

Table 1. Agreement between ECG- and WHOOP-derived Heart Rate (bpm)

Analysis	ECG	Agreement	Filter Strength					WHOOP filter
			None	Low	Medium	Strong	Very Strong	
Time matched; SWS detected by WHOOP	58.06±4.16	WHOOP	58.04±4.14	58.03±4.14	58.04±4.13	58.03±4.13	58.00±4.15	57.82±4.12*
		Bias	-0.02±0.18 ^w	-0.02±0.18 ^w	-0.02±0.19 ^w	-0.02±0.19 ^w	-0.05±0.19 ^w	-0.23±0.21 ^{n,l,m,s,vs}
		Residual	0.21±0.15 ^{vs,w}	0.22±0.14 ^w	0.22±0.14	0.22±0.15	0.24±0.14 ⁿ	0.27±0.15 ^{n,l}
		LOA	±0.71	±0.71	±0.72	±0.72	±0.74	±0.81
		%Bias	-0.03±0.37 ^w	-0.03±0.37 ^w	-0.02±0.37 ^w	-0.03±0.37 ^w	-0.09±0.39 ^w	-0.39±0.38 ^{n,l,m,s,vs}
		%Residual	0.41±0.30 ^{vs,w}	0.42±0.30 ^w	0.43±0.30 ^w	0.42±0.30 ^w	0.47±0.30 ⁿ	0.52±0.30 ^{n,l,m,s}
		%LOA	±1.43	±1.43	±1.44	±1.44	±1.52	±1.56
		ICC	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)
Time matched; SWS detected by PSG	58.90±3.98	WHOOP	58.93±4.00	58.93±4.00	58.93±4.00	58.93±3.99	58.88±4.02	58.74±4.03*
		Bias	0.03±0.12 ^w	0.03±0.12 ^w	0.03±0.12 ^w	0.03±0.12 ^w	-0.03±0.14 ^w	-0.16±0.13 ^{n,l,m,s,vs}
		Residual	0.14±0.09	0.14±0.09	0.14±0.10	0.13±0.10	0.17±0.10	0.17±0.09
		LOA	±0.46	±0.45	±0.48	±0.46	±0.53	±0.50
		%Bias	0.04±0.22 ^w	0.04±0.22 ^w	0.04±0.23 ^w	0.05±0.22 ^w	-0.06±0.25 ^w	-0.29±0.24 ^{n,l,m,s,vs}
		%Residual	0.25±0.17	0.25±0.17	0.25±0.19	0.23±0.18	0.32±0.19	0.33±0.16
		%LOA	±0.84	±0.83	±0.89	±0.85	±0.97	±0.92
		ICC	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.00)

ECG, electrocardiogram; ICC, intraclass correlation coefficient; LOA, limits of agreement; PSG, polysomnography; SWS, slow wave sleep; *, significant difference between ECG- and WHOOP-derived HR (P<0.05); vs, significantly different from Very Strong filter (P<0.05); s, significantly different from Strong filter (P<0.05); m, significantly different from Medium filter (P<0.05); l, significantly different from Low filter (P<0.05); w, significantly different from WHOOP proprietary filter (P<0.05). Data are presented as mean ± 95% confidence interval. Bias is calculated as WHOOP value minus ECG value. %Bias is calculated as bias as a percentage of ECG value.