**Table S1.** Pearson’s correlation coefficients (), root mean square error (RMSE) and relative RMSE (rRMSE) of ground reaction forces (GRFs), moments (GRMs), and joint torques during normal-speed, fast-speed (approximately +20 % of the normal-speed), and slow-speed (approximately -20 % of the normal-speed). The average and standard deviation (SD) for all participants are displayed, with magnitudes normalized to body mass of participants.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gait speed | Normal | | |  | Fast  (+20 %) | | |  | Slow  (-20 %) | | |
|  | (SD) | RMSE (SD)  [N/kg or Nm/kg] | rRMSE (SD)  [%] |  | (SD) | RMSE (SD)  [N/kg or Nm/kg] | rRMSE (SD)  [%] |  | (SD) | RMSE (SD)  [N/kg or Nm/kg] | rRMSE (SD)  [%] |
| Anterior  GRF | 0.901  (0.087) | 0.427  (0.135) | 11.4  (3.9) |  | 0.888  (0.120) | 0.551  (0.180) | 12.6  (5.0) |  | 0.910  (0.062) | 0.356  (0.107) | 10.6  (3.4) |
| Lateral  GRF | 0.813  (0.092) | 0.164  (0.029) | 17.0  (3.6) |  | 0.776  (0.159) | 0.183  (0.034) | 17.6  (3.9) |  | 0.748  (0.160) | 0.161  (0.027) | 18.4  (3.6) |
| Vertical  GRF | 0.945  (0.068) | 1.422  (0.678) | 11.6  (5.4) |  | 0.931  (0.105) | 1.614  (0.794) | 12.2  (6.0) |  | 0.953  (0.062) | 1.258  (0.678) | 10.9  (6.2) |
| Frontal  GRM | 0.796  (0.154) | 0.066  (0.028) | 19.5  (7.1) |  | 0.753  (0.169) | 0.098  (0.056) | 23.3  (10.9) |  | 0.790  (0.164) | 0.078  (0.049) | 21.7  (13.2) |
| Sagittal  GRM | 0.906  (0.131) | 0.211  (0.080) | 13.9  (7.9) |  | 0.910  (0.141) | 0.210  (0.088) | 12.5  (7.4) |  | 0.856  (0.311) | 0.257  (0.336) | 14.9  (13.6) |
| Transverse  GRM | 0.854  (0.144) | 0.018  (0.007) | 13.5  (5.4) |  | 0.823  (0.200) | 0.023  (0.009) | 15.0  (6.4) |  | 0.783  (0.316) | 0.020  (0.018) | 13.9  (7.9) |
| Hip  abduction | 0.897  (0.056) | 0.168  (0.046) | 14.5  (3.4) |  | 0.866  (0.077) | 0.202  (0.065) | 15.7  (4.2) |  | 0.914  (0.063) | 0.158  (0.042) | 13.9  (4.0) |
| Hip  flexion | 0.798  (0.076) | 0.307  (0.095) | 15.0  (2.5) |  | 0.825  (0.082) | 0.416  (0.157) | 15.1  (4.1) |  | 0.814  (0.068) | 0.219  (0.055) | 15.0  (2.7) |
| Hip  rotation | 0.915  (0.038) | 0.032  (0.007) | 11.3  (2.6) |  | 0.875  (0.133) | 0.046  (0.019) | 13.0  (7.1) |  | 0.902  (0.052) | 0.032  (0.008) | 12.6  (3.2) |
| Knee  abduction | 0.878  (0.091) | 0.054  (0.023) | 16.3  (6.4) |  | 0.839  (0.121) | 0.076  (0.047) | 19.3  (7.4) |  | 0.876  (0.071) | 0.059  (0.021) | 18.8  (5.7) |
| Knee  flexion | 0.759  (0.084) | 0.187  (0.053) | 18.3  (3.7) |  | 0.802  (0.083) | 0.215  (0.047) | 16.3  (3.5) |  | 0.760  (0.148) | 0.160  (0.044) | 17.9  (5.9) |
| Knee  rotation | 0.860  (0.120) | 0.040  (0.016) | 18.4  (7.0) |  | 0.817  (0.209) | 0.060  (0.048) | 20.5  (9.4) |  | 0.870  (0.123) | 0.040  (0.019) | 18.6  (7.2) |
| Ankle  eversion | 0.750  (0.245) | 0.039  (0.016) | 22.1  (7.2) |  | 0.725  (0.214) | 0.057  (0.040) | 24.0  (9.3) |  | 0.809  (0.121) | 0.042  (0.018) | 23.0  (7.1) |
| Ankle  dorsiflexion | 0.938  (0.123) | 0.186  (0.096) | 10.8  (8.5) |  | 0.941  (0.137) | 0.177  (0.115) | 9.5  (9.3) |  | 0.941  (0.104) | 0.170  (0.090) | 10.4  (8.8) |
| Ankle  rotation | 0.855  (0.135) | 0.053  (0.024) | 17.9  (6.9) |  | 0.814  (0.206) | 0.078  (0.056) | 21.0  (10.4) |  | 0.873  (0.122) | 0.056  (0.025) | 18.5  (7.4) |