

Supplementary Materials

Supplementary Figure 1

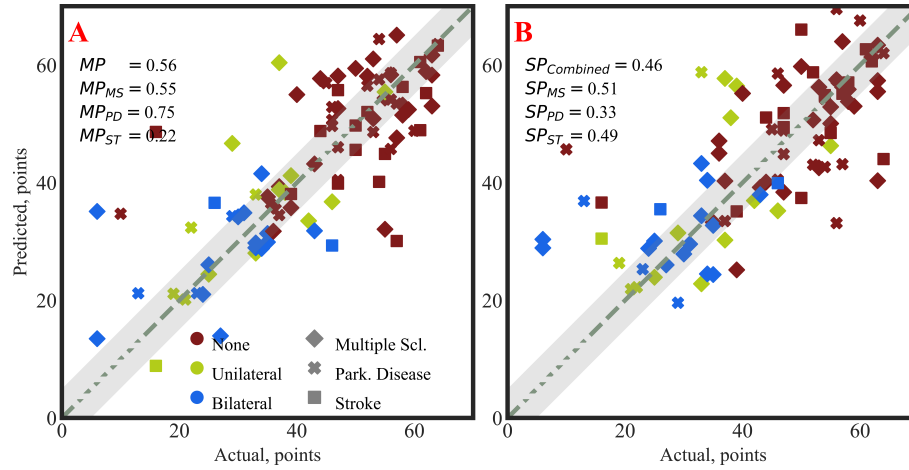


Figure 1: Model predictions with only 6MWT score and presence of an assistive device as training data. The pipeline used is the same to obtain Figure 2.

Supplementary Figure 2

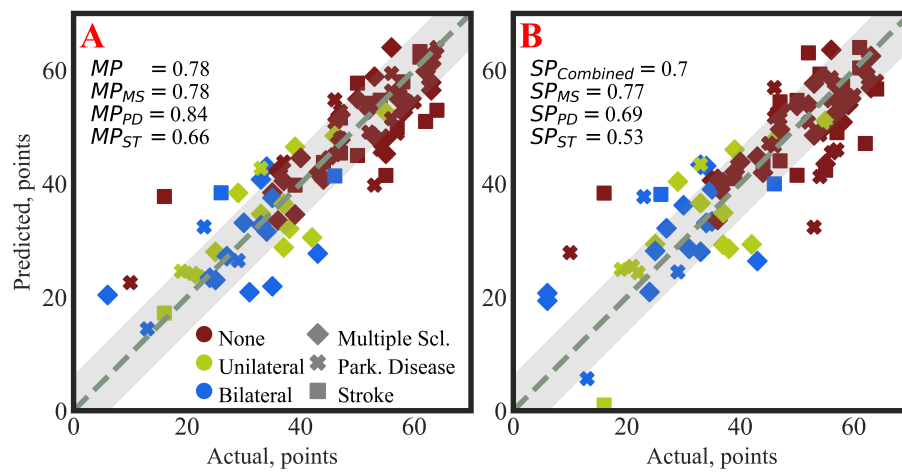


Figure 2: Model predictions with only IMU-related data. The pipeline used is the same to obtain Figure 2.

Supplementary Table 1

Group comparison between IMU-derived features across different pathological groups (MS, ST, and PD). The test adopted is the Kruskal-Wallis test with grouping variable set to the pathological group and independent variable set to the IMU-derived feature.

Variable Name	χ	p-value
6MWT	1.959	0.376
T _{stride}	4.367	0.113
T_{swing}	6.657	0.036
T_{d,support}	8.135	0.017
T_{s,support}	10.556	0.005
T_{step}	10.694	0.005
Step Regularity_{ap}	8.486	0.014
Stride Regularity_{ap}	6.611	0.037
Step Regularity _{ml}	3.649	0.161
Stride Regularity_{ml}	10.043	0.007
Step Regularity_{vt}	6.070	0.048
Stride Regularity_{vt}	9.773	0.008
CV _{T, stride}	3.111	0.211
CV _{T, step}	3.056	0.217
iHR _{ap}	5.476	0.065
iHR _{ml}	5.650	0.059
iHR _{vt}	3.975	0.137
Lyapunov step_{ap}	11.398	0.003
Lyapunov step _{ml}	1.550	0.461
Lyapunov step _{vt}	0.225	0.893
RMS Acc. _{ap}	0.626	0.731
RMS Acc. _{ml}	5.505	0.064
RMS Acc. _{vt}	1.703	0.427
Log. Norm. Jerk _{ap}	0.122	0.941
Log. Norm. Jerk _{ml}	1.059	0.589
Log. Norm. Jerk _{vt}	5.394	0.067

Legend. 6MWT: 6-Minutes Walk Test; T: Time; CV: Coefficient of Variation; RMS: Root Mean Square; AP: Antero-Posterior; ML: Medio-Lateral; VT: Vertical.