**Table 1**

Numerical parameters (*µ* and *α*) derived from inverse analysis of the ACL-specific finite element models defining non-linear hyperelastic characteristics of the ACLs. Root mean square (RMS) values represents the accuracy achieved between experimental and numerical data during the inverse analysis. There are two suspected outliers, and they are *µ* for specimen one and *α* for specimen three. The coefficient of variation for both parameters might have been affected because of the suspected outliers.

|  |  |  |  |
| --- | --- | --- | --- |
| **Specimen No.** | **µ** | **α** | **RMS (%)** |
| **1** | 2.58 | 20.36 | 0. 63 |
| **2** | 0.23 | 17.72 | 1.11 |
| **3** | 0.82 | 70.32 | 0.53 |
| **4** | 0.64 | 44.52 | 0.67 |
| **5** | 0.08 | 14.31 | 0.76 |
| **First Quartile (25%)** | 0.16 | 16.01 |  |
| **Third Quartile (75%)** | 1.70 | 57.42 |
| **Interquartile Range (IQR)** | 1.54 | 41.40 |
| **Suspected Outliers (Inner Fence: 1.5 x IQR)** | 2.32 | 62.11 |
| **Outlier (Outer Fence: 3 x IQR above third quartile)** | 6.33 | 181.63 |
| **Outlier (Outer Fence: 3 x IQR below first quartile)** | 4.48 | 108.20 |
| **Mean** | 0.87 | 33.44 |
| **Standard Deviation** | 1.00 | 23.81 |
| **Coefficient of Variation (%)** | 115.24 | 71.18 |
| **Mean – excluding outlier** | 0.44 | 24.23 |
| **Standard Deviation – excluding outlier** | 0.34 | 13.75 |
| **Coefficient of Variation – excluding outlier** | 78.05 | 56.77 |

**Table 2**

Longitudinal displacement obtained from the digital image correlation test setup, their corresponding standard deviation, and the coefficient of variation values across the five cadaveric specimens. The highest standard deviation is 54% of the mean and this value decreases with increasing the load with the lowest value being 39%.

|  |  |  |  |
| --- | --- | --- | --- |
| **Load (N)** | **Longitudinal Displacement (mm)** | **Standard Deviation** | **Coefficient of Variation (%)** |
| 0.0 | 0 | 0 | N/A |
| 1.1 | 0.074 | 0.040 | 54 |
| 2.2 | 0.129 | 0.063 | 49 |
| 3.3 | 0.168 | 0.079 | 47 |
| 4.4 | 0.198 | 0.088 | 44 |
| 5.5 | 0.229 | 0.099 | 43 |
| 6.6 | 0.257 | 0.108 | 41 |
| 7.7 | 0.278 | 0.112 | 40 |
| 8.8 | 0.300 | 0.120 | 39 |
| 9.9 | 0.318 | 0.124 | 39 |

**Table 3**

Longitudinal displacement obtained from the digital image correlation test setup, their corresponding standard deviation, and the coefficient of variation values within the specimens. The standard deviation describes variability of data obtained from different camera pairs. Abbreviations: Dis, longitudinal displacement; SD, standard deviation of the mean; CV, coefficient of variation.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Load (N)** | **Specimen 1** | **Specimen 2** | **Specimen 3** | **Specimen 4** | **Specimen 5** |
| **Dis (mm)** | **SD** | **CV (%)** | **Dis (mm)** | **SD** | **CV (%)** | **Dis (mm)** | **SD** | **CV (%)** | **Dis (mm)** | **SD** | **CV (%)** | **Dis (mm)** | **SD** | **CV (%)** |
| 0.0 | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A | 0.000 | 0.000 | N/A |
| 1.1 | 0.028 | 0.010 | 36 | 0.086 | 0.047 | 55 | 0.036 | 0.025 | 69 | 0.116 | 0.048 | 41 | 0.105 | 0.024 | 22 |
| 2.2 | 0.061 | 0.020 | 32 | 0.141 | 0.073 | 51 | 0.065 | 0.043 | 66 | 0.193 | 0.082 | 42 | 0.183 | 0.042 | 22 |
| 3.3 | 0.085 | 0.027 | 32 | 0.179 | 0.089 | 49 | 0.087 | 0.058 | 66 | 0.246 | 0.110 | 44 | 0.241 | 0.059 | 24 |
| 4.4 | 0.110 | 0.033 | 30 | 0.209 | 0.101 | 48 | 0.105 | 0.069 | 66 | 0.279 | 0.127 | 45 | 0.285 | 0.073 | 25 |
| 5.5 | 0.134 | 0.039 | 29 | 0.243 | 0.109 | 44 | 0.121 | 0.080 | 65 | 0.312 | 0.145 | 46 | 0.334 | 0.088 | 26 |
| 6.6 | 0.158 | 0.043 | 26 | 0.269 | 0.113 | 41 | 0.136 | 0.089 | 65 | 0.341 | 0.162 | 47 | 0.378 | 0.086 | 22 |
| 7.7 | 0.178 | 0.048 | 27 | 0.292 | 0.117 | 40 | 0.149 | 0.098 | 65 | 0.364 | 0.176 | 48 | 0.406 | 0.099 | 24 |
| 8.8 | 0.197 | 0.051 | 25 | 0.314 | 0.122 | 38 | 0.161 | 0.105 | 65 | 0.387 | 0.192 | 49 | 0.440 | 0.100 | 22 |
| 9.9 | 0.214 | 0.055 | 25 | 0.330 | 0.132 | 39 | 0.172 | 0.110 | 64 | 0.409 | 0.206 | 50 | 0.463 | 0.104 | 22 |