Suppl Table 3. Mixed effect logistic regression for analysis of the strength – function relationships for each MFM-D3-UL and CHFS item and for analysis of the difference in relationships between DMD and SMA patients.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Median score cutoff | Percentage of subjects above cutoff | Handgrip (%pred) | | | | | | | Key pinch (%pred) | | | | | | |
|  | Strength - Function relationship | | | Comparison between SMA and DMD | | | | Strength - Function relationship | | | Comparison between SMA and DMD | | | |
|  | Strength coef  β1 | β1  SD | β1  p-value | SMA coef  β2 | β2  SD | β2  p-value | Ability SMA | Strength coef  β1 | β1  SD | β1  p-value | SMA coef  β2 | β2  SD | β2  p-value | Ability SMA |
| MFM-D3-UL |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Item 17 | ≥ 3 | 58 | 0.201 | 0.028 | **<0.0001** | 0.880 | 0.676 | 0.1933 | = DMD | 0.185 | 0.025 | **<0.0001** | 0.710 | 0.660 | 0.2822 | = DMD |
| Item 18 | ≥ 3 | 68 | 0.269 | 0.048 | **<0.0001** | 3.991 | 1.000 | **0.0001** | > DMD | 0.229 | 0.040 | **<0.0001** | 4.028 | 0.980 | **<0.0001** | > DMD |
| Item 19 | ≥ 3 | 52 | 0.002 | 0.009 | 0.8145 | 2.625 | 0.446 | **<0.0001** | > DMD | 0.007 | 0.008 | 0.3818 | 2.530 | 0.448 | **<0.0001** | > DMD |
| Item 20 | ≥ 2 | 71 | 0.196 | 0.030 | **<0.0001** | 0.473 | 0.450 | 0.2928 | = DMD | 0.208 | 0.028 | **<0.0001** | 0.694 | 0.397 | 0.0804 | = DMD |
| Item 21 | > 2 | 40 | 0.139 | 0.023 | **<0.0001** | 4.373 | 0.851 | **<0.0001** | > DMD | 0.117 | 0.019 | **<0.0001** | 3.923 | 0.802 | **<0.0001** | > DMD |
| Item 22 | ≥ 3 | 95 | 0.029 | 0.032 | 0.3620 | 1.925 | 1.343 | 0.1518 | = DMD | 0.035 | 0.033 | 0.2888 | 1.576 | 1.345 | 0.2412 | = DMD |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CHFS |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Item 1 | > 2 | 45 | -0.183 | 0.046 | **0.0001** | -2.703 | 0.979 | 0.0058 | = DMD | -0.144 | 0.037 | **0.0001** | -2.787 | 1.033 | 0.0070 | = DMD |
| Item 2 | ≥ 5 | 63 | -0.356 | 0.101 | **0.0004** | -8.269 | 3.363 | 0.0139 | = DMD | -0.233 | 0.070 | **0.0009** | -7.349 | 2.927 | 0.0121 | = DMD |
| Item 3 | ≥ 5 | 64 | -0.158 | 0.047 | **0.0008** | -1.848 | 0.958 | 0.0538 | = DMD | -0.116 | 0.036 | **0.0014** | -1.696 | 0.975 | 0.0820 | = DMD |
| Item 4 | > 4 | 47 | -0.211 | 0.069 | 0.0021 | -5.239 | 2.176 | 0.0161 | = DMD | -0.155 | 0.053 | 0.0038 | -5.234 | 2.271 | 0.0212 | = DMD |
| Item 5 | ≥ 4 | 52 | -0.270 | 0.076 | **0.0004** | -0.587 | 0.854 | 0.4924 | = DMD | -0.166 | 0.042 | **0.0001** | -0.512 | 0.748 | 0.4942 | = DMD |
| Item 6 | ≥ 5 | 53 | -0.808 | 0.282 | 0.0042 | -3.827 | 3.532 | 0.2785 | = DMD | -0.430 | 0.172 | 0.0124 | -4.409 | 3.340 | 0.1868 | = DMD |
| Item 7 | > 0 | 41 | -0.370 | 0.122 | 0.0025 | -2.672 | 1.432 | 0.0621 | = DMD | -0.336 | 0.122 | 0.0059 | -3.235 | 1.715 | 0.0593 | = DMD |
| Item 8 | ≥ 5 | 61 | -0.327 | 0.091 | **0.0003** | -6.374 | 2.632 | 0.0154 | = DMD | -0.241 | 0.073 | **0.0010** | -5.644 | 2.437 | 0.0205 | = DMD |
| Item 9 | ≥ 4 | 53 | -0.333 | 0.091 | **0.0003** | -5.154 | 1.607 | **0.0013** | > DMD | -0.197 | 0.050 | **0.0001** | -4.537 | 1.383 | **0.0010** | > DMD |
| Item 10 | ≥ 4 | 51 | -0.352 | 0.091 | **0.0001** | -3.203 | 1.131 | 0.0046 | = DMD | -0.216 | 0.056 | **0.0001** | -3.017 | 1.091 | 0.0057 | = DMD |
| Item 11 | ≥ 2 | 53 | -0.291 | 0.084 | **0.0005** | -0.106 | 1.120 | 0.9243 | = DMD | -0.199 | 0.052 | **0.0002** | -0.041 | 1.009 | 0.9677 | = DMD |
| Item 12 | ≥ 1 | 53 | -0.154 | 0.039 | **0.0001** | -1.679 | 0.819 | 0.0404 | = DMD | -0.112 | 0.028 | **0.0001** | -1.522 | 0.798 | 0.0566 | = DMD |
| Item 13 | > 0 | 35 | -0.205 | 0.065 | **0.0015** | -2.135 | 1.044 | 0.0408 | = DMD | -0.156 | 0.047 | **0.0010** | -1.945 | 0.999 | 0.0517 | = DMD |
| Item 14 | > 0 | 21 | -0.309 | 0.113 | 0.0061 | -2.234 | 1.286 | 0.0824 | = DMD | -0.206 | 0.067 | 0.0021 | -1.985 | 1.103 | 0.0717 | = DMD |
| Item 15 | ≥ 5 | 61 | -0.267 | 0.081 | **0.0010** | -2.897 | 1.280 | 0.0236 | = DMD | -0.224 | 0.078 | 0.0043 | -3.036 | 1.383 | 0.0282 | = DMD |
| Item 16 | > 0 | 46 | -0.175 | 0.049 | **0.0003** | -0.791 | 0.829 | 0.3400 | = DMD | -0.123 | 0.035 | **0.0004** | -0.610 | 0.857 | 0.4762 | = DMD |
| Item 17 | > 0 | 42 | -0.460 | 0.151 | 0.0024 | -2.266 | 1.257 | 0.0714 | = DMD | -0.302 | 0.087 | **0.0005** | -2.151 | 1.158 | 0.0634 | = DMD |
| Item 18 | ≥ 5 | 57 | -0.472 | 0.137 | **0.0006** | -1.766 | 1.378 | 0.2000 | = DMD | -0.317 | 0.001 | **<0.0001** | -1.551 | 0.001 | **<0.0001** | > DMD |

P-values < 0.0018 reflect significance and are indicated in bold. The β1 and β2 coefficients come from the equation Logit (Item in two class⏐handgrip or key pinch strength, diagnosis) = β0 + β1 \* strength (%pred) + β2 \* 1|SMA, where diagnosis value equals 0 for DMD or 1 for SMA.

The "SMA Ability" columns reflect the strength vs item score relationship of SMA participants compared to that of DMD participants for each corresponding item. The strength vs item score relationship of the SMA participants is equivalent to that of the DMD participants (=DMD) when the β2 p-value is not significant (β2 p-value ≥ 0.0018). For MFM items, the "Ability SMA" is superior to that of DMD participants (>DMD) when the β2 p-value is significant (β2 p-value < 0.0018) and when SMA coef β2 is > 0 (as the best score of MFM items = 3). For CHFS items, the "SMA Ability" is higher than that of DMD participants (>DMD) when the p-value β2 is significant and when the SMA coef β2 is < 0 (as the best score of CHFS items = 0).