

Table S1. Surfer, Surfboard, and Surfing Fin Specifications

	Participant 1	Participant 2	Participant 3	Participant 4
Skill level ranking per [7]	6	7	8	9
Participant age(years)	17	21	32	-
Ranking description per [7]	Intermediate, skills of 5, plus able to execute occasional advanced maneuvers	Expert, able to execute advanced maneuvers and surf waves > 4.0 m	Expert, skills of 7, plus able to execute multiple advanced maneuvers on waves > 4.0 m	Top 44 surfers in world
Control fin make/model	Tokoro Honeycomb/Futures Fins LLC	NA	AM2 Honeycomb/Futures Fins LLC	-
Control center fin: base length/height/area(mm/mm/mm ²)	115/116/9,445	NA	118/114/9,884	-
Control thruster fin: base length/height/area (mm/mm/mm ²)	115/116/9,445	NA	118/120/10,300	-
RW Center fin: base length/height/area(mm/mm/mm ²)	114/116/9340	114/116/10,452	114/116/10,452	-
RW 5° cant thruster fin: base length/height/area (mm/mm/mm ²)	114/116/9479	114/116/9479	114/116/9479	-
Surfboard make/model	Eric Arakawa Amplifire	Schaper Pro Model	Eric Arakawa Scream	-
Surfboard length/width/thickness (cm), [volume in L]	178/47/6.0 [25.9]	185/48/6.3 [29.7]	188/50/6.7 or 198/48/7.0 [33.0]	-
Surfer + board moment of inertia, calculated per Gately et al [5], (kg m ²)	20.6	28.5	30.9-33.9	26
Surfer mass (kg)	73	93.2	98	~87.6