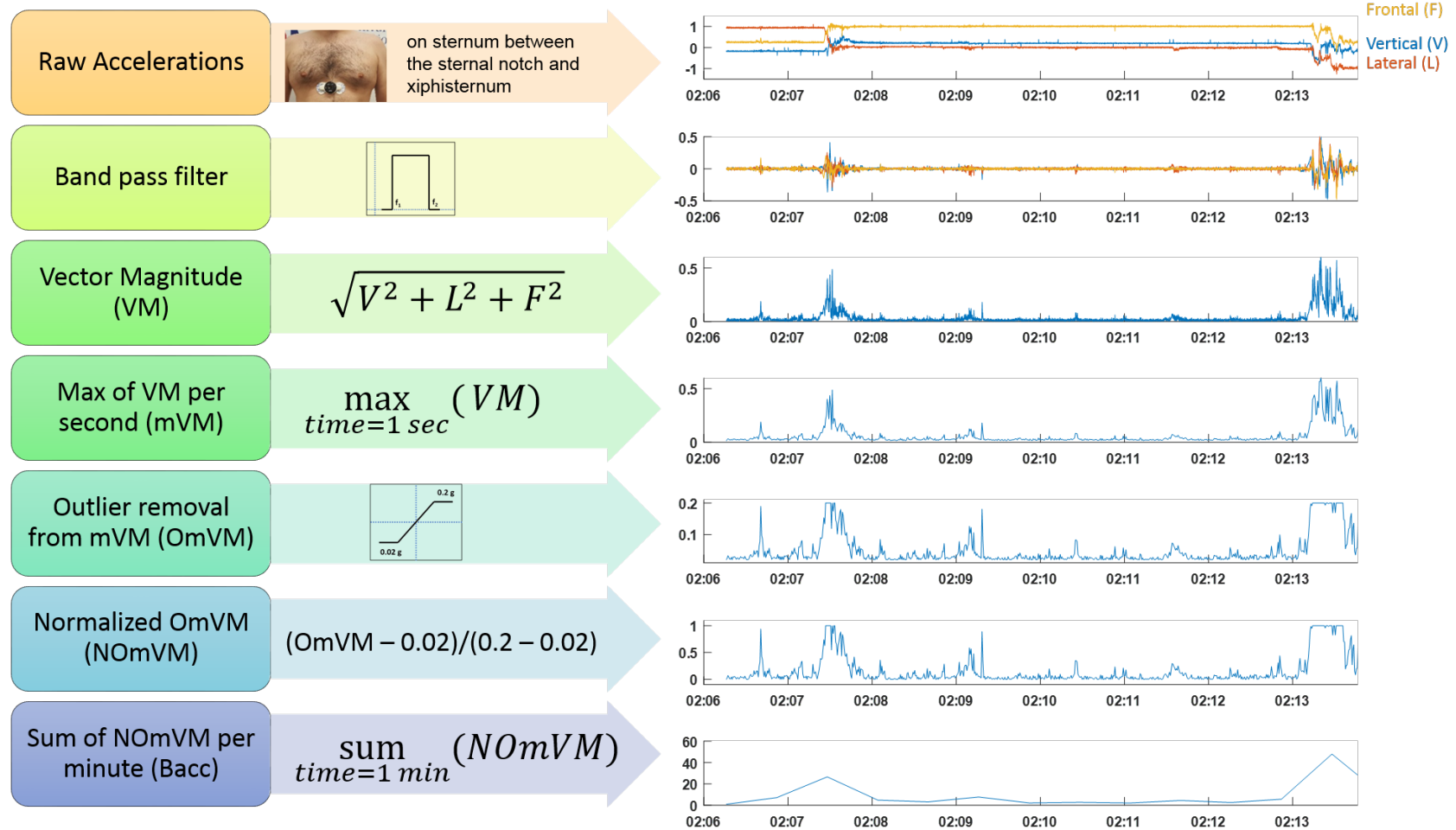
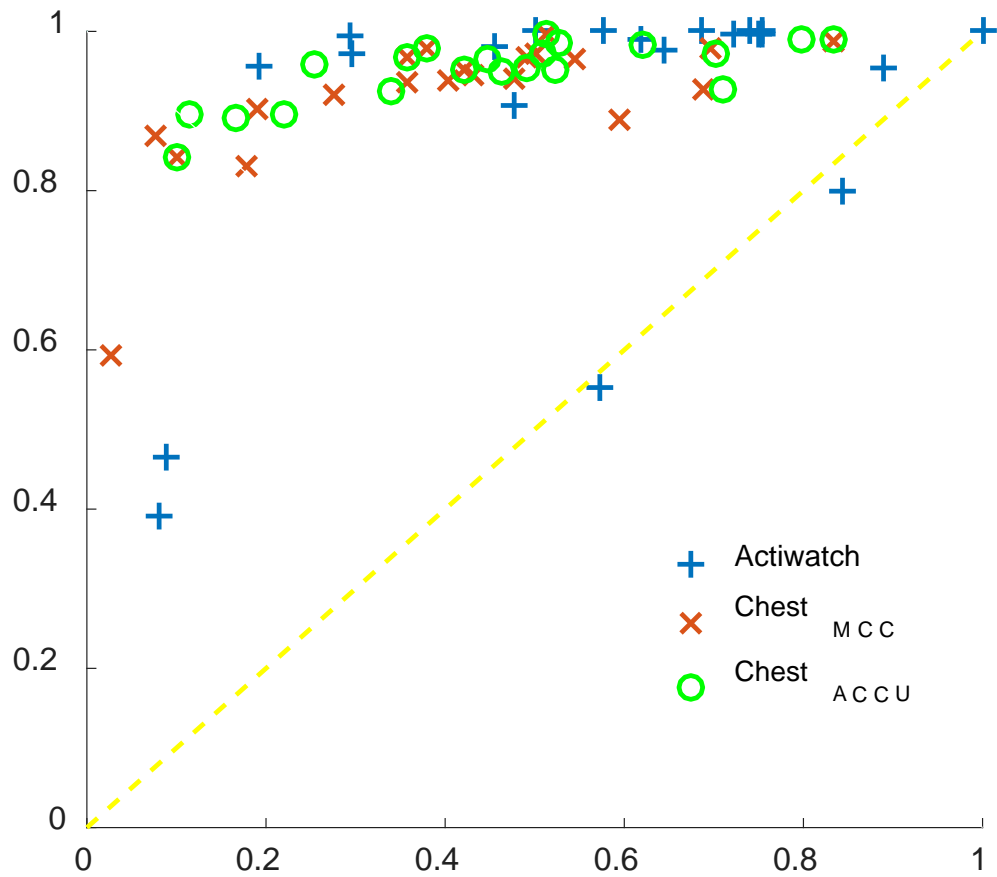


**Figure S1**



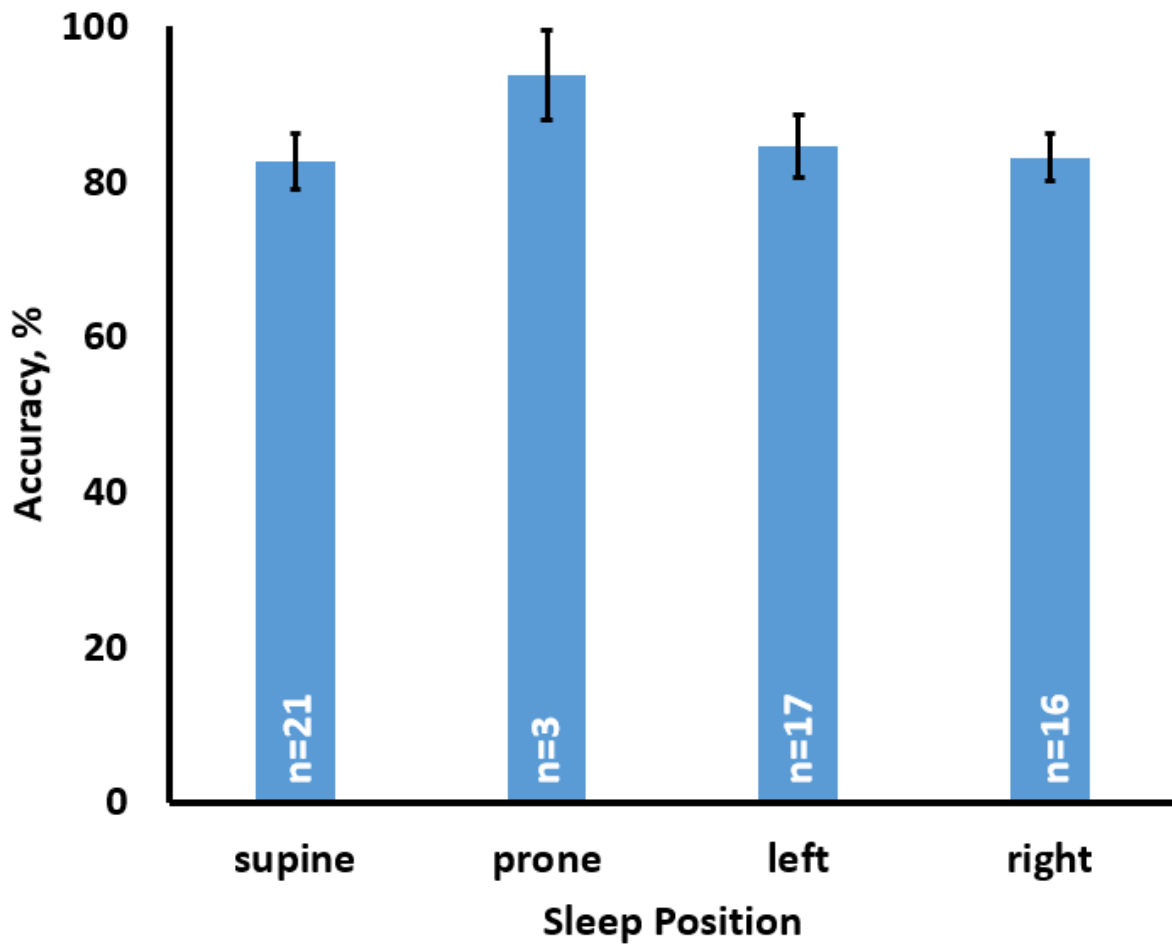
The preprocessing steps applied to the raw accelerations data: 1) the sensor placed on chest and raw data recorded, 2) the raw signal passed through bandpass filter, 3) the vector magnitude (VM) calculated, 4) maximum of VM (mVM) calculated for each second, 5) the outliers removed from the mVM signal (OmVM), 6) the OmVM signal passed through a normalization process, 7) finally, the sum of values calculated for each minute.

Figure S2



The sensitivity and 1-specificity data from each participants plotted for the wrist worn sensor (Actiwatch), and chest worn sensor (threshold determined based on Matthew correlation coefficients, Chest<sub>MCC</sub>; threshold determined based on accuracy, Chest<sub>ACCU</sub>). The Actiwatch has blue plus, the Chest<sub>MCC</sub> has red cross, and the chest<sub>ACCU</sub> has green circle.

Figure S3



The accuracy of chest-worn sensor compared to PSG (Gold Standard) remains high in various body positions. The numbers in the barograph showed the prevalence of the specific sleep posture among the participants.

**Table S1**

Agreement between the wearable sensors and the polysomnography based on Bland-Altman analysis.							
	Epoch	TST, min		WASO, min		SE, %	
		mean±SD	95%LOA	mean±SD	95%LOA	mean±SD	95%LOA
Chest <sub>MCC</sub>	1 min	-2.8±48.6	-98.6;92.0	-4.2±43.1	-88.3;80.6	1.1±10.5	-19.7;21.4
Chest <sub>ACCU</sub>		-16.9±34.9	-85.5;51.0	7.3±29.9	-51.0;65.9	-1.9±7.4	-16.4;12.3
Wrist		-43.8±95.7	-210.2;136.6	-9.5±95.5	-193.0;178.8	-0.2±20.4	-40.1;39.5
Chest <sub>MCC</sub>	30 sec	-7.2±38.9	-83.4;69.0	-1.0±31.8	-63.3;61.3	0.1±7.8	-15.2;15.4
Chest <sub>ACCU</sub>		-15.1±31.3	-30.5;-28.9	4.58±26.2	-46.8;55.9	-1.4±6.4	-13.9;11.1

TST = total sleep time, WASO = wake after sleep onset, SE = sleep efficiency, SD = standard deviation, 95%LOA = 95% limits of agreement (average difference ± 1.96 standard deviation of the difference).

Wrist = wrist-worn sensor, Chest<sub>MCC</sub> = chest-worn sensor optimized based on Matthew's correlation coefficients, Chest<sub>ACCU</sub> = chest-worn sensor optimized based on accuracy.

**Table S2**

The Spearman correlation (denoted as 'rho') between subjective (i.e. Pittsburg Sleep Quality Index: PSQI) and objective (i.e. PSG, Chest<sub>MCC</sub>, and Chest<sub>ACCU</sub>) sleep parameters of interest.

	Sleep Parameters	vs. PSQI rho (p-value)
PSG	SOL	0.23(0.321)
	TST	0.17(0.460)
	WASO	-0.06(0.797)
	SE	0.13(0.588)
Chest <sub>MCC</sub>	SOL	0.25(0.275)
	TST	-0.13(0.577)
	WASO	0.28(0.225)
	SE	-0.28(0.225)
Chest <sub>ACCU</sub>	SOL	-0.29(0.205)
	TST	0.18(0.428)
	WASO	0.21(0.365)
	SE	-0.18(0.437)

SOL = sleep onset latency, TST = total sleep time, WASO = wake after sleep onset, SE = sleep efficiency, rho = linear correlation calculated by Spearman approach.

Chest<sub>MCC</sub> = chest-worn sensor optimized based on Matthew's correlation coefficients, Chest<sub>ACCU</sub> = chest-worn sensor optimized based on accuracy.

PSQI = Pittsburg Sleep Quality Index.