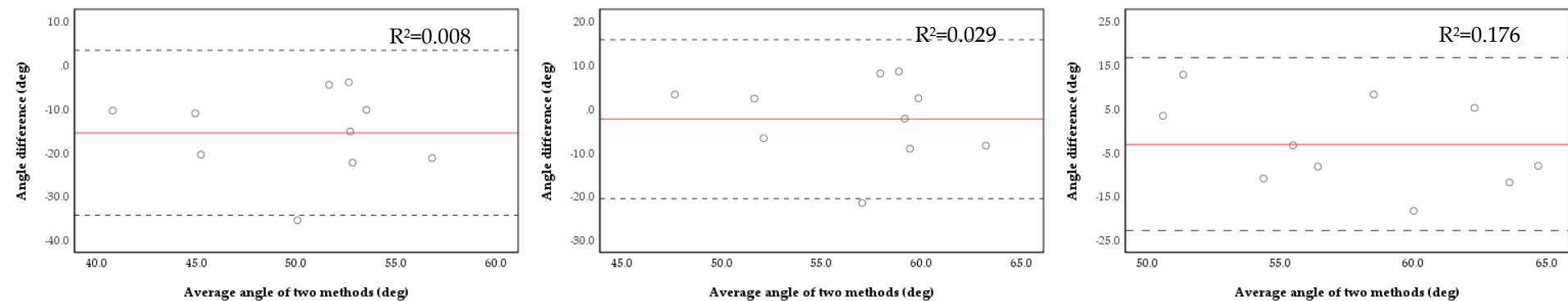
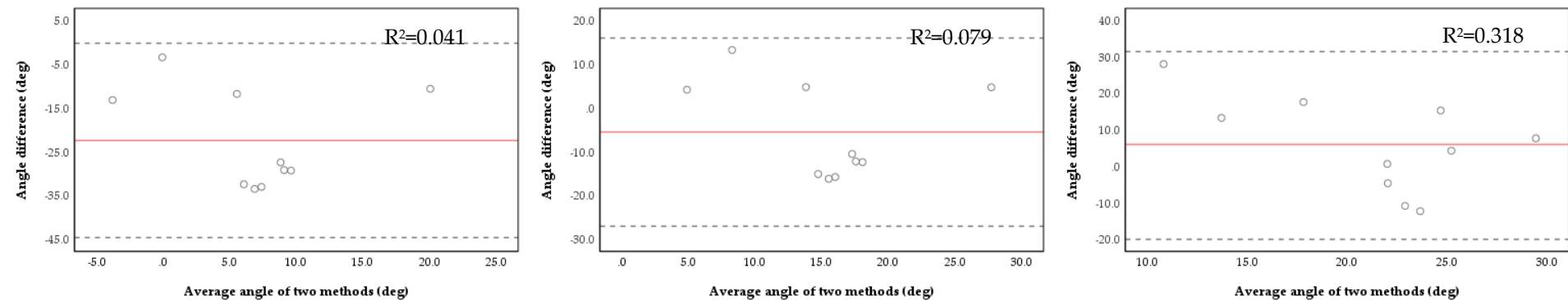


Supplementary Material – Bland-Altman plots for joint kinematics parameters during gait.

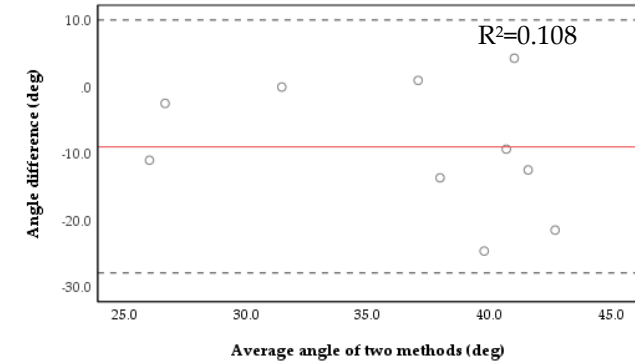
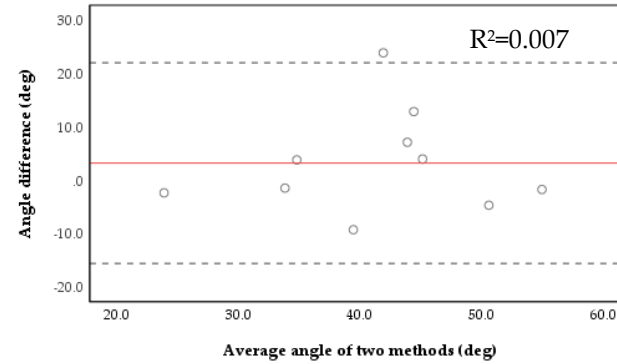
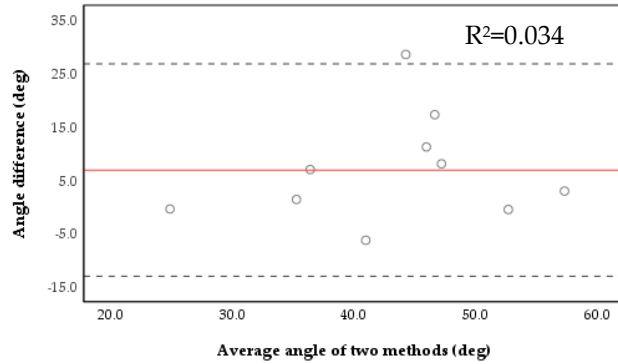
Maximum Hip flexion/extension angle



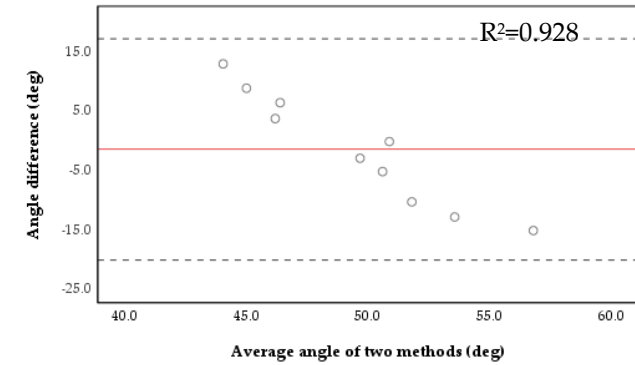
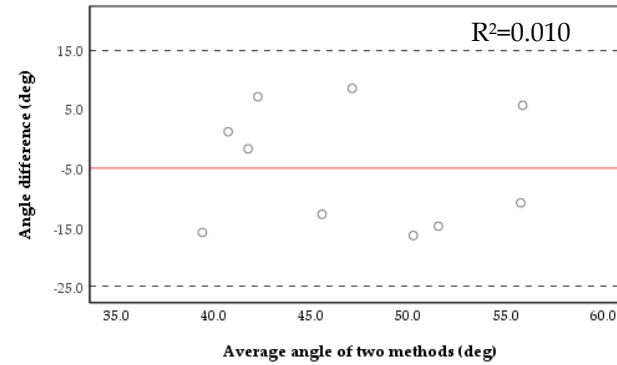
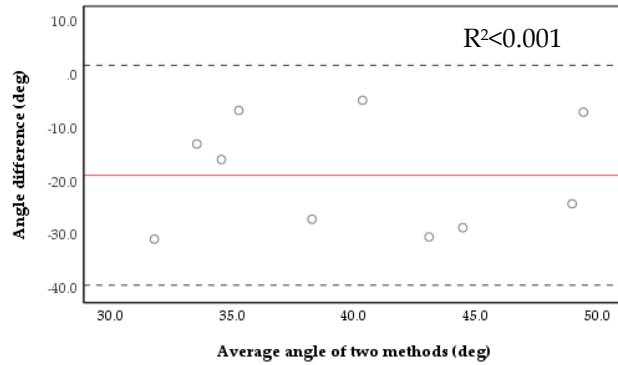
Minimum Hip flexion/extension angle



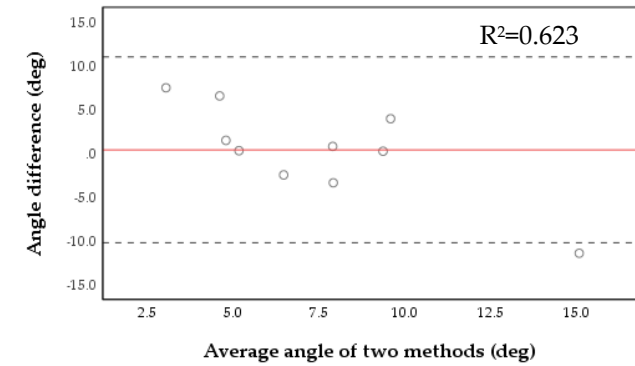
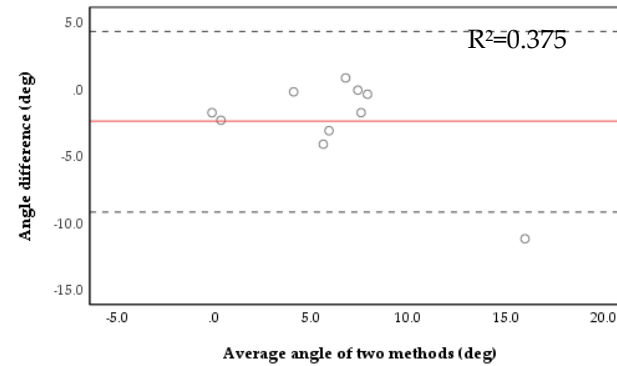
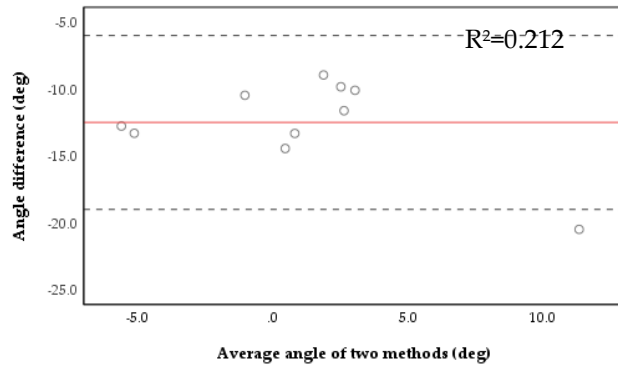
## Hip flexion/extension ROM



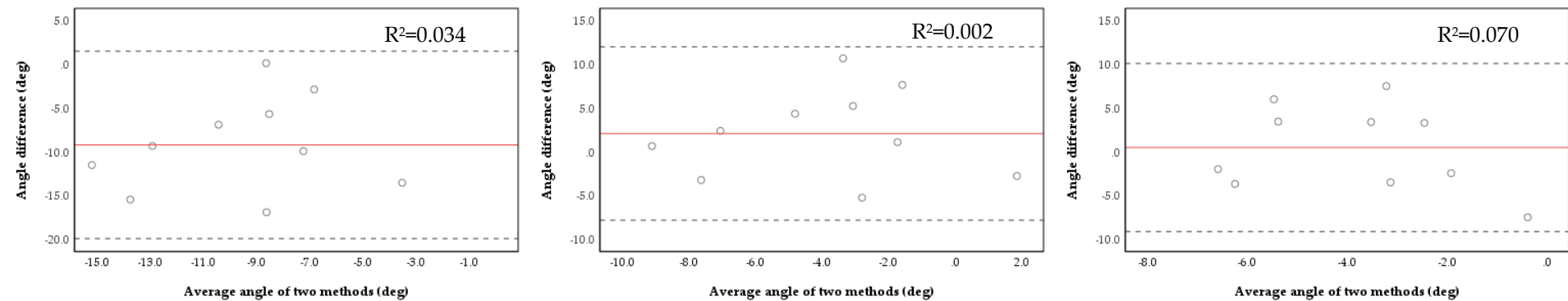
## Hip flexion/extension at initial contact



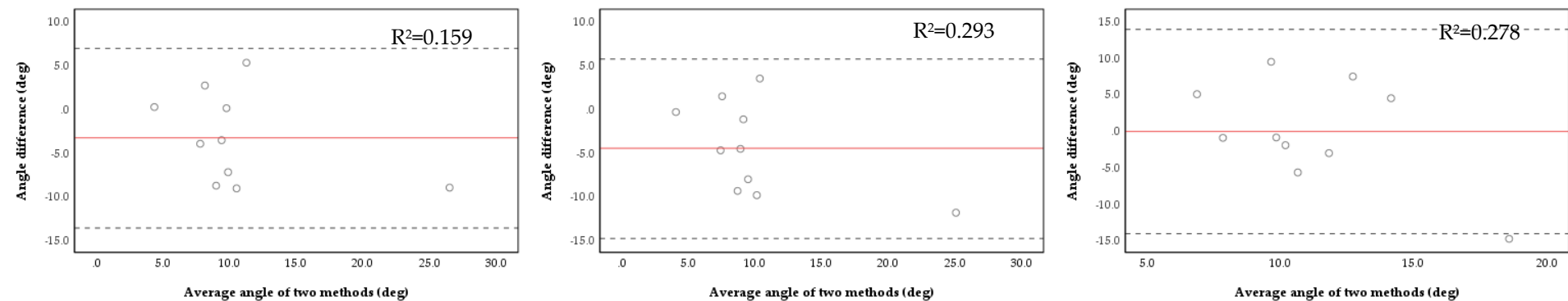
## Maximum Hip adduction/abduction angle



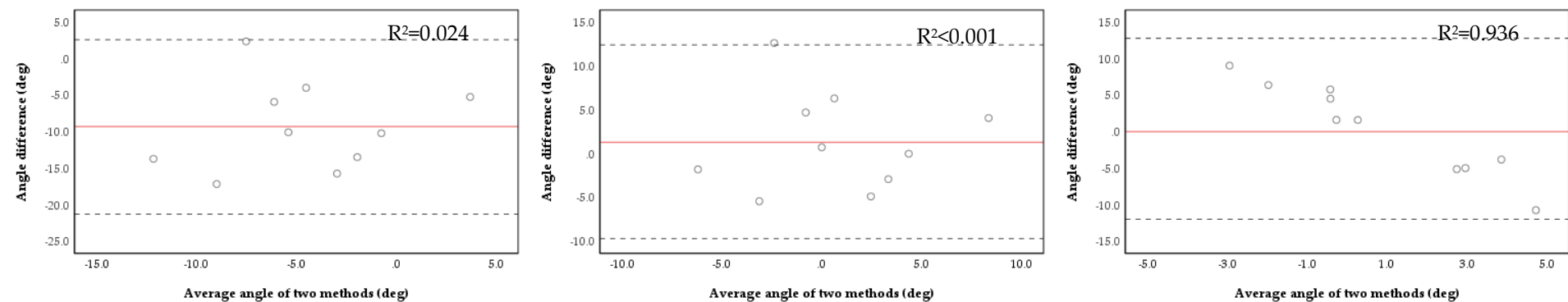
Minimum Hip adduction/abduction angle



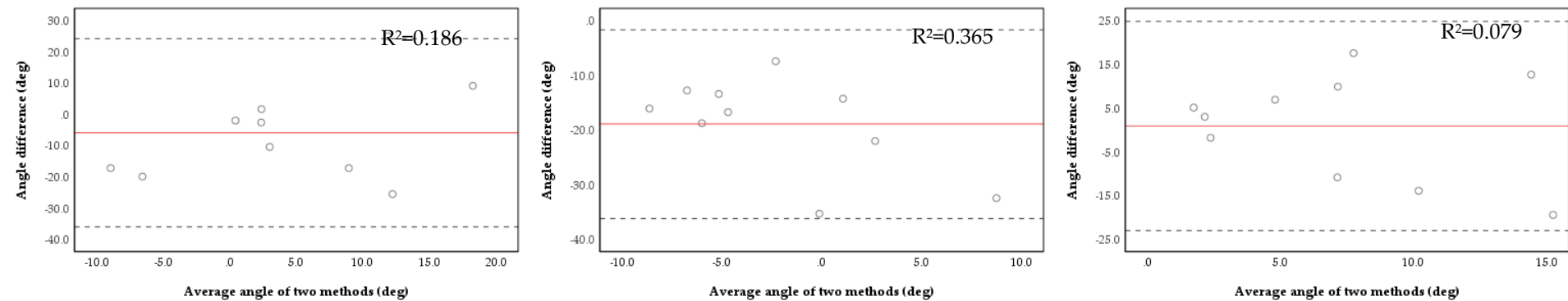
Hip adduction/abduction ROM



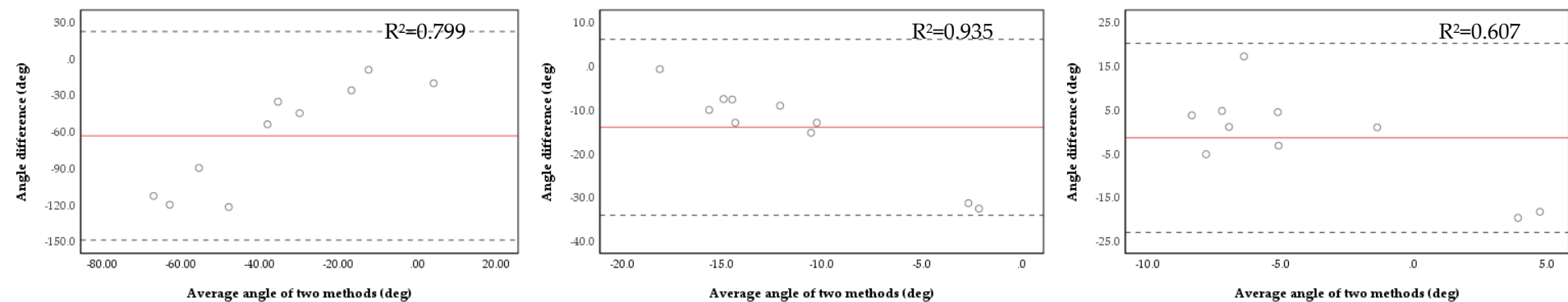
Hip adduction/abduction at initial contact



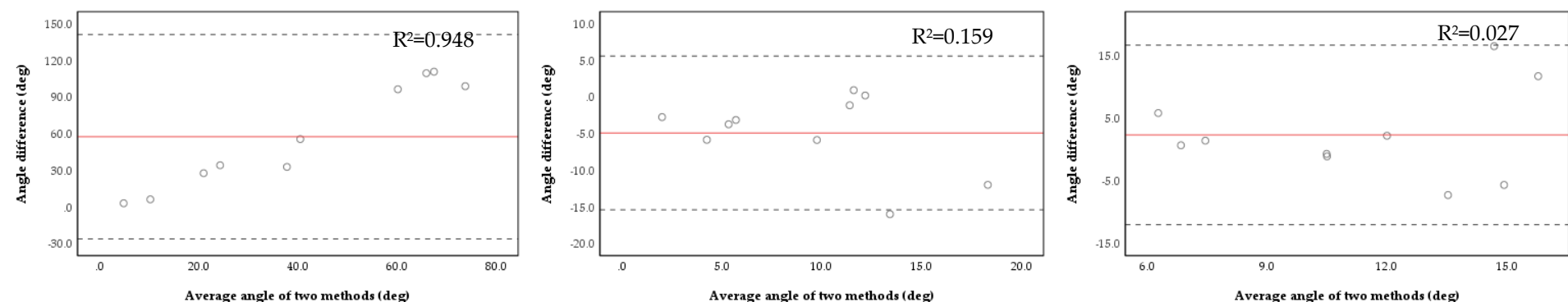
Maximum Hip internal/external rotation angle



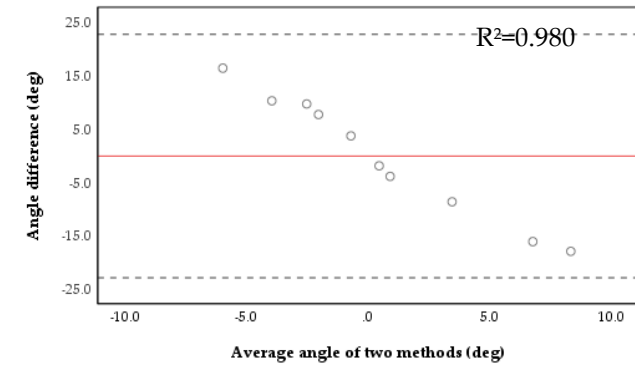
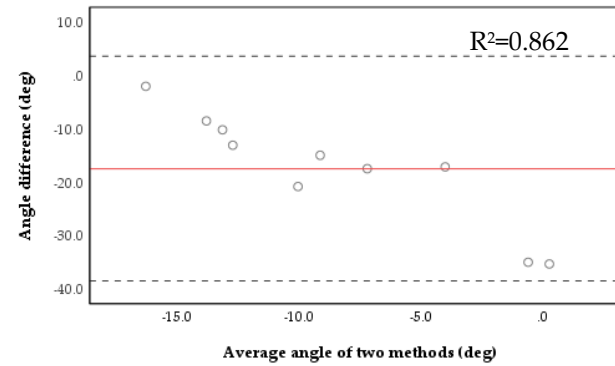
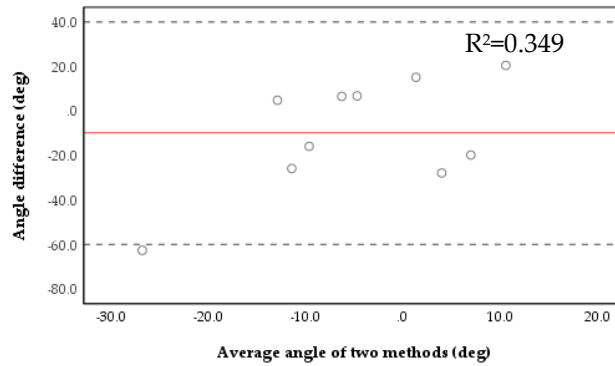
Minimum Hip internal/external rotation angle



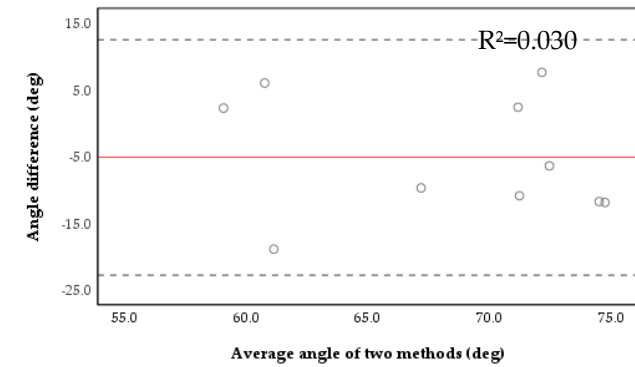
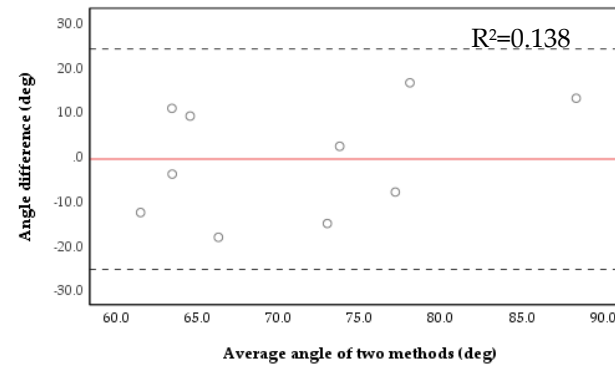
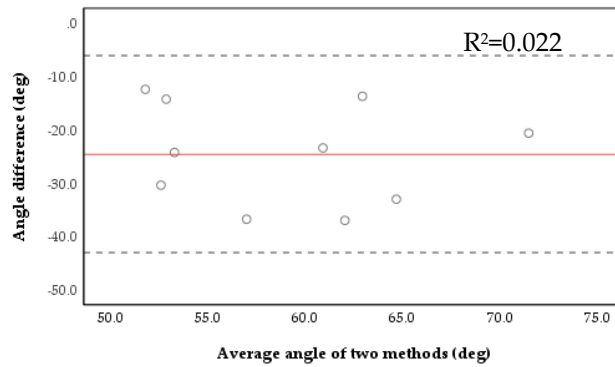
Hip internal/external rotation ROM



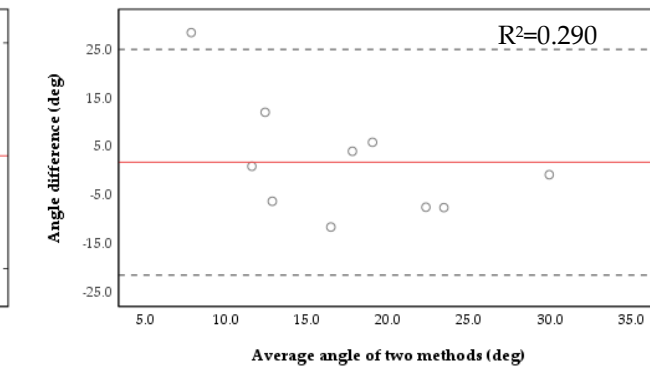
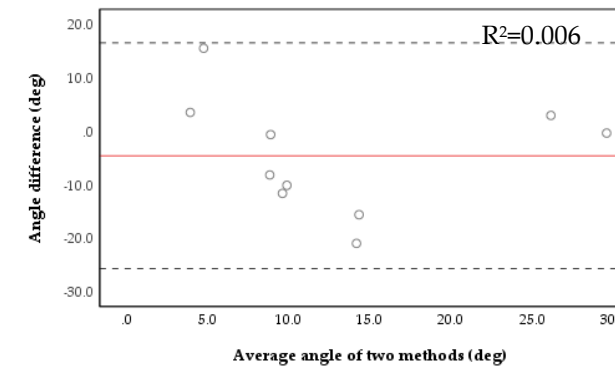
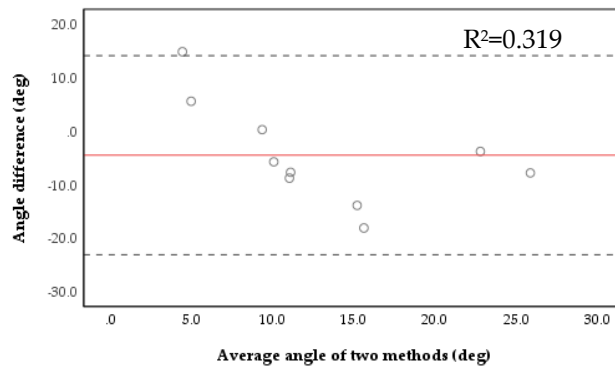
## Hip internal/external rotation at initial contact



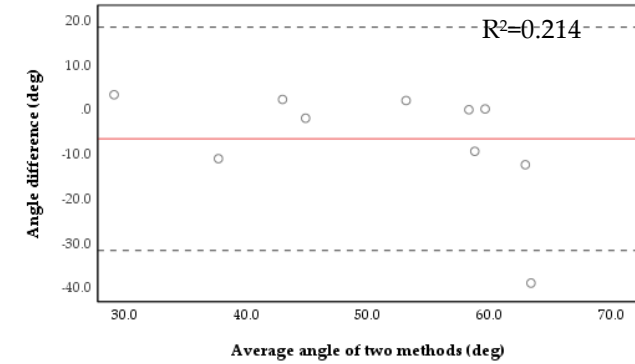
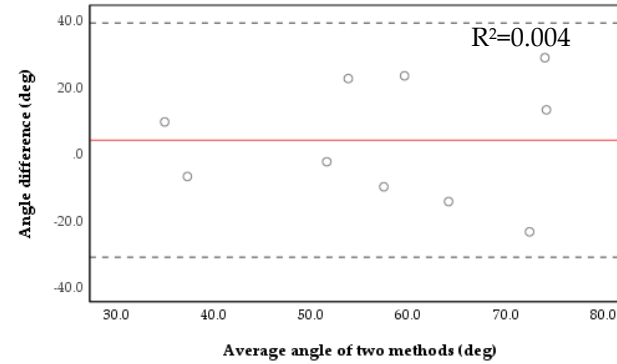
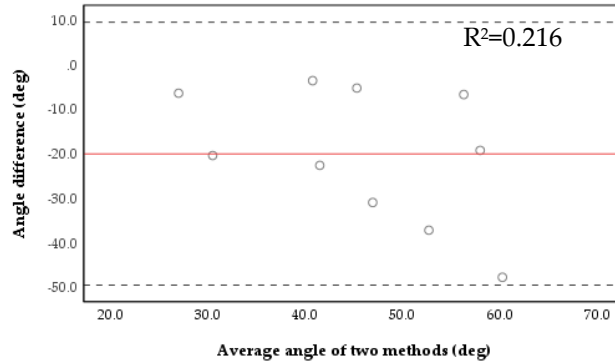
## Maximum Knee flexion/extension angle



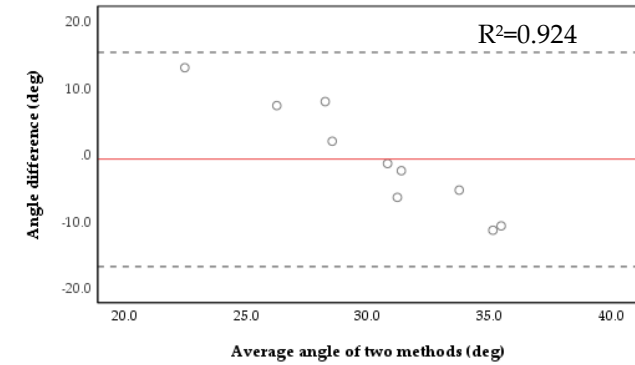
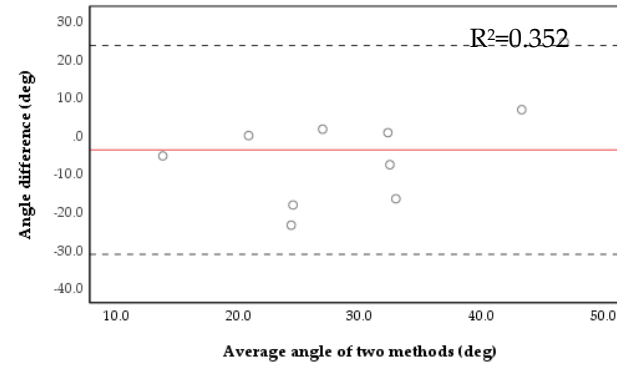
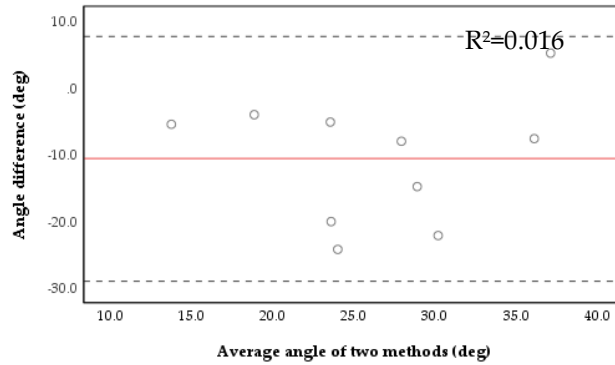
## Minimum Knee flexion/extension angle



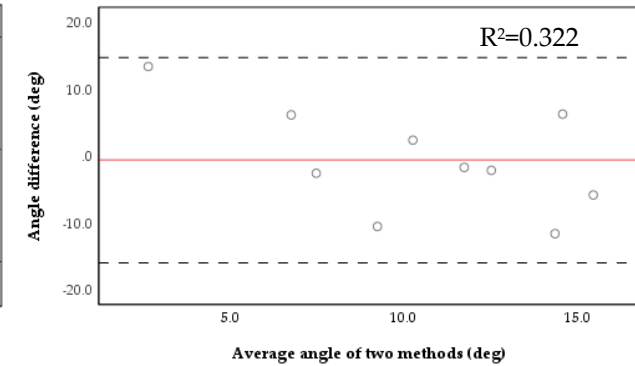
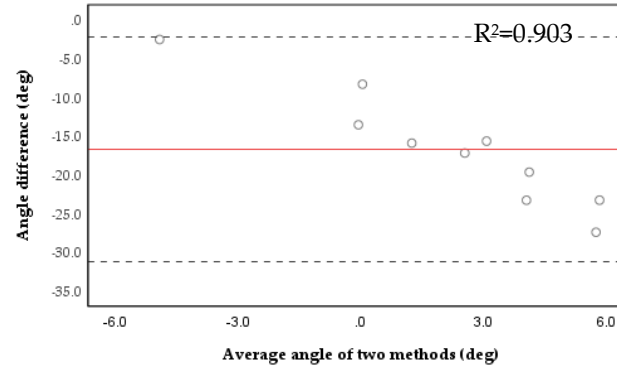
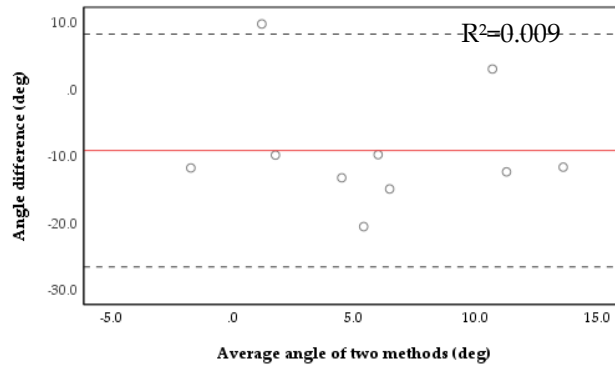
## Knee flexion/extension ROM



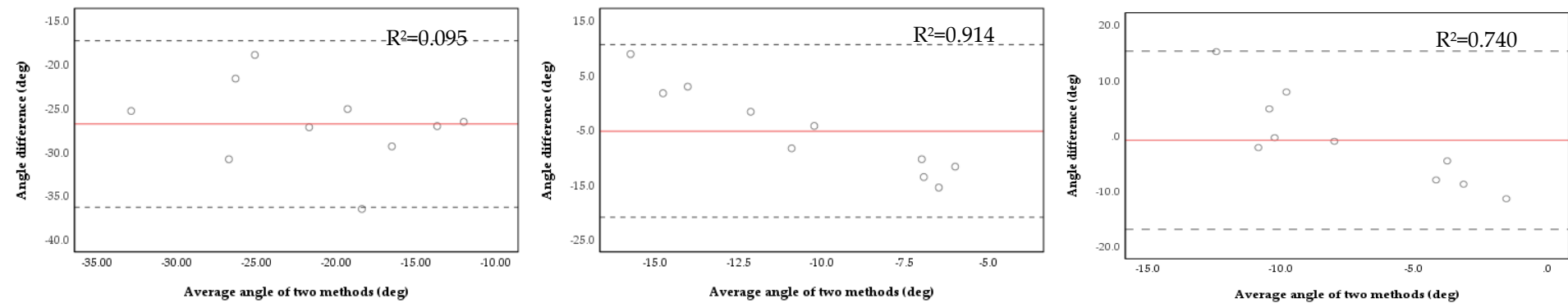
## Knee flexion/extension angle at initial contact



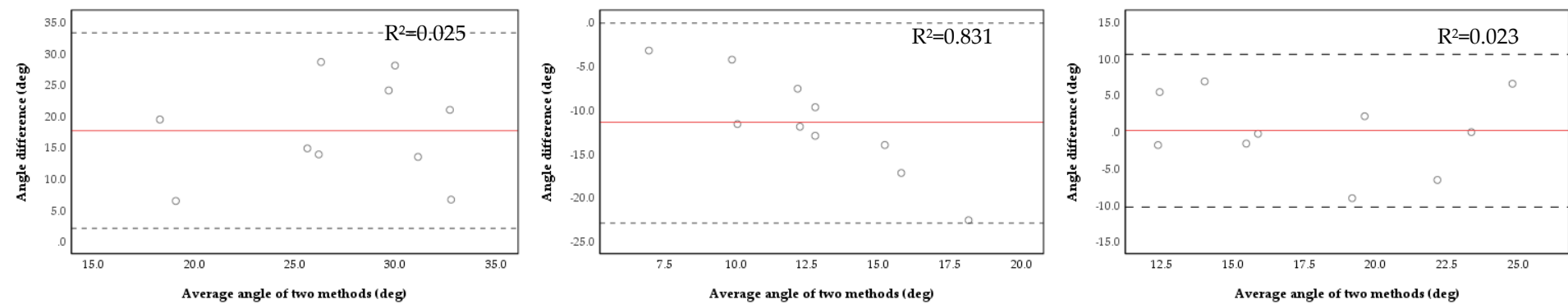
## Maximum Ankle dorsiflexion/plantarflexion angle



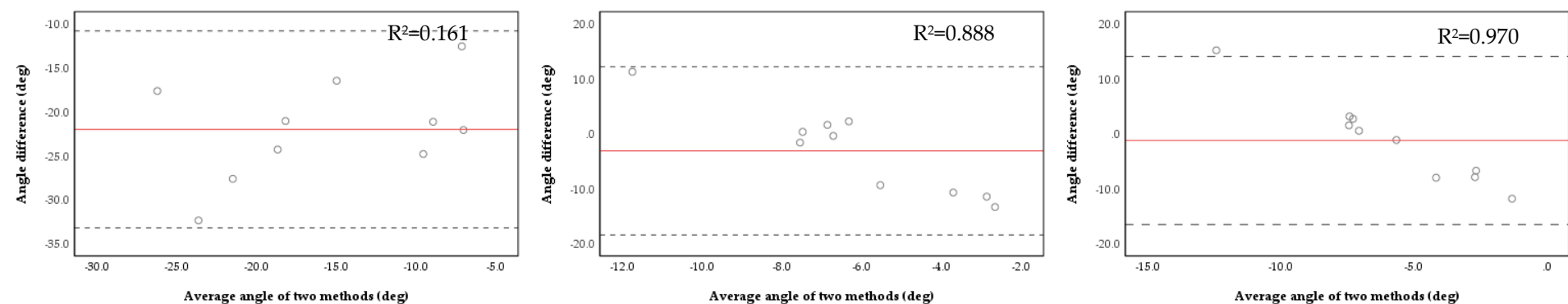
Minimum Ankle dorsiflexion/plantarflexion angle



Ankle dorsiflexion/plantarflexion ROM



Ankle dorsiflexion/plantarflexion at initial contact



**Figure 1S.** Bland-Altman plots with 95% limits of agreement (LoA). X axes represents the angle means of two systems and the Y axes represents the mean of differences. The red line (middle one) represents the reference line at mean, and the two dashed lines represent the upper and lower limit of agreement. From left to right, the plots are measurement differences between “Kinect vs. Motion Analysis”, “Kinect calibrated by linear regression vs. Motion Analysis” and “Kinect calibrated by LSTM vs Motion Analysis” respectively.

**Table S1.** Results of Bland-Altman analysis of agreement between joint kinematic parameter calculated from Kinect and Motion Analysis. Mean difference, limits of agreement (LoA), Lower LoA and Upper LoA are reported.

| Kinematic parameter                | Mean difference | LoA  | Lower LoA | Upper LoA |
|------------------------------------|-----------------|------|-----------|-----------|
| <b>Hip flexion/extension</b>       |                 |      |           |           |
| maximum                            | -15.5           | 18.8 | -34.3     | 3.4       |
| minimum                            | -22.4           | 22.2 | -44.6     | -0.2      |
| ROM                                | 6.9             | 19.9 | -12.9     | 26.8      |
| initial contact                    | -18.9           | 20.6 | -39.5     | 1.7       |
| <b>Hip adduction/abduction</b>     |                 |      |           |           |
| maximum                            | -12.5           | 6.5  | -19.0     | -6.0      |
| minimum                            | -9.2            | 10.7 | -19.9     | 1.5       |
| ROM                                | -3.3            | 10.2 | -13.6     | 6.9       |
| initial contact                    | -9.3            | 11.9 | -21.3     | 2.6       |
| <b>Hip int/external rotation</b>   |                 |      |           |           |
| maximum                            | -5.9            | 30.1 | -36.0     | 24.2      |
| minimum                            | -63.4           | 85.7 | -149.1    | 22.3      |
| ROM                                | 57.5            | 83.8 | -26.3     | 141.3     |
| initial contact                    | -9.8            | 49.8 | -59.6     | 40.0      |
| <b>Knee flexion/extension</b>      |                 |      |           |           |
| maximum                            | -24.6           | 18.4 | -43.0     | -6.1      |
| minimum                            | -4.5            | 18.6 | -23.1     | 14.1      |
| ROM                                | -20.1           | 29.5 | -49.6     | 9.5       |
| initial contact                    | -10.6           | 18.4 | -29.0     | 7.7       |
| <b>Ankle dorsi/plantar flexion</b> |                 |      |           |           |
| maximum                            | -9.2            | 17.4 | -26.6     | 8.2       |
| minimum                            | -26.8           | 9.5  | -36.3     | -17.3     |
| ROM                                | 17.7            | 15.6 | 2.1       | 33.3      |
| initial contact                    | -22.0           | 11.2 | -33.2     | -10.8     |

**Table S2.** Results of Bland-Altman analysis of agreement between joint kinematic parameter calculated from Kinect (calibrated by linear regression method) and Motion Analysis. Mean difference, limits of agreement (LoA), Lower LoA and Upper LoA are reported.

| Kinematic parameter              | Mean difference | LoA  | Lower LoA | Upper LoA |
|----------------------------------|-----------------|------|-----------|-----------|
| <b>Hip flexion/extension</b>     |                 |      |           |           |
| maximum                          | -2.3            | 9.3  | -20.5     | 15.8      |
| minimum                          | -5.5            | 11.0 | -27.0     | 16.0      |
| ROM                              | 3.2             | 9.6  | -15.6     | 22.0      |
| initial contact                  | -4.8            | 10.1 | -24.7     | 15.0      |
| <b>Hip adduction/abduction</b>   |                 |      |           |           |
| maximum                          | -2.4            | 3.4  | -9.2      | 4.3       |
| minimum                          | 2.1             | 5.0  | -7.8      | 12.0      |
| ROM                              | -4.5            | 5.2  | -14.8     | 5.7       |
| initial contact                  | 1.3             | 5.6  | -9.7      | 12.4      |
| <b>Hip int/external rotation</b> |                 |      |           |           |
| maximum                          | -18.9           | 8.8  | -36.2     | -1.7      |
| minimum                          | -14.0           | 10.3 | -34.1     | 6.1       |
| ROM                              | -4.9            | 5.4  | -15.4     | 5.6       |
| initial contact                  | -17.5           | 10.7 | -38.5     | 3.6       |

|                                    |       |      |       |      |
|------------------------------------|-------|------|-------|------|
| <b>Knee flexion/extension</b>      |       |      |       |      |
| maximum                            | -0.6  | 12.7 | -25.4 | 24.2 |
| minimum                            | -4.6  | 10.8 | -25.7 | 16.5 |
| ROM                                | 4.0   | 17.9 | -31.1 | 39.1 |
| initial contact                    | -3.8  | 14.0 | -31.2 | 23.6 |
| <b>Ankle dorsi/plantar flexion</b> |       |      |       |      |
| maximum                            | -16.7 | 7.4  | -31.2 | -2.2 |
| minimum                            | -5.2  | 8.0  | -20.9 | 10.6 |
| ROM                                | -11.5 | 5.8  | -22.9 | -0.1 |
| initial contact                    | -3.1  | 7.8  | -18.4 | 12.2 |

**Table S3.** Results of Bland-Altman analysis of agreement between joint kinematic parameter calculated from Kinect (calibrated by long short-term memory recurrent neural network) and Motion Analysis. Mean difference, limits of agreement (LoA), Lower LoA and Upper LoA are reported.

| Kinematic parameter                | Mean difference | LoA  | Lower LoA | Upper LoA |
|------------------------------------|-----------------|------|-----------|-----------|
| <b>Hip flexion/extension</b>       |                 |      |           |           |
| maximum                            | -3.1            | 10.1 | -22.8     | 16.7      |
| minimum                            | 5.9             | 13.0 | -19.6     | 31.5      |
| ROM                                | -9.0            | 9.6  | -27.9     | 9.9       |
| initial contact                    | -1.6            | 9.5  | -20.3     | 17.0      |
| <b>Hip adduction/abduction</b>     |                 |      |           |           |
| maximum                            | 0.4             | 5.4  | -10.2     | 11.0      |
| minimum                            | 0.5             | 4.9  | -9.1      | 10.1      |
| ROM                                | -0.1            | 7.1  | -14.1     | 13.9      |
| initial contact                    | 0.4             | 6.3  | -12.0     | 12.8      |
| <b>Hip int/external rotation</b>   |                 |      |           |           |
| maximum                            | 0.9             | 12.2 | -22.9     | 24.8      |
| minimum                            | -1.4            | 11.0 | -23.0     | 20.2      |
| ROM                                | 2.3             | 7.3  | -12.0     | 16.6      |
| initial contact                    | -0.1            | 11.6 | -22.9     | 22.7      |
| <b>Knee flexion/extension</b>      |                 |      |           |           |
| maximum                            | -5.1            | 9.0  | -22.8     | 12.5      |
| minimum                            | 1.6             | 11.8 | -21.6     | 24.8      |
| ROM                                | -6.7            | 12.8 | -31.8     | 18.4      |
| initial contact                    | -0.7            | 8.2  | -16.8     | 15.3      |
| <b>Ankle dorsi/plantar flexion</b> |                 |      |           |           |
| maximum                            | -0.6            | 7.8  | -16.0     | 14.7      |
| minimum                            | -0.8            | 8.2  | -16.9     | 15.3      |
| ROM                                | 0.2             | 5.3  | -10.3     | 10.6      |
| initial contact                    | -1.2            | 7.8  | -16.5     | 14.1      |