Journal of the Royal Society Interface, 2019

Humans falling in holes: Adaptations in lower-limb joint mechanics in response to a rapid change in substrate height during human hopping

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Supplementary Table 1. Summary of statistical results

peak ankle plantarflexion angle			
full model	lme(ank_ang~hop*height, random = subject)		
	hop	$f_{1,45}$= 0.155	p=0.695
	height	$f_{2,45}$= 6.112	p=0.004*
	hop*height	$f_{2,,45}$= 4.225	p=0.021*
height=20	hop	$f_{1,9}$= 4.451	p=0.064
height=10	hop	$f_{1,9}$= 0.002	p=0.967
height=5	hop	$f_{1,9}$= 8.023	p=0.019*
peak ankle dorsiflexion angle			
full model	lme(ank_ang~hop*height, random = subject)		
	hop	$f_{1,45}$= 3.376	p=0.073
	height	$f_{2,45}$= 4.767	p=0.013*
	hop*height	$f_{2,,45}$= 1.222	p=0.12
peak knee extension angle			
full model	lme(knee_ang~hop*height, random = subject)		
	hop	$f_{1,45}$= 0.663	p=0.419
	height	$f_{2,45}$= 1.589	p=0.212
	hop*height	$f_{2,,45}$= 1.463	p=0.242
peak knee flexion angle			
full model	lme(knee_ang~hop*height, random = subject)		
	hop	$f_{1,45}$= 1.559	p=0.218
	height	$f_{2,45}$= 8.488	p<0.001*
	hop*height	$f_{2,,45}$= 7.156	p=0.002*
height=20	hop	$f_{1,9}$= 5.692	p=0.041*
height=10	hop	$f_{1,9}$= 0.009	p=0.927
height=5	hop	$f_{1,9}$= 10.701	p=0.01*
peak hip extension angle			
full model	lme(hip_ang~hop*height, random = subject)		
	hop	$f_{1,45}$= 1.472	p=0.232
	height	$f_{2,45}$= 0.007	p=0.994
	hop*height	$f_{2,,45}$= 1.527	p=0.229
peak hip flexion angle			
full model	lme(hip_ang~hop*height, random = subject)		

	hop	$f_{1,45}$= 2.800	p=0.101
	height	$f_{2,45}$= 1.366	p=0.265
	hop*height	$f_{2,,45}$= 6.187	p=0.004*
height=20	hop	$f_{1,9}$= 10.834	p=0.009*
height=10	hop	$f_{1,9}$= 0.013	p=0.912
height=5	hop	$f_{1,9}$= 0.684	p=0.429
ankle moment			
full model	lme(ank_mom~hop*height, random = subject)		
	hop	$f_{1,45}$= 81.103	p<0.001*
	height	$f_{2,45}$= 1.048	p=0.359
	hop*height	$f_{2,,45}$= 0.713	p=0.495
knee moment			
full model	lme(knee_mom~hop*height, random = subject)		
	hop	$f_{1,45}$= 0.269	p=0.606
	height	$f_{2,45}$= 1.-26	p=0.366
	hop*height	$f_{2,,45}$= 2.962	p=0.062
hip moment			
full model	lme(hip_mom~hop*height, random = subject)		
	hop	$f_{1,45}$= 20.620	p<0.001*
	height	$f_{2,45}$= 1.981	p=0.150
	hop*height	$f_{2,,45}$= 0.2.066	p=0.139
positive ankle power			
full model	lme(ankpow_pos~hop*height, random = subject)		
	hop	$f_{1,45}$= 41.452	p<0.001*
	height	$f_{2,45}$= 1.758	p=0.187
	hop*height	$f_{2,,45}$= 0.036	p=0.965
negative ankle power			
full model	lme(ankpow_neg~hop*height, random = subject)		
	hop	$f_{1,45}$= 58.476	p<0.001*
	height	$f_{2,45}$= 6.641	p<0.001*
	hop*height	$f_{2,,45}$= 8.530	p<0.001*
height=20	hop	$f_{1,9}$= 18.370	p=0.003*
height=10	hop	$f_{1,9}$= 76.781	p<0.001*
height=5	hop	$f_{1,9}$= 66.226	p<0.001*
net ankle power			
full model	lme(ankpow_net~hop*height, random = subject)		
	hop	$f_{1,45}$= 20.779	p<0.001*
	height	$f_{2,45}$= 8.316	p<0.001*

	hop*height	$f_{2,,45}$= 7.542	p=0.002*
height=20	hop	$f_{1,9}$= 12.564	p=0.008*
height=10	hop	$f_{1,9}$= 13.845	p=0.006*
height=5	hop	$f_{1,9}$= 0.186	p=0.677
positive knee power			
full model	lme(kneepow_pos~hop*height, random = subject)		
	hop	$f_{1,45}$= 0.513	p=0.478
	height	$f_{2,45}$= 0.599	p=0.554
	hop*height	$f_{2,,45}$= 0.555	p=0.578
negative knee power			
full model	lme(kneepow_neg~hop*height, random = subject)		
	hop	$f_{1,45}$= 4.536	p=0.039*
	height	$f_{2,45}$= 2.262	p=0.117
	hop*height	$f_{2,,45}$= 3.104	p=0.046*
height=20	hop	$f_{1,9}$= 5.695	p=0.044*
height=10	hop	$f_{1,9}$= 0.412	p=0.539
height=5	hop	$f_{1,9}$= 0.079	p=0.785
net knee power			
full model	lme(kneepow_net~hop*height, random = subject)		
	hop	$f_{1,45}$= 4.590	p=0.038*
	height	$f_{2,45}$= 1.611	p=0.212
	hop*height	$f_{2,,45}$= 2.437	p=0.1
positive hip power			
full model	lme(hippow_pos~hop*height, random = subject)		
	hop	$f_{1,45}$= 14.759	p<0.001*
	height	$f_{2,45}$= 0.370	p=0.693
	hop*height	$f_{2,,45}$= 0.080	p=0.923
negative hip power			
full model	lme(hippow_neg~hop*height, random = subject)		
	hop	$f_{1,45}$= 4.979	p=0.031*
	height	$f_{2,45}$= 2.043	p=0.143
	hop*height	$f_{2,,45}$= 2.141	p=0.131
net hip power			
full model	lme(hippow_net~hop*height, random = subject)		
	hop	$f_{1,45}$= 1.697	p=0.200
	height	$f_{2,45}$= 3.407	p=0.043*
	hop*height	$f_{2,,45}$= 2.900	p=0.066

Dick et al., (2019) *Interface*. Humans falling in holes: Adaptations in lower-limb joint mechanics in response to a rapid change in substrate height during human hopping

For all analyses, a within subject design was used, including subject as random factor using the lme.r function from the nlme package (pinheiro et al., 2017) in r (v3.4.3, vienna, austria). To examine variation in joint angles, joint moments, and joint powers between factors (hop cycle ([hop]: p-1, p, p+1; drop [height]: 5cm, 10cm, 20cm) we specified the model with lme.r function, and then used glht.r function from the multcomp package (hothorn et al., 2008) to perform tukey post-hoc tests where appropriate differences were considered significant at the $p<0.05$ level.