

SUPPLEMENTARY TABLE S1. IMPACT KINEMATICS AND EXPOSURE

		Kinematics			Impact Exposure			Predicted Brain Measures	
		Peak Linear Acceleration	Δ Angular Velocity	Peak Angular Acceleration	Number of Impacts	Average Impact Linear Acceleraiton	Maximum Impact Duration	Δ Brain Surface Displacement	Peak Brain Surface Velocity
Subject A	Ride 1	4.1g	7.0 rad/s	200 rad/s ²	41	3.4 ± 0.3g	103ms	2.3mm	96mm/s
	Ride 2	6.7g	7.3 rad/s	210 rad/s ²	45	4.0 ± 0.8g	106ms	3.6mm	97mm/s
	Ride 3	4.3g	6.2 rad/s	150 rad/s ²	31	3.5 ± 0.4g	63ms	2.1mm	74mm/s
	Running	2.4g	3.3 rad/s	70 rad/s ²	0	--	--	0.7mm	52mm/s
	Soccer Header	10g	5.6 rad/s	1100 rad/s ²	--	--	--	4.2mm	100mm/s
Subject B	Ride 1	6.3g	7.3 rad/s	230 rad/s ²	113	3.7 ± 0.7g	327ms	3.3mm	89mm/s
	Ride 2	8.0g	9.9 rad/s	290 rad/s ²	117	4.1 ± 1.0g	162ms	4.0mm	97mm/s
	Ride 3	5.0g	6.3 rad/s	240 rad/s ²	52	3.6 ± 0.5g	174ms	2.0mm	71mm/s
	Running	3.6g	3.7 rad/s	70 rad/s ²	23	3.2 ± 0.1g	123ms	1.5mm	64mm/s
	Soccer Header	--	--	--	--	--	--	--	--
	Football	22g	8.1 rad/s	930 rad/s ²	--	--	--	3.2mm	252mm/s

Peak linear accelerations, changes in angular velocity, peak angular accelerations, number of impacts, and brain surface displacements for Subjects A and B during three roller coaster rides, running, and average soccer headers, and, for comparison, during 10th percentile football impact.