

Appendix 1:

The 4 outcome groups (fall, non-fall, skate-over, and walk-over) were not independent due to the nature of our study. In order to verify whether the four slip conditions are independent from each other regardless of whether the individuals are the same or different. Paired and independent t-tests were conducted to compare differences in the studied variables between different slip outcomes which involved the same participants. For the same participants in different groups, paired t-test was used, while for different participants in different groups, independent t-test was used.

The participants chosen to study fall were completely independent from those chosen to study non-fall, and the participants chosen to study walk-over were completely independent from those chosen to study skate-over. Therefore, these two pairs of comparisons meet the requirement of independence. However, the other comparisons did involve some of the same participants to study different slip outcomes. Specifically, for fall and skate-over, 17 participants were the same; for fall and walk-over, 14 were the same; for non-fall and walk-over, 17 were the same, and for non-fall and skate-over, 15 were the same.

Note: only the results for key factors discussed in the manuscript were showed here. MP denotes mid-proactive phase; LP denotes late-proactive phase; ER denotes early-reactive phase.

Shank angle in LP	Dependent participants		Independent participants	
	Sample size	p value	Sample size	p value
fall vs skate-over	17 vs 17	<0.001	14 vs 17	0.024
fall vs walk-over	14 vs 14	<0.001	17 vs 16	<0.001
non-fall vs skate-over	17 vs 17	<0.001	23 vs 17	0.012
non-fall vs walk-over	15 vs 15	<0.001	25 vs 14	<0.001

Shank angle in ER	Dependent participants		Independent participants	
	Sample size	p value	Sample size	p value
fall vs skate-over	17 vs 17	<0.001	14 vs 17	<0.001
fall vs walk-over	14 vs 14	<0.001	17 vs 16	<0.001
non-fall vs skate-over	17 vs 17	<0.001	23 vs 17	<0.001
non-fall vs walk-over	15 vs 15	<0.001	25 vs 14	<0.001

Knee moment in MP	Dependent participants		Independent participants	
	Sample size	p value	Sample size	p value
fall vs skate-over	17 vs 17	<0.001	14 vs 17	0.031
fall vs walk-over	14 vs 14	0.002	17 vs 16	<0.001
non-fall vs skate-over	17 vs 17	<0.001	23 vs 17	0.002
non-fall vs walk-over	15 vs 15	0.001	25 vs 14	<0.001

Ankle moment in ER	Dependent participants		Independent participants	
	Sample size	p value	Sample size	p value
fall vs skate-over	17 vs 17	<0.001	14 vs 17	0.006
fall vs walk-over	14 vs 14	<0.001	17 vs 16	<0.001
non-fall vs skate-over	17 vs 17	<0.001	23 vs 17	0.017
non-fall vs walk-over	15 vs 15	0.011	25 vs 14	<0.001