

1. COMPARISON VENTO VS FLUTTER (experimental data)

Resistance 1 (R=1, small 'low resistance' ball); Resistance 1 (R=2, standard ball)

Table 1: Mean PEP (cm H₂O)

Flow (L/min)	0° Angle			30° Angle		20° Angle
	Resolve		Flutter ^a	Resolve		Flutter
	Resistance 1	Resistance 2		Resistance 1	Resistance 2	
5	4.9 ± 0.0	6.0 ± 0.0	6.2 ± 0.02	9.6 ± 0.2	11.1 ± 0.1	-
15	5.4 ± 0.1	6.5 ± 0.1	7.1 ± 0.03	9.3 ± 0.0	10.9 ± 0.1	-
25	6.3 ± 0.1	7.7 ± 0.1		10.7 ± 0.1	12.4 ± 0.1	11.5 ± 0.05 ^b

Table 2: Peak PEP (cm H₂O)

Flow (L/min)	0° Angle			30° Angle		20° Angle
	Resolve		Flutter ^a	Resolve		Flutter
	Resistance 1	Resistance 2		Resistance 1	Resistance 2	
5	9.6 ± 0.1	10.9 ± 0.1	9.3 ± 0.16	12.8 ± 0.1	15.2 ± 0.2	-
15	18.0 ± 0.0	20.0 ± 0.0	19.3 ± 0.01	18.8 ± 0.0	22.2 ± 0.1	-
25	26.8 ± 0.1	29.3 ± 0.1		26.8 ± 0.0	31.4 ± 0.2	21.8 ± 0.12 ^b

Table 3: Amplitude PEP (Peak – Nadir)

Flow (L/min)	0° Angle			30° Angle		20° Angle
	Resolve		Flutter ^a	Resolve		Flutter
	Resistance 1	Resistance 2		Resistance 1	Resistance 2	
5	8.5 ± 0.1	9.1 ± 0.1	5.9 ± 0.7	5.9 ± 0.4	7.2 ± 0.1	-
15	17.6 ± 0.0	19.4 ± 0.1	17.9 ± 0.8	16.5 ± 0.1	19.8 ± 0.3	-
25	24.1 ± 0.8	27.5 ± 0.5		24.9 ± 0.1	29.6 ± 0.2	25.0 ± 2.1 ^b

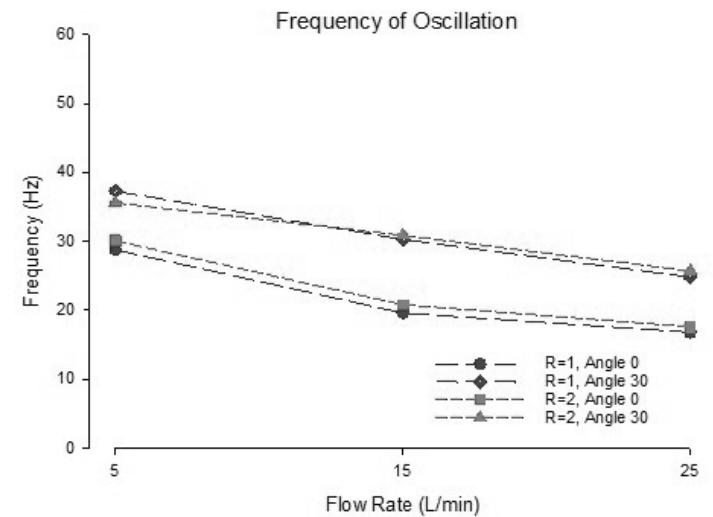
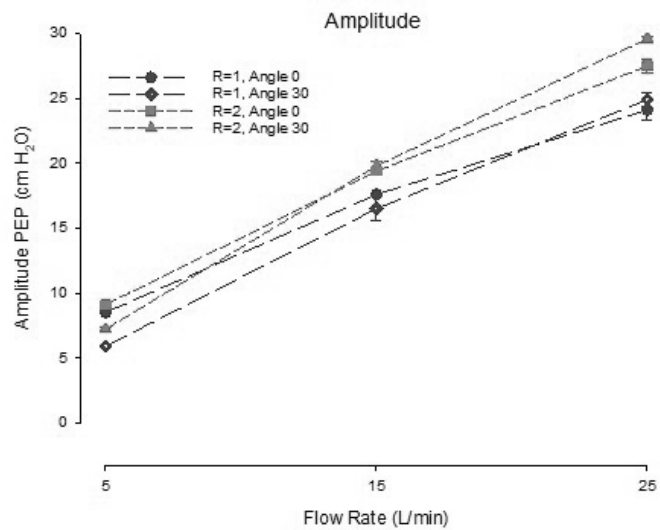
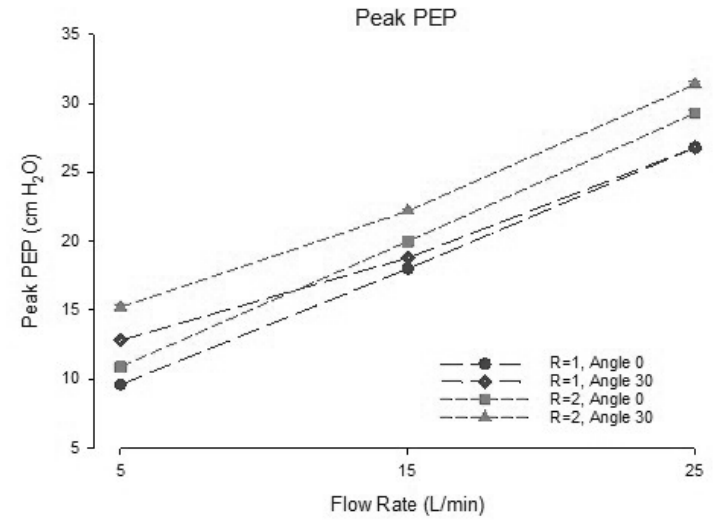
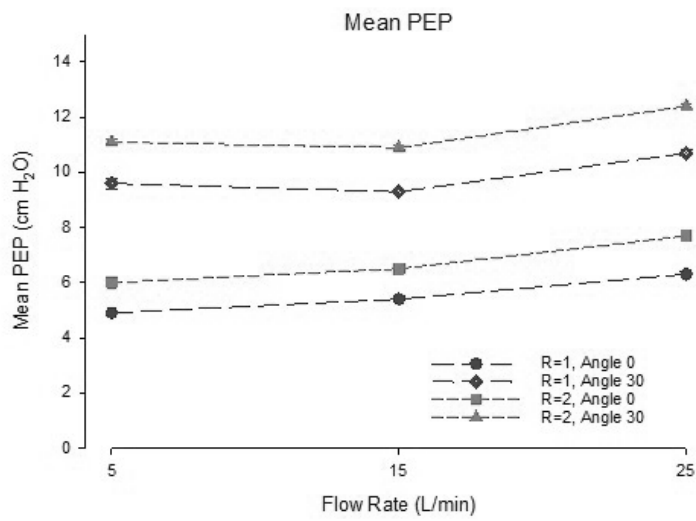
Table 4: Oscillation Frequency (Hz)

Flow (L/min)	0° Angle			30° Angle		20° Angle
	Resolve		Flutter ^a	Resolve		Flutter
	Resistance 1	Resistance 2		Resistance 1	Resistance 2	
5	28.8 ± 0.1	30.1 ± 0.1	25.9 ± 0.9	37.3 ± 0.5	35.6 ± 0.1	-
15	19.6 ± 0.1	20.8 ± 0.1	20.0 ± 0.0	30.3 ± 0.0	30.9 ± 0.2	-
25	16.8 ± 0.6	17.6 ± 0.3		24.8 ± 0.3	25.7 ± 0.1	31.3 ± 0.2 ^b

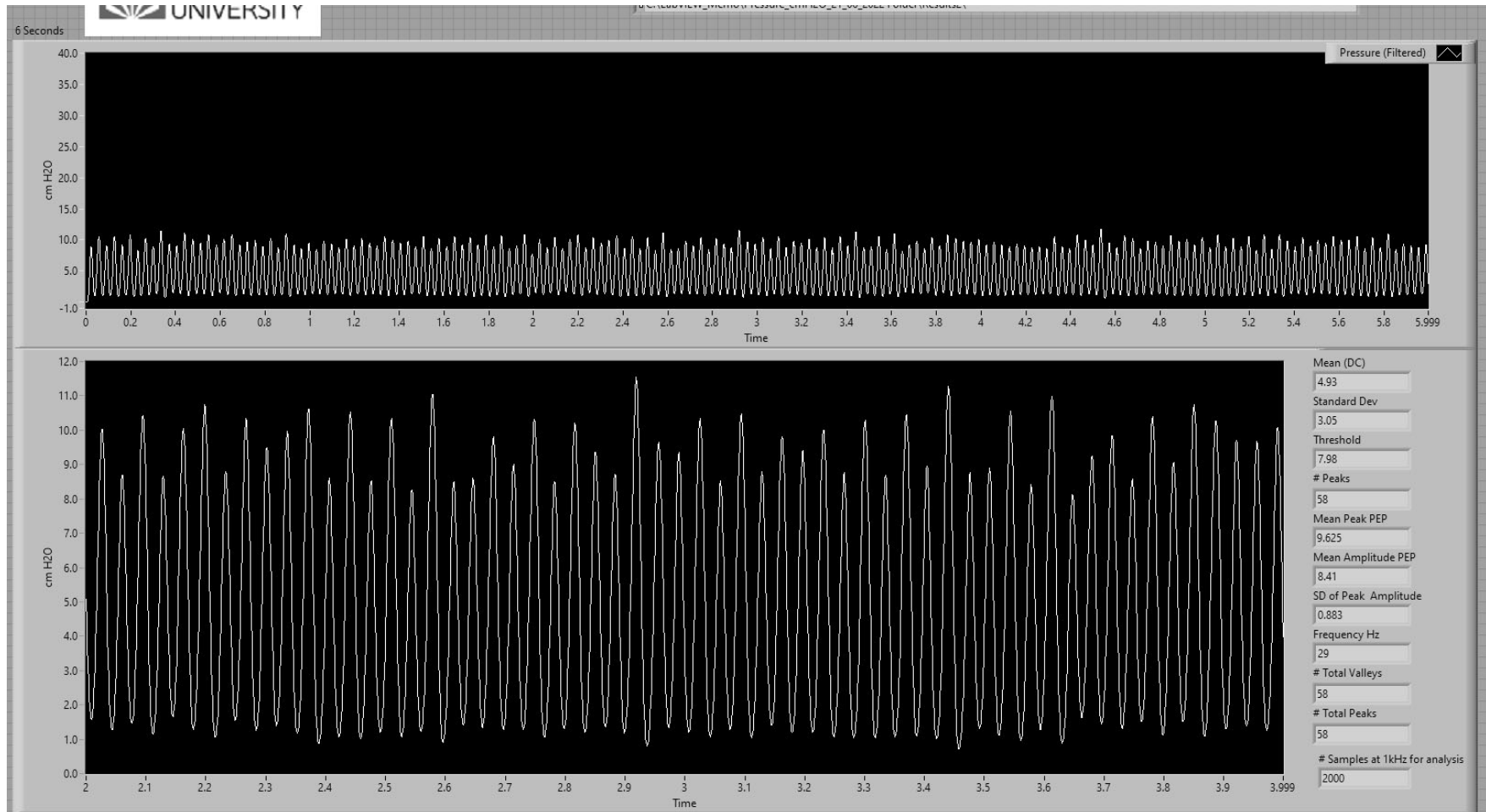
^aFlutter Data collected in January 2021

^bData extracted from Franks et al, Respiratory Care 2019. 64(4), 434-444.

Figure 1. Mean, peak, amplitude and frequency of PEP across flow rates and with two resistances.



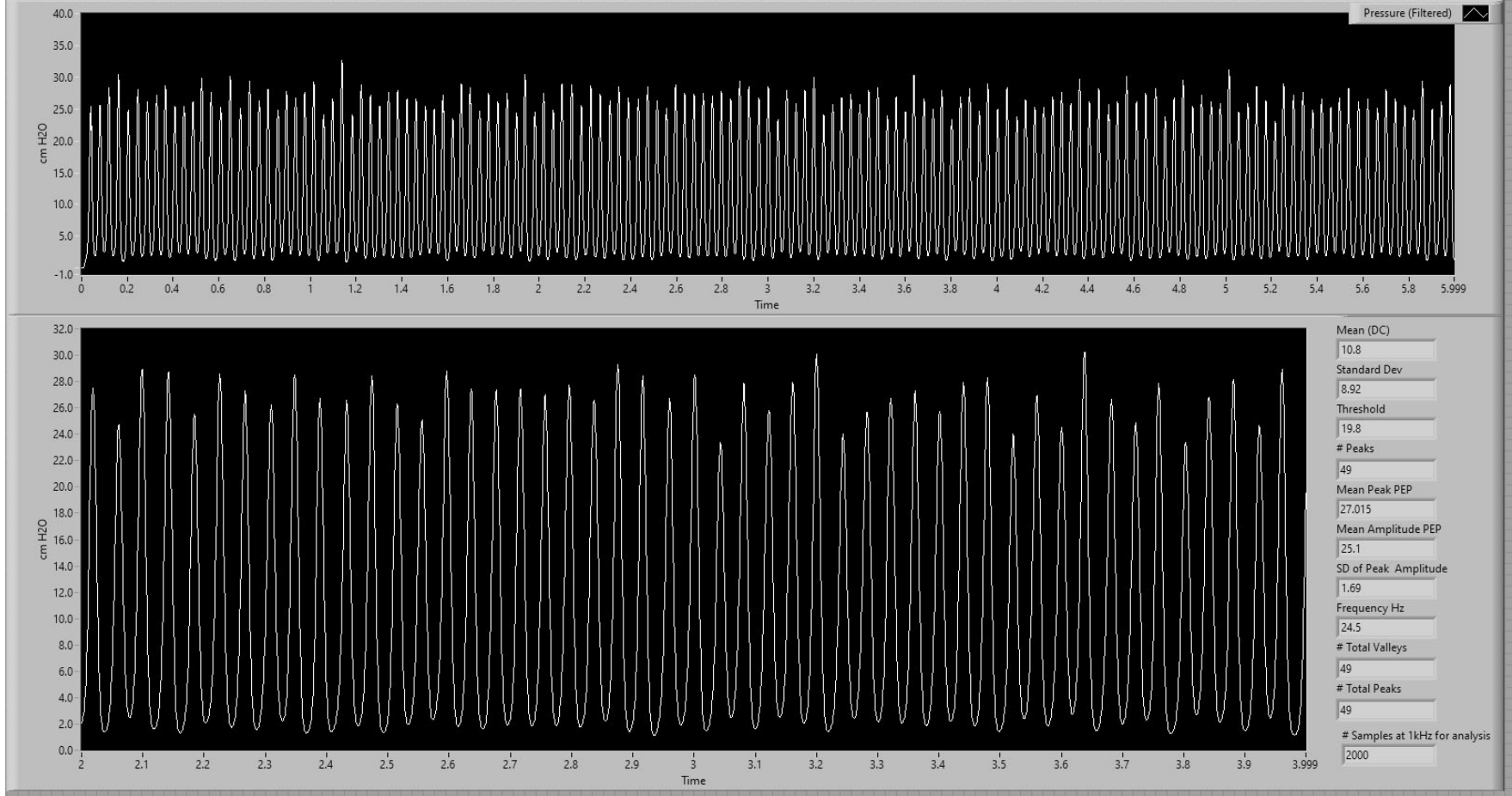
Data Collection Images



Resistance =1 (small 'low resistance' ball); Flow: 5 L/min; 0° Inclination

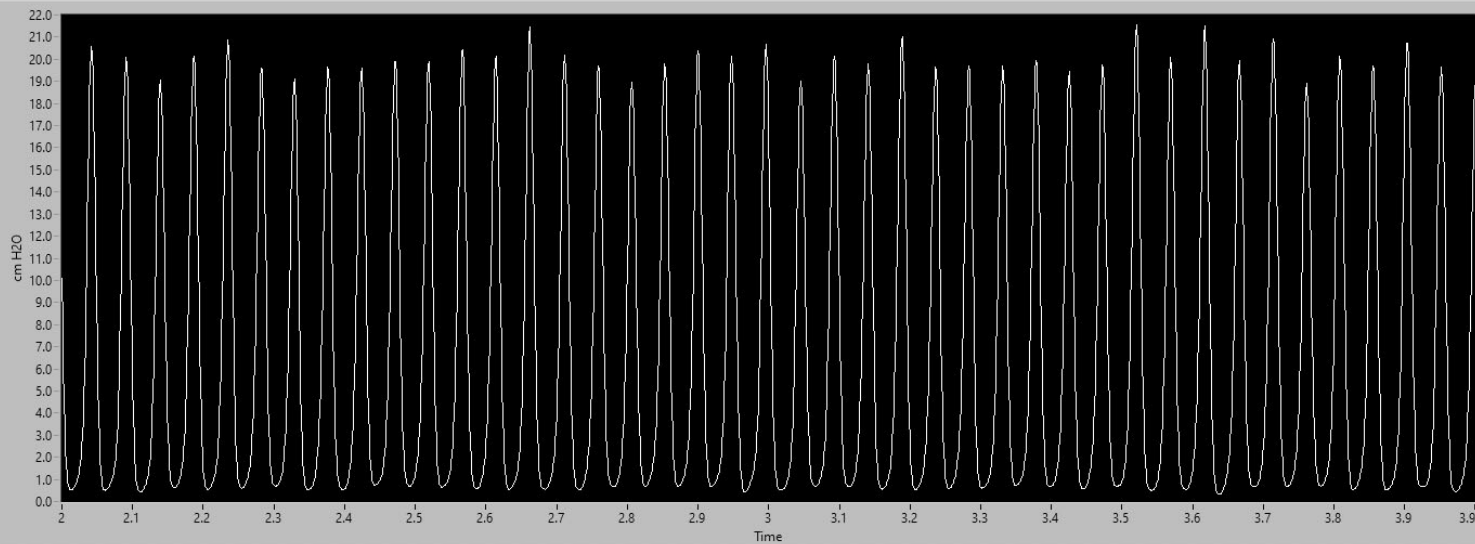
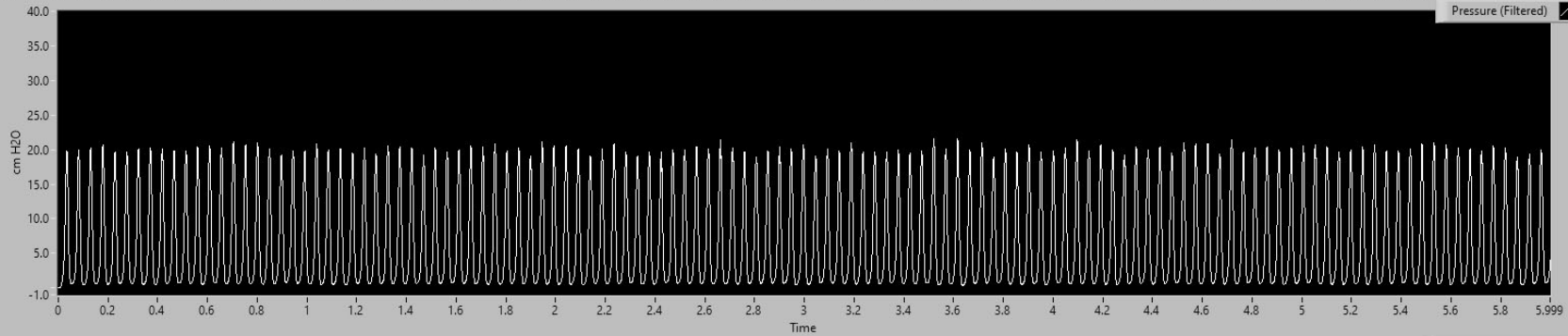

6 Seconds

Pressure (Filtered)



Resistance =1 (small 'low resistance' ball); Flow: 5 L/min; 30° Inclination

6 Seconds

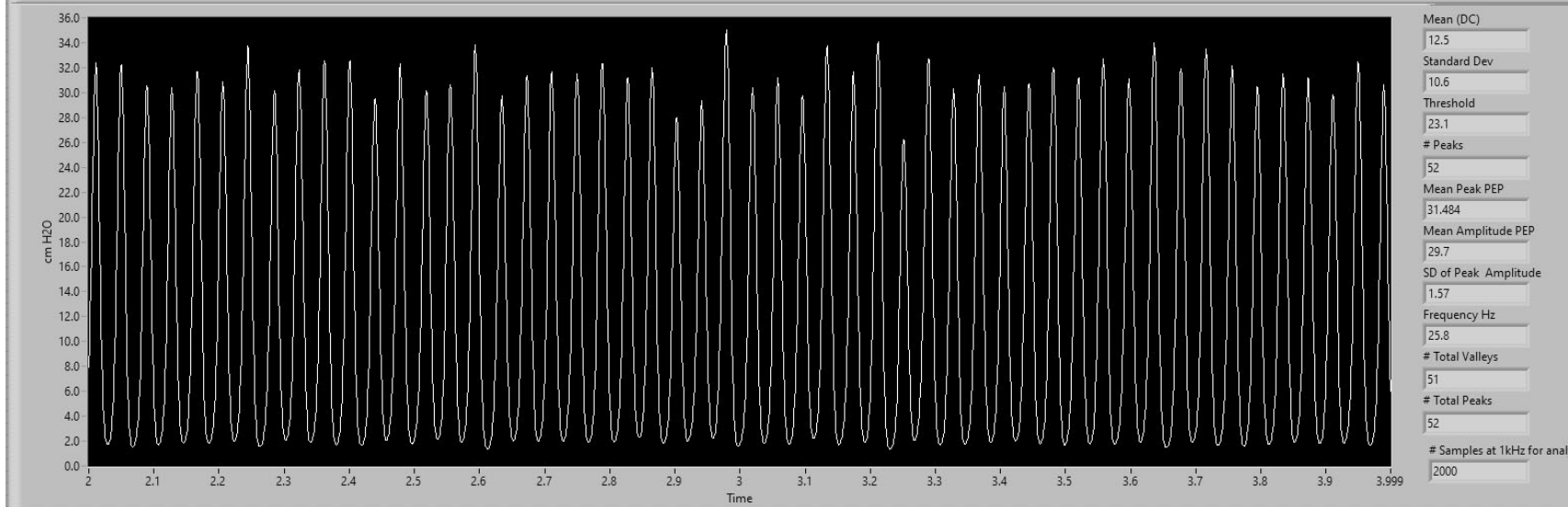
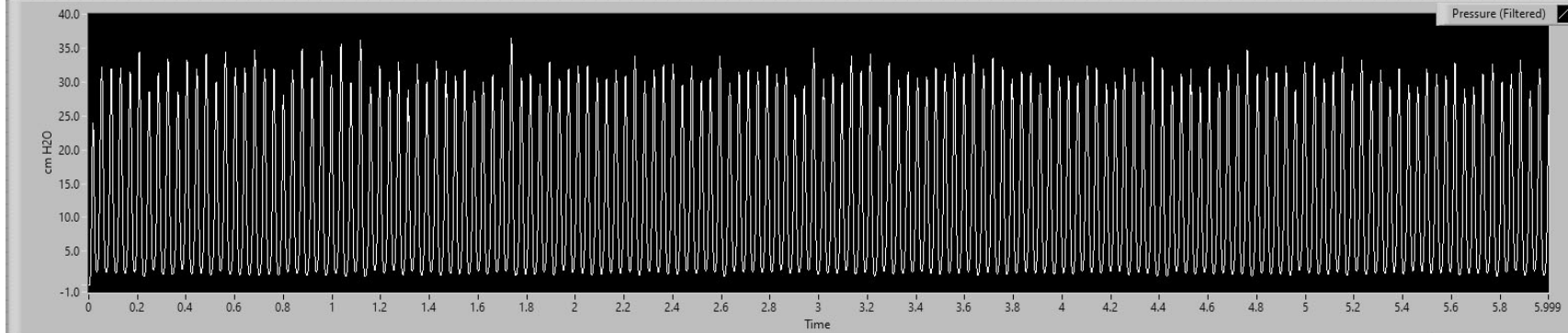
Pressure (Filtered) 

Mean (DC) 6.51
Standard Dev 6.72
Threshold 13.2
Peaks 41
Mean Peak PEP 20.066
Mean Amplitude PEP 19.5
SD of Peak Amplitude 0.662
Frequency Hz 20.8
Total Valleys 42
Total Peaks 41
Samples at 1kHz for analysis 2000

Resistance =2 (standard ball); Flow: 15 L/min; 0° Inclination

6 Seconds

Pressure (Filtered)



Resistance =2 (standard ball); Flow: 15 L/min; 30° Inclination

Data Publication Note

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