** | 9.87090 | 2.28 | 0.0236 | (1.3803 - 18.362) | | 100.4785 | 2.95 | 0.0035 | (33.733 - 167.224) | |
| **PWBI** | 2.77934 | 0.74 | 0.4589 | (–4.563 - 10.122) | | 27.66610 | 0.94 | 0.3485 | (–30.061 - 85.393) | |
| **AD** | 0.15578 | 0.65 | 0.5177 | (–0.3155 - 0.627) | | -1.35894 | -0.72 | 0.4729 | (–5.0635 - 2.3456) | |
| **CCT** | 0.24750 | 1.26 | 0.2086 | (–0.1372 - 0.632) | | 0.35066 | 0.23 | 0.8204 | (–2.6730 - 3.3743) | |
| **RST** | -0.00455 | -1.58 | 0.1144 | (–0.0102 - 0.001) | | -0.04217 | -1.87 | 0.0630 | (–0.0864 - 0.0021) | |
| Model fit | **1.C F = 12.48, p<0.0001** | | | | | **1.D F = 13.92, p<0.0001** | | | | |
| Independent Variable | Parameter Estimate | T-value | p-value | (95% CI) | Overall model $R^2$ | Parameter Estimate | T-value | p-value | (95% CI) | Overall model $R^2$ |
| | **Dependent Variable - CRF drop** | | | | | **Dependent Variable - CRF change** | | | | |
| **FT** | 0.02615 | 4.57 | <.0001 | (0.0149 - 0.0374) | 0.24 | 0.19022 | 4.05 | <.0001 | (0.0982 - 0.2822) | 0.26 |
| **AWBI** | 3.90093 | 0.88 | 0.3813 | (–4.815 - 12.617) | | 86.72712 | 2.38 | 0.0182 | (15.238 - 158.22) | |
| **PWBI** | -1.21917 | -0.32 | 0.7515 | (–8.758 - 6.321) | | 29.60635 | 0.94 | 0.3489 | (–32.224 - 91.437) | |
| **AD** | 0.31647 | 1.28 | 0.2010 | (–0.167 - 0.800) | | 0.41703 | 0.21 | 0.8370 | (–3.551 - 4.385) | |
| **CCT** | 0.46787 | 2.32 | 0.0211 | (0.073 - 0.863) | | 2.86949 | 1.74 | 0.0839 | (–0.371 - 6.110) | |
| **RST** | -0.00909 | -3.08 | 0.0023 | (–0.015 - – 0.003) | | -0.09473 | -3.92 | 0.0001 | –0.1421 to – 0.0473 | |

F- value = the value of the model statistic in multiple regression analysis; p = probability value; T-value = t -statistic for each individual regression coefficient; $R^2$ = coefficient of determination; CH = corneal hysteresis; CH drop = absolute drop of corneal hysteresis, CH change = relative drop of corneal hysteresis ; FT = flap thickness; AWBI = anterior weighted biomechanical index; PWBI = posterior weighted biomechanical index; AD = ablation depth; CCT = central corneal thickness; RST = residual stromal thickness; CRF = corneal resistance factor; CRF drop = absolute drop of corneal resistance factor; CRF change = relative drop of corneal resistance factor