Appendix

We report all the parameters we used to carry out the simulations. In Table 2, we list the parameters we used for electrophysiology, active force generation and mechanics. Table 3 contains the parameters used in the 0D circulation model. Details on the parameters used in the CFD model (in particular RIIS model) are provided in Table 4. Parameters of the perfusion model are given in Table 5 and Table 6.

Physics	Parameter		Value	
Electrophysiology (LV only)	Conductivities	σ_m^l	$2.00 \cdot 10^{-4}$	m^2/s
		σ_m^t	$1.05 \cdot 10^{-4}$	m^2/s
		σ_m^n	$0.55 \cdot 10^{-4}$	m^2/s
	Stimulus	A_{app}	25.71	V/s
		σ_{app}	$2.5 \cdot 10^{-3}$	m
		T_{app}	$3 \cdot 10^{-3}$	s
Active Force (LV only)		γ	30	
		k_d	0.36	
		α_{k_d}	−0.2083	
		K_{off}	8	1/s
		K_{basic}	4	1/s
		μ_{fp}^0	32.255	1/s
		μ_{fp}^1	0.768	1/s
		a_{XB}	$20 \cdot 10^8$	Pa
Mechanics	Guccione	ρ_s	1000	kg/m^2
		c	$8.8 \cdot 10^2$	Pa
		a_{ff}	8	
		a_{ss}	6	
		a_{nn}	3	
		a_{fs}	12	
		a_{fn}	3	
		a_{sn}	3	
		κ	$5 \cdot 10^4$	Pa
	Boundary conditions	$K_\perp^{epi}$	$2 \cdot 10^5$	Pa/m
		$K_\parallel^{epi}$	$2 \cdot 10^4$	Pa/m
		$C_\perp^{epi}$	$2 \cdot 10^4$	Pa s/m
		$C_\parallel^{epi}$	$2 \cdot 10^3$	Pa s/m
	In. conditions	p_0	1333.2	Pa

Table 2. Parameters used in the electromechanical model: electrophysiology, active force generation, and solid mechanics. For the force generation model, we only report parameters that are different from the original setting described in[55]. For a description of each parameter, we refer the reader to[33], where also the same notation is employed.

	Parameter	Value	
Systemic arteries	R_{AR}^{SYS}	0.60	mmHg s/mL
	C_{AR}^{SYS}	2.55	mL/mmHg
	L_{AR}^{SYS}	$2.7 \cdot 10^{-3}$	mmHg s^2/mL
	$R_{upstream}^{SYS}$	0.05	mmHg s/mL
	$p_{AR}^{SYS}(0)$	80.0	Pa
	$Q_{AR}^{SYS}(0)$	0.0	mL/s
Systemic veins	R_{VEN}^{SYS}	0.26	mmHg s/mL
	C_{VEN}^{SYS}	60.0	mL/mmHg
	L_{VEN}^{SYS}	$5 \cdot 10^{-4}$	mmHg s^2/mL
	$p_{VEN}^{SYS}(0)$	30.9	Pa
	$Q_{VEN}^{SYS}(0)$	0.0	mL/s
Pulmonary arteries	R_{AR}^{PUL}	0.05	mmHg s/mL
	C_{AR}^{PUL}	10.0	mL/mmHg
	L_{AR}^{PUL}	$5 \cdot 10^{-4}$	mmHg s^2/mL
	$p_{AR}^{PUL}(0)$	29.34	Pa
	$Q_{AR}^{PUL}(0)$	0.0	mL/s
Pulmonary veins	R_{VEN}^{PUL}	0.025	mmHg s/mL
	C_{VEN}^{PUL}	38.4	mL/mmHg
	L_{VEN}^{PUL}	$2.083 \cdot 10^{-4}$	mmHg s^2/mL
	$p_{VEN}^{PUL}(0)$	13.58	Pa
	$Q_{VEN}^{PUL}(0)$	0.0	mL/s
Right atrium	E_A	0.06	mmHg/mL
	E_B	0.07	mmHg/mL
	t_C	0.80	
	T_C	0.17	
	T_R	0.17	
	$V_{RA}(0)$	64.17	mL
Right ventricle	E_A	0.55	mmHg/mL
	E_B	0.05	mmHg/mL
	t_C	0.0	
	T_C	0.34	
	T_R	0.15	
	$V_{RV}(0)$	148.9	mL
Mitral valve	R_{min}	0.0075	mmHg s/mL
	R_{max}	75 006.2	mmHg s/mL
Aortic valve	R_{min}	0.0075	mmHg s/mL
	R_{max}	75 006.2	mmHg s/mL
Tricuspid valve	R_{min}	0.0075	mmHg s/mL
	R_{max}	75 006.2	mmHg s/mL
Pulmonary valve	R_{min}	0.0075	mmHg s/mL
	R_{max}	75 006.2	mmHg s/mL

Table 3. Parameters of the circulation model for the electromechanical simulation. We refer to[33] for a description of each parameter, where the same notation is also employed.

Physics	Parameter		Value	
Fluid dynamics		ρ	$1.06 \cdot 10^3$	kg/m^3
		μ	$3.5 \cdot 10^{-3}$	kg/(m s)
	RIIS	R_{MV}	$1 \cdot 10^4$	kg/(m s)
		R_{AV}	$1 \cdot 10^4$	kg/(m s)
		ε_{MV}	$2 \cdot 10^{-3}$	mm
		ε_{AV}	$2 \cdot 10^{-3}$	mm

Table 4. Parameters used in the fluid dynamics model. For a description of the RIIS parameters, we refer the reader to[66], where the same notation is also used.

Region	K_1 m^2/(Pa s)	K_2 m^2/(Pa s)	K_3 m^2/(Pa s)
1	$1.74 \cdot 10^{-8}$	$1.21 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
2	$3.87 \cdot 10^{-8}$	$2.58 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
3	$6.84 \cdot 10^{-8}$	$4.91 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
4	$3.75 \cdot 10^{-8}$	$1.75 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
5	$3.95 \cdot 10^{-8}$	$2.50 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
6	$5.32 \cdot 10^{-8}$	$4.78 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
7	$3.51 \cdot 10^{-8}$	$2.53 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
8	$3.88 \cdot 10^{-8}$	$2.09 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
9	$3.40 \cdot 10^{-8}$	$1.75 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
10	$3.77 \cdot 10^{-8}$	$2.34 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
11	$2.62 \cdot 10^{-8}$	$1.50 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
12	$5.55 \cdot 10^{-9}$	$4.45 \cdot 10^{-10}$	$1.00 \cdot 10^{-7}$
13	$3.24 \cdot 10^{-8}$	$2.07 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
14	$2.88 \cdot 10^{-8}$	$1.94 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
15	$3.13 \cdot 10^{-8}$	$1.84 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
16	$1.04 \cdot 10^{-7}$	$6.25 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$
17	$4.37 \cdot 10^{-8}$	$2.55 \cdot 10^{-9}$	$1.00 \cdot 10^{-7}$

Table 5. Parameters used in the multicomparment Darcy model: permeabilities. The parameters have been estimated in[18].

Region	$\beta_{1,2}$ 1/(Pa s)	$\beta_{2,3}$ 1/(Pa s)	α m^3/(Pa s)
1	$4.93 \cdot 10^{-6}$	$1.26 \cdot 10^{-6}$	$4.65 \cdot 10^{-5}$
2	$2.45 \cdot 10^{-5}$	$2.83 \cdot 10^{-6}$	$1.07 \cdot 10^{-4}$
3	$3.06 \cdot 10^{-5}$	$5.61 \cdot 10^{-6}$	$3.15 \cdot 10^{-4}$
4	$1.09 \cdot 10^{-5}$	$2.02 \cdot 10^{-6}$	$1.28 \cdot 10^{-4}$
5	$1.91 \cdot 10^{-5}$	$3.16 \cdot 10^{-6}$	$1.63 \cdot 10^{-4}$
6	$1.69 \cdot 10^{-5}$	$3.16 \cdot 10^{-6}$	$4.46 \cdot 10^{-4}$
7	$1.08 \cdot 10^{-5}$	$1.47 \cdot 10^{-6}$	$2.22 \cdot 10^{-4}$
8	$2.88 \cdot 10^{-5}$	$4.14 \cdot 10^{-6}$	$2.56 \cdot 10^{-4}$
9	$5.07 \cdot 10^{-6}$	$1.81 \cdot 10^{-6}$	$4.91 \cdot 10^{-5}$
10	$1.56 \cdot 10^{-5}$	$2.06 \cdot 10^{-6}$	$1.24 \cdot 10^{-4}$
11	$5.28 \cdot 10^{-6}$	$8.97 \cdot 10^{-7}$	$7.23 \cdot 10^{-5}$
12	$9.50 \cdot 10^{-7}$	$1.97 \cdot 10^{-7}$	$2.09 \cdot 10^{-5}$
13	$7.69 \cdot 10^{-6}$	$1.04 \cdot 10^{-6}$	$8.22 \cdot 10^{-5}$
14	$1.49 \cdot 10^{-5}$	$2.04 \cdot 10^{-6}$	$8.83 \cdot 10^{-5}$
15	$9.90 \cdot 10^{-6}$	$1.07 \cdot 10^{-6}$	$5.51 \cdot 10^{-5}$
16	$2.30 \cdot 10^{-4}$	$1.47 \cdot 10^{-5}$	$2.35 \cdot 10^{-4}$
17	$3.41 \cdot 10^{-5}$	$6.56 \cdot 10^{-6}$	$1.12 \cdot 10^{-4}$

Table 6. Parameters used in the multicomparment Darcy model: pressure coupling coefficients (β) and coefficients in the Robin coupling condition (α). The parameters have been estimated in[18].