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Supplemental data

Table S1: Conditional differences in blood pressure or heart rate recovery compared to robust category (% baseline)

SBP				
	Model 1		Model 2	
	Prefrail	Frail	Prefrail	Frail
10	0.39 [-0.41,1.20]	0.29 [-2.58,3.17]	0.44 [-0.40,1.28]	1.07 [-1.97,4.10]
20	-0.59 [-1.39,0.21]	-3.83 [-6.69,-0.97]**	-0.44 [-1.28,0.40]	-1.65 [-4.67,1.38]
30	-0.59 [-1.38,0.21]	-4.08 [-6.92,-1.23]**	-0.37 [-1.20,0.46]	-1.93 [-4.94,1.07]
40	-0.44 [-1.19,0.32]	-3.62 [-6.30,-0.94]**	-0.27 [-1.06,0.52]	-1.67 [-4.49,1.16]
50	-0.28 [-1.00,0.44]	-3.16 [-5.71,-0.61]*	-0.17 [-0.92,0.59]	-1.40 [-4.09,1.29]
60	-0.13 [-0.83,0.57]	-2.70 [-5.17,-0.23]*	-0.07 [-0.80,0.67]	-1.13 [-3.73,1.48]
70	0.02 [-0.67,0.71]	-2.24 [-4.69,0.21]	0.04 [-0.69,0.76]	-0.86 [-3.44,1.72]
80	0.17 [-0.53,0.87]	-1.78 [-4.25,0.69]	0.14 [-0.60,0.87]	-0.59 [-3.20,2.02]
90	0.32 [-0.40,1.04]	-1.32 [-3.87,1.23]	0.24 [-0.52,0.99]	-0.32 [-3.01,2.37]
100	0.48 [-0.28,1.23]	-0.86 [-3.54,1.82]	0.34 [-0.45,1.13]	-0.05 [-2.88,2.77]
110	0.63 [-0.17,1.42]	-0.40 [-3.25,2.44]	0.44 [-0.39,1.27]	0.22 [-2.79,3.22]
DBP				
10	0.80 [-0.01,1.61]	2.77 [0.10,5.44]*	0.55 [-0.31,1.40]	2.59 [-0.27,5.45]
20	-1.00 [-1.80,-0.20]*	-2.49 [-5.13,0.15]	-0.84 [-1.69,0.00]	-0.84 [-3.68,1.99]
30	-1.18 [-1.97,-0.39]**	-3.66 [-6.23,-1.09]**	-0.77 [-1.61,0.06]	-1.61 [-4.36,1.15]
40	-1.03 [-1.78,-0.28]**	-3.41 [-5.84,-0.98]**	-0.68 [-1.47,0.11]	-1.52 [-4.11,1.08]
50	-0.88 [-1.60,-0.16]*	-3.16 [-5.47,-0.84]**	-0.58 [-1.34,0.18]	-1.43 [-3.90,1.05]
60	-0.73 [-1.43,-0.03]*	-2.90 [-5.15,-0.65]*	-0.48 [-1.22,0.25]	-1.34 [-3.74,1.06]
70	-0.58 [-1.27,0.11]	-2.65 [-4.88,-0.42]*	-0.38 [-1.11,0.35]	-1.25 [-3.62,1.13]
80	-0.43 [-1.13,0.27]	-2.40 [-4.64,-0.15]*	-0.29 [-1.02,0.45]	-1.16 [-3.56,1.25]
90	-0.28 [-1.00,0.43]	-2.14 [-4.46,0.17]	-0.19 [-0.94,0.57]	-1.06 [-3.54,1.41]
100	-0.13 [-0.88,0.61]	-1.89 [-4.32,0.54]	-0.09 [-0.88,0.70]	-0.97 [-3.57,1.62]
110	0.01 [-0.77,0.80]	-1.64 [-4.21,0.93]	0.01 [-0.82,0.84]	-0.88 [-3.64,1.87]
HR				
10	-1.26 [-1.93,-0.59]***	-2.02 [-4.20,0.16]	-0.51 [-1.22,0.19]	0.70 [-1.64,3.03]
20	0.49 [-0.17,1.15]	2.90 [0.74,5.06]**	0.70 [0.01,1.40]*	3.10 [0.79,5.42]**
30	0.46 [-0.19,1.10]	1.80 [-0.32,3.92]	0.77 [0.10,1.45]*	1.98 [-0.29,4.25]
40	0.39 [-0.22,1.01]	1.56 [-0.45,3.57]	0.74 [0.10,1.39]*	1.80 [-0.35,3.96]
50	0.33 [-0.26,0.92]	1.32 [-0.61,3.25]	0.71 [0.10,1.33]*	1.63 [-0.43,3.69]
60	0.26 [-0.31,0.84]	1.08 [-0.79,2.96]	0.68 [0.08,1.28]*	1.45 [-0.55,3.46]
70	0.20 [-0.37,0.77]	0.85 [-1.02,2.71]	0.65 [0.06,1.25]*	1.28 [-0.70,3.26]
80	0.13 [-0.44,0.71]	0.61 [-1.27,2.48]	0.62 [0.02,1.22]*	1.10 [-0.90,3.11]
90	0.07 [-0.52,0.66]	0.37 [-1.56,2.30]	0.59 [-0.03,1.21]	0.93 [-1.13,2.99]
100	0.00 [-0.61,0.62]	0.13 [-1.88,2.14]	0.56 [-0.08,1.20]	0.76 [-1.40,2.91]
110	-0.06 [-0.71,0.59]	-0.11 [-2.23,2.01]	0.53 [-0.15,1.21]	0.58 [-1.69,2.85]

Parameters are estimated from mixed effects models with linear splines. Model 1: Age and sex, Model 2: Age, sex, BMI, smoking, depressive symptoms, self-reported CVD conditions, medication use *P<0.05, **P<0.01, ***P<0.001

Table S2: Model parameters for blood pressure and heart rate recovery following active standing (mmHg of heart rate)

	Intercept (10s difference)	Frailty*Time (rate of recovery)		
		10-20s	20-30s	30-110s
Systolic BP (mmHg)				
Model 1				
Prefrail	0.34 [-1.30,1.98]	-1.27 [-1.78,-0.75]***	-0.04 [-0.55,0.47]	0.20 [0.07,0.33]**
Frail	1.27 [-4.66,7.21]	-5.99 [-7.89,-4.09]***	-0.47 [-2.37,1.43]	0.67 [0.13,1.21]*
Model 2				
Prefrail	0.13 [-1.59,1.85]	-1.20 [-1.74,-0.66]***	0.08 [-0.46,0.62]	0.13 [-0.01,0.27]
Frail	0.89 [-5.39,7.17]	-4.47 [-6.49,-2.44]***	-0.46 [-2.49,1.57]	0.43 [-0.14,1.01]
Diastolic BP (mmHg)				
Model 1				
Prefrail	0.10 [-0.74,0.94]	-1.30 [-1.60,-0.99]***	-0.25 [-0.55,0.05]	0.10 [0.04,0.16]**
Frail	1.01 [-1.76,3.78]	-3.87 [-4.99,-2.75]***	-0.93 [-2.03,0.18]	0.20 [-0.03,0.43]
Model 2				
Prefrail	-0.08 [-0.95,0.80]	-1.01 [-1.33,-0.69]***	-0.04 [-0.36,0.28]	0.07 [0.00,0.13]*
Frail	0.32 [-2.59,3.23]	-2.80 [-4.00,-1.60]***	-0.61 [-1.80,0.58]	0.10 [-0.15,0.35]
Heart rate				
Model 1				
Prefrail	0.92 [0.18,1.67]*	1.03 [0.78,1.29]***	-0.04 [-0.29,0.21]	-0.04 [-0.09,0.01]
Frail	2.09 [-0.32,4.50]	2.99 [2.22,3.76]***	-0.78 [-1.55,-0.01]*	-0.14 [-0.30,0.02]
Model 2				
Prefrail	0.98 [0.22,1.74]*	0.71 [0.44,0.98]***	0.04 [-0.23,0.30]	-0.02 [-0.07,0.03]
Frail	1.42 [-1.05,3.90]	1.45 [0.61,2.29]***	-0.73 [-1.56,0.10]	-0.11 [-0.29,0.07]

Parameters are estimated from mixed effects models with linear splines. Interaction coefficients represent the difference in time slopes or rate of recovery in blood pressure or heart rate at each stage of the active stand. Model 1: Age and sex, Model 2: Age, sex, BMI, smoking, depressive symptoms, self-reported CVD conditions, medication use *P<0.05, **P<0.01, ***P<0.001

Table S3: Conditional differences in blood pressure or heart rate recovery compared to robust category in (mmHg or heart rate)

SBP				
	Model 1		Model 2	
	Prefrail	Frail	Prefrail	Frail
10	0.34 [-1.30,1.98]	1.27 [-4.66,7.21]	0.13 [-1.59,1.85]	0.89 [-5.39,7.17]
20	-0.93 [-2.56,0.71]	-4.72 [-10.65,1.21]	-1.07 [-2.78,0.64]	-3.57 [-9.85,2.70]
30	-0.97 [-2.60,0.66]	-5.19 [-11.11,0.74]	-0.99 [-2.69,0.72]	-4.03 [-10.30,2.24]
40	-0.77 [-2.36,0.83]	-4.52 [-10.27,1.23]	-0.86 [-2.53,0.81]	-3.60 [-9.68,2.48]
50	-0.57 [-2.14,1.00]	-3.85 [-9.47,1.78]	-0.73 [-2.37,0.92]	-3.17 [-9.11,2.78]
60	-0.37 [-1.92,1.18]	-3.18 [-8.72,2.37]	-0.60 [-2.22,1.03]	-2.73 [-8.59,3.12]
70	-0.17 [-1.72,1.37]	-2.51 [-8.02,3.01]	-0.47 [-2.09,1.15]	-2.30 [-8.13,3.53]
80	0.03 [-1.53,1.58]	-1.84 [-7.38,3.71]	-0.34 [-1.96,1.29]	-1.87 [-7.73,3.99]
90	0.23 [-1.34,1.79]	-1.17 [-6.79,4.46]	-0.21 [-1.85,1.43]	-1.44 [-7.38,4.51]
100	0.42 [-1.17,2.02]	-0.50 [-6.25,5.25]	-0.08 [-1.75,1.59]	-1.00 [-7.08,5.08]
110	0.62 [-1.01,2.25]	0.17 [-5.75,6.10]	0.05 [-1.66,1.76]	-0.57 [-6.84,5.70]
DBP				
10	0.10 [-0.74,0.94]	1.01 [-1.76,3.78]	-0.08 [-0.95,0.80]	0.32 [-2.59,3.23]
20	-1.20 [-2.04,-0.37]**	-2.86 [-5.62,-0.10]*	-1.08 [-1.96,-0.21]*	-2.48 [-5.38,0.42]
30	-1.45 [-2.28,-0.62]***	-3.79 [-6.52,-1.06]**	-1.13 [-1.99,-0.27]*	-3.09 [-5.96,-0.22]*
40	-1.35 [-2.16,-0.54]**	-3.59 [-6.25,-0.93]**	-1.06 [-1.91,-0.22]*	-2.99 [-5.78,-0.20]*
50	-1.25 [-2.05,-0.45]**	-3.39 [-6.00,-0.78]*	-0.99 [-1.83,-0.16]*	-2.90 [-5.63,-0.16]*
60	-1.15 [-1.94,-0.36]**	-3.19 [-5.76,-0.61]*	-0.93 [-1.75,-0.10]*	-2.80 [-5.50,-0.10]*
70	-1.05 [-1.83,-0.26]**	-2.99 [-5.55,-0.42]*	-0.86 [-1.68,-0.04]*	-2.70 [-5.39,-0.01]*
80	-0.94 [-1.74,-0.15]*	-2.79 [-5.36,-0.21]*	-0.79 [-1.62,0.03]	-2.60 [-5.30,0.10]
90	-0.84 [-1.64,-0.05]*	-2.59 [-5.20,0.02]	-0.73 [-1.56,0.11]	-2.51 [-5.24,0.23]
100	-0.74 [-1.55,0.07]	-2.39 [-5.05,0.27]	-0.66 [-1.50,0.19]	-2.41 [-5.20,0.38]
110	-0.64 [-1.47,0.19]	-2.19 [-4.92,0.54]	-0.59 [-1.45,0.27]	-2.31 [-5.18,0.56]
HR				
10	0.92 [0.18,1.67]*	2.09 [-0.32,4.50]	0.98 [0.22,1.74]*	1.42 [-1.05,3.90]
20	1.96 [1.21,2.70]***	5.08 [2.68,7.48]***	1.69 [0.94,2.45]***	2.87 [0.40,5.34]*
30	1.92 [1.18,2.65]***	4.30 [1.91,6.69]***	1.73 [0.98,2.48]***	2.15 [-0.30,4.60]
40	1.88 [1.16,2.60]***	4.16 [1.81,6.51]***	1.71 [0.98,2.45]***	2.04 [-0.37,4.44]
50	1.84 [1.13,2.56]***	4.02 [1.70,6.34]***	1.70 [0.97,2.42]***	1.93 [-0.45,4.30]
60	1.81 [1.10,2.52]***	3.88 [1.58,6.18]***	1.68 [0.96,2.40]***	1.82 [-0.54,4.17]
70	1.77 [1.06,2.48]***	3.74 [1.44,6.03]**	1.66 [0.94,2.38]***	1.71 [-0.64,4.06]
80	1.73 [1.02,2.44]***	3.59 [1.29,5.89]**	1.65 [0.93,2.37]***	1.60 [-0.75,3.95]
90	1.70 [0.98,2.41]***	3.45 [1.13,5.77]**	1.63 [0.91,2.36]***	1.49 [-0.88,3.86]
100	1.66 [0.94,2.39]***	3.31 [0.96,5.66]**	1.62 [0.88,2.35]***	1.38 [-1.02,3.79]
110	1.63 [0.89,2.36]***	3.17 [0.78,5.56]**	1.60 [0.85,2.35]***	1.27 [-1.18,3.72]

Parameters are estimated from mixed effects models with linear splines. Model 1: Age and sex, Model 2: Age, sex, BMI, smoking, depressive symptoms, self-reported CVD conditions, medication use *P<0.05, **P<0.01, ***P<0.001

Figure S1: Conditional mean blood pressure and heart rate responses across frailty categories (mmHg or heart rate)

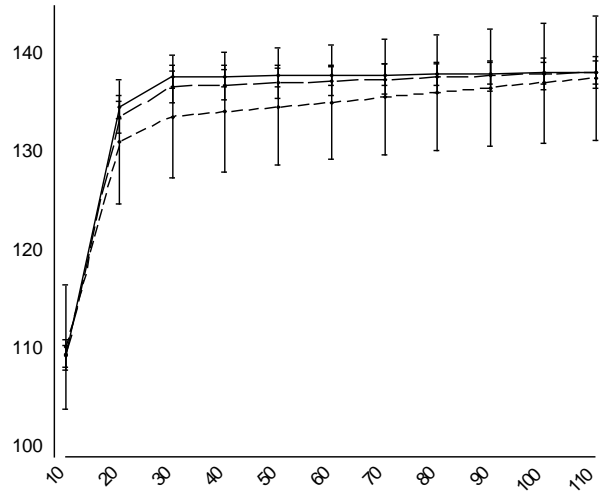
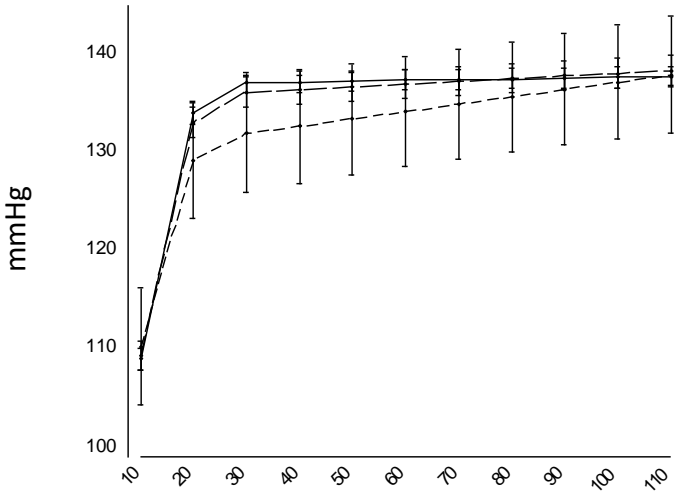
Data are conditional means and 95% confidence intervals estimated from mixed effects models. Model 1: Age and sex; Model 2: age, sex, BMI, smoking, antihypertensive and antidepressant medication use, depressive symptoms and CVD conditions.

———— Robust - - - - - Prefrail - - - - - Frail

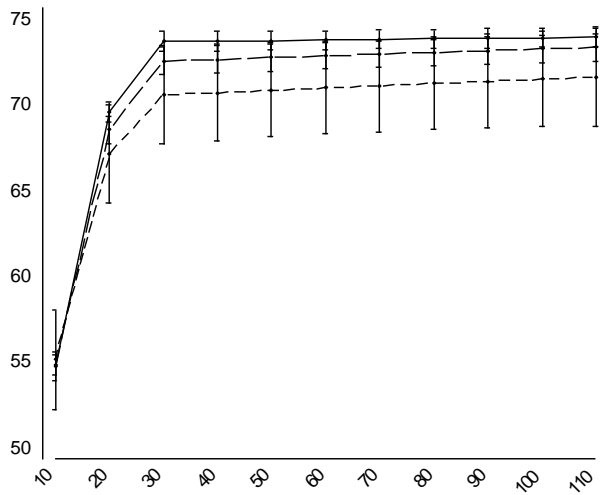
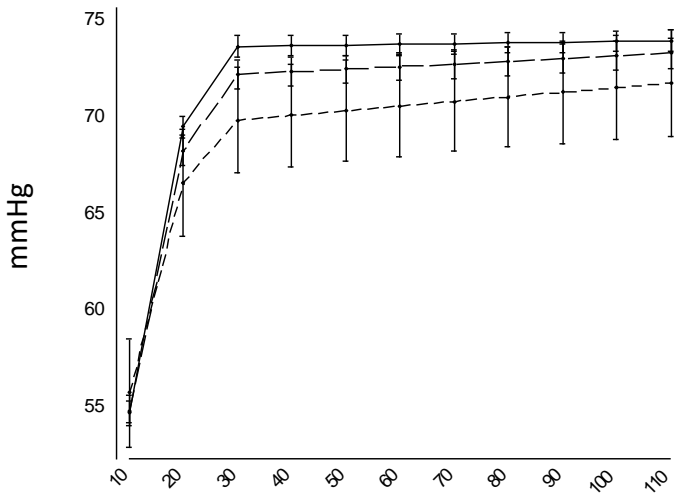
Model 1

Model 2

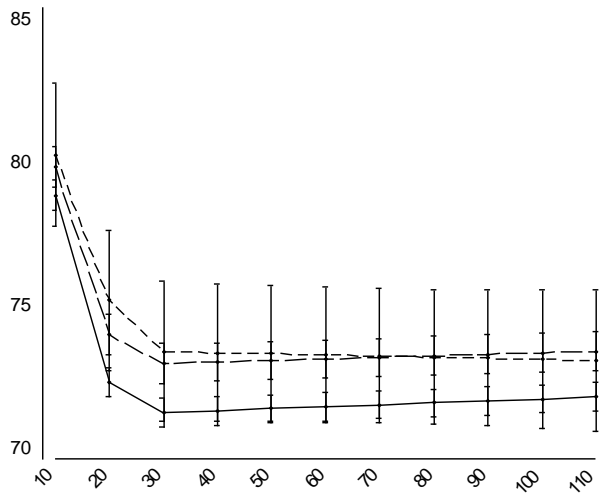
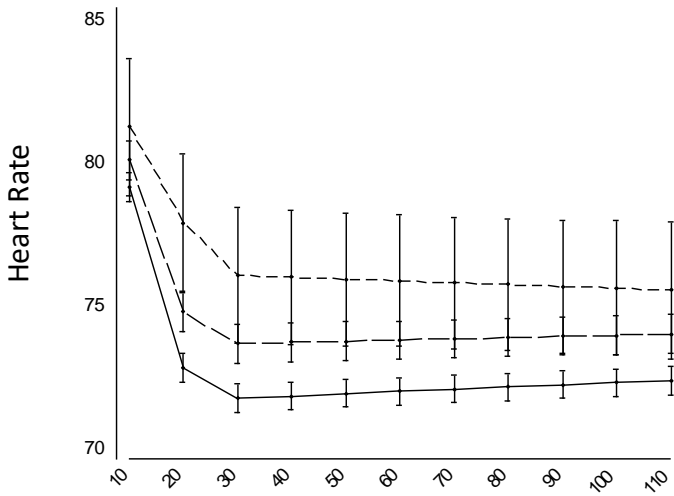
Systolic blood pressure



Diastolic blood pressure



Heart Rate



Time since stand (s)