**Supplement 2** Stride-to-stride fluctuations between groups

**Table 1** Comparison of stride-to-stride fluctuations between non-COPD control subjects and subjects with COPD

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dependent variable | Joint | Group | SLOWMean (SD) | SSWSMean (SD) | FASTMean (SD) | GroupF,p | SpeedF,p | InteractionF,p |
| Mean RoM(degrees) | Ankle | Control | 27.2 (4.5) | 28.2 (5.1) | 30.5 (5.0) | 0.87, 0.358 | 3.07, 0.052 | 4.38, 0.016 |
|  |  | COPD | 26.2 (5.9) | 26.5 (6.0) | 27.7 (6.0) |  |  |  |
|  | Knee | Control | 58.1 (4.0) | 59.1 (4.4) | 61.0 (4.2) | 0.40, 0.531 | 1.76, 0.178 | 0.61, 0.544 |
|  |  | COPD | 57.1 (8.8) | 57.6 (8.7) | 59.1 (7.2) |  |  |  |
|  | Hip | Control | 35.8 (4.3) | 37.4 (4.7) | 40.0 (4.7) | 0.11, 0.743 | 0.71, 0.493 | 3.49, 0.035 |
|  |  | COPD | 35.5 (5.6) | 36.5 (5.1) | 37.9 (4.9) |  |  |  |
| Standard deviation RoM(degrees) | Ankle | Control | 2.80 (1.36) | 2.61 (0.93) | 2.51 (0.98) | 1.20, 0.279 | 0.03, 0.974 | 1.07, 0.347 |
|  |  | COPD | 3.09 (1.77) | 3.20 (1.79) | 3.25 (2.31) |  |  |  |
|  | Knee | Control | 1.88 (1.07) | 1.75 (0.79) | 1.90 (0.87) | 0.12, 0.726 | 4.39, 0.015 | 0.59, 0.556 |
|  |  | COPD | 1.91 (0.70) | 1.84 (0.71) | 2.19 (0.76) |  |  |  |
|  | Hip | Control | 2.39 (0.92) | 2.29 (0.77) | 2.17 (0.91) | 0.20, 0.656 | 2.89, 0.062 | 0.79, 0.457 |
|  |  | COPD | 2.63 (1.22) | 2.36 (0.98) | 2.57 (0.96) |  |  |  |
| Coefficient of variation RoM | Ankle | Control | 0.10 (0.05) | 0.09 (0.03) | 0.08 (0.03) | 1.82, 0.184 | 0.44, 0.647 | 2.04, 0.137 |
|  |  | COPD | 0.12 (0.07) | 0.12 (0.08) | 0.12 (0.09) |  |  |  |
|  | Knee | Control | 0.05 (0.03) | 0.05 (0.02) | 0.05 (0.02) | 0.37, 0.545 | 4.84, 0.010 | 0.47, 0.624 |
|  |  | COPD | 0.06 (0.02) | 0.05 (0.02) | 0.06 (0.02) |  |  |  |
|  | Hip | Control | 0.04 (0.02) | 0.04 (0.02) | 0.04 (0.02) | 0.58, 0.451 | 3.48, 0.036 | 0.74, 0.481 |
|  |  | COPD | 0.05 (0.03) | 0.04 (0.02) | 0.05 (0.02) |  |  |  |
| Sample entropy RoM | Ankle | Control | 1.60 (0.35) | 1.64 (0.29) | 1.58 (0.37) | 0.37, 0.549 | 0.68, 0.510 | 2.03, 0.138 |
|  |  | COPD | 1.53 (0.38) | 1.46 (0.40) | 1.57 (0.51) |  |  |  |
|  | Knee | Control | 1.65 (0.38) | 1.65 (0.26) | 1.62 (0.36) | 0.01, 0.906 | 0.13, 0.875 | 0.43, 0.652 |
|  |  | COPD | 1.70 (0.42) | 1.62 (0.39) | 1.58 (0.36) |  |  |  |
|  | Hip | Control | 1.70 (0.28) | 1.69 (0.37) | 1.59 (0.33) | 0.27, 0.606 | 4.36, 0.016 | 0.51, 0.600 |
|  |  | COPD | 1.72 (0.23) | 1.66 (0.23) | 1.64 (0.29) |  |  |  |
| Local divergence exponent joint angle | Ankle | Control | 1.13 (0.13) | 1.11 (0.09) | 1.03 (0.10) | 0.39, 0.536 | 0.54, 0.586 | 2.88, 0.062 |
|  |  | COPD | 1.14 (0.11) | 1.12 (0.17) | 1.11 (0.15) |  |  |  |
|  | Knee | Control | 1.38 (0.12) | 1.37 (0.13) | 1.26 (0.12) | 3.73, 0.060 | 0.64, 0.532 | 4.43, 0.015 |
|  |  | COPD | 1.46 (0.14) | 1.39 (0.16) | 1.40 (0.17) |  |  |  |
|  | Hip | Control | 1.62 (0.17) | 1.58 (0.19) | 1.45 (0.22) | 5.90, 0.020 | 2.18, 0.119 | 4.18, 0.019 |
|  |  | COPD | 1.73 (0.18) | 1.66 (0.18) | 1.66 (0.19) |  |  |  |

Abbreviations: COPD, chronic obstructive pulmonary disease; RoM, range of motion; SSWS, self-selected walking speed.
Note: Group analysis was conducted to analyze associations between the groups. Speed analysis was conducted to analyze differences between speeds by combining the group data. Interaction analysis was conducted to analyze the interaction between group and speed.