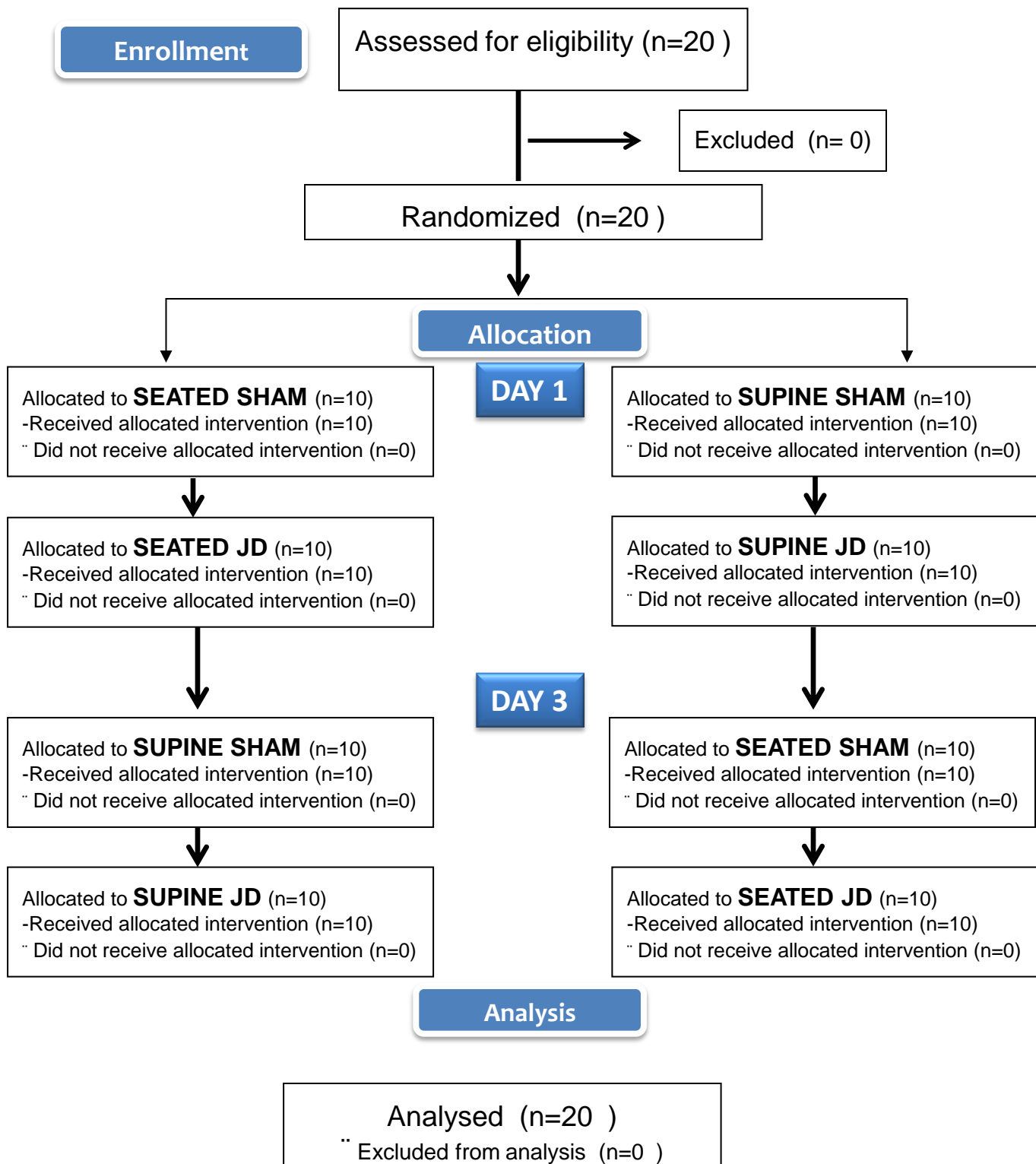


# Supplementary Information

## Figure 1S

### CONSORT Flow Diagram



## Supplemental Data

**Table 1S. The effects of age on JD induced changes in HRV**

		SEATED				SUPINE			
		Older		Younger		Older		Younger	
		Sham	JD	Sham	JD	Sham	JD	Sham	JD
<b>Heart Rate (bpm)</b>	BL	65(3)	67(3)	77(4) †	71(4)	62(3)	65(3)	73(3) †	67(3)
	REC	64(3)	68(4)	73(6) †	70(4)	62(3)	65(3)	74(3) †	65(3)
<b>SDNN (ms)</b>	BL	44(6)	33(6)	39(5)	48(8) †	50(6)	43(6)	49(11)	55(8)†
	REC	43(4)	51(9)* ††	48(8)	68(9)* †††	57(6)	56(6) ††	50(8)	92(25)* †† ††
<b>RMSSD (ms)</b>	BL	42(7)	27(7)*	32(8) †	46(12) †	39(8)	35(7)	34(8)	49(9)†
	REC	35(6)	46(11) ††	21(4) †	63(15)* †††	44(11)	50(10) ††	39(9)	84(27)* †† ††
<b>SD1(ms)</b>	BL	29(5)	19(5)*	15(3) †	32(8)* †	27(5)	25(5)	24(6)	35(6)* †
	REC	25(4)	32(8) ††	32(8) †††	44(11)* †††	31(8)	36(7)	27(6)	60(19)* †† ††
<b>SD2(ms)</b>	BL	58(8)	43(7)*	54(8)	58(10) †	63(9)	54(7)	65(15)	70(9) †
	REC	54(6)	64(11) ††	53(7)	83(10)* †††	73(8)	68(8) ††	64(10)	115(30)* †† ††
<b>LF nu</b>	BL	53(7)	51(4)	57(7)	50(6)	44(8)	49(6)	61(7) †	45(5)*
	REC	47(9)	56(8)	72(5) †††	52(6)*	60(8)	48(7)	52(6)	53(4)
<b>HF nu</b>	BL	37(5)	42(4)	32(4)	42(5)*	41(5)	40(4)	33(7) †	48(5)* †
	REC	39(6)	35(6)	24(5) †	39(5)*	30(5)	38(4)	39(5)	38(2)
<b>LF/HF</b>	BL	2.9(1.5)	1.4(0.4)	2.3(0.5)	1.9(0.8)	2.0(0.9)	1.5(0.3)	3.5(1.4)†	1.2(0.3)*
	REC	2.6(1.4)	2.9( 0.9)	4.8(1.4)† ††	2.3(1.0)	3.3(1.1)	1.5(0.3)	2.5(1.3)	1.5(0.2)

*Legend:*

The effects of age on HRV parameters in seated and supine postures for Older (subjects >59 yrs ) and Younger ( subjects < 59 yrs). Standard deviation of all normal RR intervals (SDNN), square root of the mean of the sum of the squares of differences between adjacent NN intervals (RMSSD). Poincare parameters of SD1 and SD2, Frequency domain parameters determined using a standard Fast Fourier spectral analysis calculated on the NN time intervals; low-frequency power (LF) , high-frequency power (HF) LF, and HF powers are reported in normalized units ( LFnu, and HFnu) Baseline (BL) and recovery (REC) in seated and supine postures for Sham and JD . †  $p < 0.05$  Older vs. Younger ††  $p < 0.05$  BL vs. REC , \* Sham vs. JD, <sup>a</sup> Seated vs. Supine

## Supplementary Information

**Tabel 2 S**

<i>BASELINE TO RECOVERY</i>				<i>SDNN</i>	<i>SD Delta</i>	<i>N RMSSD</i>	<i>SD1</i>	<i>SD2</i>	<i>Heart Rate</i>	<i>LF Power</i>	<i>HF Pov LF/HF</i>	
<i>SUBJECT</i>	<i>AGE</i>	<i>TYPE</i>							<i>BPM</i>	<i>nu</i>	<i>nu</i>	
1 o	GJ	SEATED	<b>BL</b>	49.1	41.9	41.8	29.7	62.7	43	69	31	2.2
1 o	GJ	SEATED	<b>REC</b>	52.6	43.3	43.2	30.6	67.8	44	64	36	1.8
1 o	GJ	SUPINE	<b>BL</b>	72.0	58.6	58.5	41.4	93.0	45	64	36	1.7
1 o	GJ	SUPINE	<b>REC</b>	99.5	63.8	63.7	45.1	133.3	51	72	27	2.7
1 o	SHAM	SEATED	<b>BL</b>	46.5	49.5	49.4	35.0	55.6	41	54	46	1.2
1 o	SHAM	SEATED	<b>REC</b>	57.9	43.7	43.6	30.9	75.8	40	56	44	1.3
1 o	SHAM	SUPINE	<b>BL</b>	63.7	54.9	54.8	38.8	81.2	41	60	40	1.5
1 o	SHAM	SUPINE	<b>REC</b>	88.6	53.4	53.2	37.7	119.6	44	73	27	2.7
2 y	GJ	SEATED	<b>BL</b>	25.7	19.9	19.8	14.1	33.6	58	57	40	1.4
2 y	GJ	SEATED	<b>REC</b>	37.8	25.6	25.5	18.1	50.3	60	46	45	1.0
2 y	GJ	SUPINE	<b>BL</b>	51.2	39.8	39.7	28.1	66.7	53	53	45	1.2
2 y	GJ	SUPINE	<b>REC</b>	46.8	30.6	30.5	21.6	62.6	54	54	44	1.2
2 y	SHAM	SEATED	<b>BL</b>	33.4	11.4	11.4	8.1	46.6	72	77	18	4.3
2 y	SHAM	SEATED	<b>REC</b>	26.7	12.9	12.8	9.1	36.7	72	84	11	7.7
2 y	SHAM	SUPINE	<b>BL</b>	32.9	25.4	25.4	18.0	43.0	64	78	17	4.5
2 y	SHAM	SUPINE	<b>REC</b>	49.5	67.4	67.3	47.7	51.2	66	24	48	0.5
3 Y	GJ	SEATED	<b>BL</b>	42.7	34.1	34.1	24.1	55.4	65	67	30	2.3
3 Y	GJ	SEATED	<b>REC</b>	81.8	37.6	37.6	26.6	112.6	69	69	27	2.5
3 Y	GJ	SUPINE	<b>BL</b>	35.8	23.7	23.6	16.7	47.8	67	64	31	2.0
3 Y	GJ	SUPINE	<b>REC</b>	48.7	29.5	29.5	20.9	65.6	65	71	27	2.6
3 Y	SHAM	SEATED	<b>BL</b>	54.2	66.5	66.4	47.0	60.5	70	32	39	0.8
3 Y	SHAM	SEATED	<b>REC</b>	41.5	30.6	30.5	21.6	54.6	71	66	30	2.2
3 Y	SHAM	SUPINE	<b>BL</b>	43.6	29.3	29.3	20.7	58.0	69	66	31	2.1
3 Y	SHAM	SUPINE	<b>REC</b>	38.7	21.7	21.7	15.3	52.5	74	48	49	1.0
4 o	GJ	SEATED	<b>BL</b>	37.62	29.12	29.07	20.59	49.06	55.28	58.49	40.31	1.45
4 o	GJ	SEATED	<b>REC</b>	73.11	87.02	86.86	61.53	83.09	56.97	28.44	56.90	0.50
4 o	GJ	SUPINE	<b>BL</b>	38.92	28.67	28.62	20.27	51.17	58.80	65.94	31.95	2.06
4 o	GJ	SUPINE	<b>REC</b>	40.59	50.76	50.66	35.89	44.79	48.88	34.88	64.80	0.54
4 o	SHAM	SEATED	<b>BL</b>	37.56	26.26	26.22	18.57	49.77	61.68	60.41	35.24	1.71

4 o	SHAM	SEATED	REC	53.64	25.24	25.20	17.85	73.73	63.73	65.87	30.13	2.19
4 o	SHAM	SUPINE	BL	79.32	28.84	28.79	20.39	110.31	57.86	50.43	46.41	1.09
4 o	SHAM	SUPINE	REC	39.03	18.71	18.68	13.23	53.59	55.98	69.80	27.78	2.51
5 y	GJ	SEATED	BL	44.6	36.3	36.3	25.7	57.7	86.8	46.5	42.6	1.1
5 y	GJ	SEATED	REC	65.5	37.1	37.0	26.2	88.8	83.7	66.6	28.4	2.3
5 y	GJ	SUPINE	BL	54.4	35.6	35.5	25.2	72.7	69.5	37.3	51.3	0.7
5 y	GJ	SUPINE	REC	76.8	46.7	46.7	33.0	103.5	66.4	55.0	39.2	1.4
5 y	SHAM	SEATED	BL	50.61	37.58	37.53	26.57	66.45	79.30	57.44	34.26	1.68
5 y	SHAM	SEATED	REC	44.46	32.35	32.31	22.87	58.56	77.70	58.02	36.76	1.58
5 y	SHAM	SUPINE	BL	38.04	30.87	30.83	21.83	49.17	72.85	52.05	42.05	1.24
5 y	SHAM	SUPINE	REC	38.59	26.67	26.64	18.86	51.21	74.57	58.54	38.23	1.53
6 o	GJ	SEATED	BL	35.70	39.76	39.71	28.11	41.93	76.72	33.30	34.12	0.98
6 o	GJ	SEATED	REC	67.19	71.98	71.89	50.90	80.24	81.96	27.42	32.62	0.84
6 o	GJ	SUPINE	BL	47.48	71.41	71.32	50.50	44.25	77.96	8.22	26.55	0.31
6 o	GJ	SUPINE	REC	69.57	107.48	107.34	76.00	62.47	76.92	8.53	31.04	0.27
6 o	SHAM	SEATED	BL	40.48	41.47	41.42	29.33	49.17	71.70	48.43	47.06	1.03
6 o	SHAM	SEATED	REC	49.96	42.60	42.54	30.12	63.91	71.36	27.65	58.26	0.47
6 o	SHAM	SUPINE	BL	58.21	44.56	44.49	31.51	76.05	68.50	36.74	37.41	0.98
6 o	SHAM	SUPINE	REC	76.84	46.48	46.41	32.87	103.58	65.21	58.80	28.15	2.09
7 y	GJ	SEATED	BL	11.72	10.09	10.07	7.13	14.96	88.45	44.37	42.80	1.04
7 y	GJ	SEATED	REC	40.39	28.88	28.84	20.42	53.35	80.51	51.90	38.82	1.34
7 y	GJ	SUPINE	BL	52.56	48.50	48.44	34.29	65.95	81.43	21.13	66.84	0.32
7 y	GJ	SUPINE	REC	57.81	51.29	51.22	36.27	73.28	73.12	42.18	46.06	0.92
7 y	SHAM	SEATED	BL	15.48	6.58	6.58	4.66	21.39	97.13	61.64	31.17	1.98
7 y	SHAM	SEATED	REC	35.87	8.34	8.33	5.90	50.39	90.50	72.67	23.81	3.05
7 y	SHAM	SUPINE	BL	29.71	20.71	20.68	14.64	39.38	76.50	69.91	20.87	3.35
7 y	SHAM	SUPINE	REC	24.83	11.50	11.48	8.13	34.16	80.00	63.19	32.23	1.96
8 y	GJ	SEATED	BL	45.58	42.79	42.73	30.26	56.92	68.45	16.45	77.16	0.21
8 y	GJ	SEATED	REC	70.97	62.04	61.95	43.87	90.27	67.88	51.05	37.20	1.37
8 y	GJ	SUPINE	BL	41.94	46.38	46.31	32.80	49.42	66.34	18.66	76.48	0.24
8 y	GJ	SUPINE	REC	71.44	45.51	45.45	32.18	95.76	71.23	55.36	38.46	1.44
8 y	SHAM	SEATED	BL	37.77	20.82	20.80	14.72	51.35	84.61	41.65	53.40	0.78
8 y	SHAM	SEATED	REC	37.59	21.14	21.12	14.95	51.02	88.56	45.37	48.88	0.93
8 y	SHAM	SUPINE	BL	38.31	30.44	30.40	21.52	49.72	81.66	26.69	66.47	0.40

8 y	SHAM	SUPINE	REC	45.11	36.80	36.76	26.02	58.24	78.71	42.61	50.47	0.84
9 o	GJ	SEATED	BL	20.88	16.13	16.10	11.40	27.24	61.46	47.71	50.51	0.94
9 o	GJ	SEATED	REC	27.34	14.25	14.22	10.07	37.33	65.40	73.40	25.08	2.93
9 o	GJ	SUPINE	BL	28.40	18.24	18.21	12.90	38.04	61.28	70.26	26.49	2.65
9 o	GJ	SUPINE	REC	36.80	17.50	17.47	12.38	50.54	60.84	62.94	35.67	1.76
9 o	SHAM	SEATED	BL	86.93	64.45	64.36	45.58	114.17	70.18	33.91	41.14	0.82
9 o	SHAM	SEATED	REC	37.96	22.97	22.93	16.24	51.16	63.11	44.49	53.18	0.84
9 o	SHAM	SUPINE	BL	41.02	67.81	67.70	47.95	32.65	61.75	4.80	57.40	0.08
9 o	SHAM	SUPINE	REC	75.99	116.78	116.58	82.58	68.78	59.24	14.39	55.56	0.26
10 o	GJ	SEATED	BL	12.70	5.12	5.12	3.62	17.60	81.96	72.87	22.84	3.19
10 o	GJ	SEATED	REC	21.43	4.80	4.80	3.40	30.11	80.97	84.68	13.50	6.27
10 o	GJ	SUPINE	BL	28.14	15.63	15.61	11.05	38.23	70.42	38.25	55.84	0.69
10 o	GJ	SUPINE	REC	36.19	11.34	11.33	8.02	50.55	75.89	57.26	39.45	1.45
10 o	SHAM	SEATED	BL	16.60	3.39	3.39	2.40	23.35	79.60	90.83	5.74	15.82
10 o	SHAM	SEATED	REC	26.94	4.23	4.23	2.99	37.98	81.13	92.15	6.48	14.22
10 o	SHAM	SUPINE	BL	28.39	13.85	13.83	9.80	38.94	70.95	89.82	9.41	9.54
10 o	SHAM	SUPINE	REC	32.17	14.26	14.24	10.08	44.37	70.31	85.30	13.51	6.31
11 o	GJ	SEATED	BL	12.46	5.51	5.50	3.90	17.19	82.01	68.65	26.38	2.60
11 o	GJ	SEATED	REC	23.77	4.25	4.24	3.00	33.49	82.11	82.74	14.65	5.65
11 o	GJ	SUPINE	BL	28.15	15.70	15.68	11.10	38.23	70.40	38.06	56.06	0.68
11 o	GJ	SUPINE	REC	37.83	13.30	13.28	9.40	52.67	76.55	68.82	28.21	2.44
11 o	SHAM	SEATED	BL	57.87	83.05	82.91	58.73	56.99	58.25	21.82	58.36	0.37
11 o	SHAM	SEATED	REC	30.75	48.33	48.25	34.18	26.88	59.20	8.97	51.84	0.17
11 o	SHAM	SUPINE	BL	63.99	77.21	77.08	54.60	72.17	60.12	28.98	54.26	0.53
11 o	SHAM	SUPINE	REC	66.68	71.08	70.96	50.26	79.79	63.50	35.72	43.10	0.83
12 y	GJ	SEATED	BL	75.35	56.90	56.80	40.23	98.68	59.22	49.04	43.59	1.13
12 y	GJ	SEATED	REC	74.78	74.39	74.24	52.60	91.75	49.79	49.26	50.59	0.97
12 y	GJ	SUPINE	BL	103.70	106.68	106.50	75.44	125.76	58.03	38.88	58.43	0.67
12 y	GJ	SUPINE	REC	308.93	311.68	311.16	220.39	377.23	59.73	54.15	25.61	2.11
12 y	SHAM	SEATED	BL	82.34	51.28	51.20	36.26	110.66	58.92	75.42	22.08	3.42
12 y	SHAM	SEATED	REC	74.14	38.02	37.97	26.88	101.35	63.91	75.18	21.70	3.46
12 y	SHAM	SUPINE	BL	130.86	87.07	86.90	61.57	174.52	54.47	28.73	59.76	0.48
12 y	SHAM	SUPINE	REC	105.78	86.50	86.35	61.17	136.52	57.48	51.54	39.30	1.31
13 o	GJ	SEATED	BL	26.64	17.81	17.79	12.60	35.51	69.90	53.70	39.42	1.36

13 o	GJ	SEATED	REC	34.36	9.92	9.91	7.02	48.08	80.39	88.08	9.28	9.49
13 o	GJ	SUPINE	BL	21.65	12.05	12.03	8.52	29.41	70.63	57.90	34.10	1.70
13 o	GJ	SUPINE	REC	58.04	65.60	65.51	46.39	67.72	72.68	44.45	35.16	1.26
13 o	SHAM	SEATED	BL	27.25	24.78	24.75	17.52	34.33	69.80	46.63	35.49	1.31
13 o	SHAM	SEATED	REC	51.89	71.27	71.17	50.40	53.35	69.29	11.73	65.98	0.18
13 o	SHAM	SUPINE	BL	15.58	12.17	12.16	8.61	20.28	71.70	35.72	57.51	0.62
13 o	SHAM	SUPINE	REC	47.26	14.76	14.74	10.44	66.01	73.15	90.31	8.00	11.29
14 Y	GJ	SEATED	BL	29.38	11.65	11.64	8.24	40.72	79.60	84.29	9.48	8.89
14 Y	GJ	SEATED	REC	32.91	11.59	11.57	8.19	45.81	82.96	90.60	8.04	11.27
14 Y	GJ	SUPINE	BL	18.22	12.45	12.43	8.80	24.22	78.73	64.85	22.78	2.85
14 Y	GJ	SUPINE	REC	55.99	77.95	77.85	55.12	56.85	77.60	25.39	39.05	0.65
14 Y	SHAM	SEATED	BL	23.10	9.09	9.08	6.43	32.03	88.57	78.20	15.62	5.01
14 Y	SHAM	SEATED	REC	24.40	9.34	9.32	6.60	33.87	84.85	88.31	7.87	11.22
14 Y	SHAM	SUPINE	BL	21.02	10.56	10.55	7.47	28.77	89.43	72.59	17.81	4.07
14 Y	SHAM	SUPINE	REC	29.68	22.58	22.56	15.97	38.82	84.32	56.34	27.49	2.05
15 o	GJ	SEATED	BL	31.99	23.33	23.29	16.50	42.12	59.32	37.98	57.22	0.66
15 o	GJ	SEATED	REC	43.69	30.58	30.53	21.63	57.87	56.03	76.19	22.82	3.34
15 o	GJ	SUPINE	BL	39.94	26.07	26.02	18.43	53.39	54.20	64.39	33.41	1.93
15 o	GJ	SUPINE	REC	54.18	34.30	34.24	24.26	72.68	52.70	63.90	33.70	1.90
15 o	SHAM	SEATED	BL	42.93	25.01	24.97	17.69	58.08	60.03	79.43	18.32	4.33
15 o	SHAM	SEATED	REC	51.23	28.59	28.54	20.22	69.57	56.60	66.18	31.23	2.12
15 o	SHAM	SUPINE	BL	44.12	16.04	16.02	11.34	61.36	60.13	77.19	19.60	3.94
15 o	SHAM	SUPINE	REC	57.42	25.18	25.13	17.80	79.24	50.91	61.09	37.43	1.63
16 o	GJ	SEATED	BL	24.86	8.27	8.26	5.85	34.67	71.59	51.72	46.38	1.12
16 o	GJ	SEATED	REC	52.42	58.22	58.14	41.17	61.65	70.86	23.42	67.25	0.35
16 o	GJ	SUPINE	BL	24.21	16.26	16.23	11.49	32.25	61.42	72.01	25.01	2.88
16 o	GJ	SUPINE	REC	40.61	24.23	24.19	17.13	54.81	63.61	70.74	26.40	2.68
16 o	SHAM	SEATED	BL	38.0	57.6	57.5	40.8	35.1	65.8	33.0	47.7	0.7
16 o	SHAM	SEATED	REC	29.6	42.4	42.3	30.0	29.1	72.1	13.0	33.2	0.4
16 o	SHAM	SUPINE	BL	34.7	18.4	18.4	13.0	47.3	66.7	24.7	37.7	0.7
16 o	SHAM	SUPINE	REC	27.4	15.1	15.0	10.6	37.3	63.9	81.7	16.9	4.8
17 o	GJ	SEATED	BL	34.59	26.85	26.81	18.99	45.08	62.61	36.01	57.53	0.63
17 o	GJ	SEATED	REC	43.01	55.77	55.68	39.43	46.32	60.33	25.66	60.72	0.42
17 o	GJ	SUPINE	BL	77.21	65.37	65.27	46.23	98.92	62.44	24.53	69.84	0.35

17 o	GJ	SUPINE	REC	64.67	83.91	83.79	59.34	69.60	67.97	14.00	39.35	0.36
17 o	SHAM	SEATED	BL	51.01	41.23	41.18	29.16	65.99	72.18	57.11	34.94	1.63
17 o	SHAM	SEATED	REC	42.56	17.66	17.63	12.49	58.87	68.38	79.90	17.61	4.54
17 o	SHAM	SUPINE	BL	67.95	52.69	52.61	37.26	88.58	64.96	32.71	48.06	0.68
17 o	SHAM	SUPINE	REC	62.10	68.34	68.24	48.32	73.33	72.22	32.89	42.28	0.78
18 y	GJ	SEATED	BL	39.90	30.28	30.23	21.41	52.20	56.60	52.37	44.76	1.17
18 y	GJ	SEATED	REC	72.30	87.05	86.90	61.56	81.64	56.91	26.06	58.76	0.44
18 y	GJ	SUPINE	BL	38.76	28.70	28.65	20.29	50.93	58.79	66.00	31.90	2.07
18 y	GJ	SUPINE	REC	54.20	37.05	36.98	26.20	72.04	50.83	66.21	33.30	1.99
18 y	SHAM	SEATED	BL	49.11	61.55	61.47	43.52	54.12	74.41	21.24	43.03	0.49
18 y	SHAM	SEATED	REC	35.58	14.64	14.62	10.35	49.25	73.06	90.28	8.08	11.17
18 y	SHAM	SUPINE	BL	39.59	13.37	13.35	9.45	55.18	74.82	92.45	6.80	13.60
18 y	SHAM	SUPINE	REC	51.23	17.35	17.33	12.27	71.40	78.03	91.81	7.31	12.56
19 y	SHAM	SEATED	BL	33.46	20.27	20.24	14.33	45.10	65.06	67.88	30.18	2.25
19 y	SHAM	SEATED	REC	32.83	21.38	21.35	15.12	43.90	65.71	67.10	29.84	2.25
19 y	SHAM	SUPINE	BL	68.66	59.02	58.94	41.73	87.68	70.47	61.41	32.29	1.90
19 y	SHAM	SUPINE	REC	64.07	58.99	58.90	41.71	80.44	70.26	34.46	56.32	0.61
20 Y	GJ	Supine	BL	70.0	64.4	64.3	45.5	87.9	77.5	43.8	45.5	1.0
20 Y	GJ	Supine	REC	107.3	109.0	108.9	77.1	130.8	74.5	47.3	41.7	1.1
20 Y	GJ	SEATED	BL	57.5	87.3	87.2	61.7	52.9	88.7	49.8	41.4	1.2
20 Y	GJ	SEATED	REC	67.6	92.8	92.7	65.6	69.5	77.4	23.5	56.4	0.4
21 y	GJ	SEATED	BL	106.62	127.09	126.89	89.87	121.07	64.77	36.64	49.72	0.74
21 y	GJ	SEATED	REC	132.80	171.96	171.70	121.60	143.14	68.20	42.12	42.17	1.00
21 y	GJ	SUPINE	BL	84.57	82.20	82.05	58.12	104.53	58.11	42.63	52.60	0.81
21 y	GJ	SUPINE	REC	97.76	106.63	106.43	75.40	115.88	54.99	55.96	41.78	1.34
22 o	GJ	SEATED	BL	79.62	82.70	82.58	58.48	96.23	68.86	33.54	55.18	0.61
22 o	GJ	SEATED	REC	127.63	122.38	122.20	86.54	158.41	71.53	38.73	44.67	0.87
22 o	GJ	SUPINE	BL	63.61	56.61	56.54	40.03	80.55	81.59	41.57	43.34	0.96
22 o	GJ	SUPINE	REC	75.36	82.15	82.03	58.09	89.35	72.48	33.72	53.64	0.63