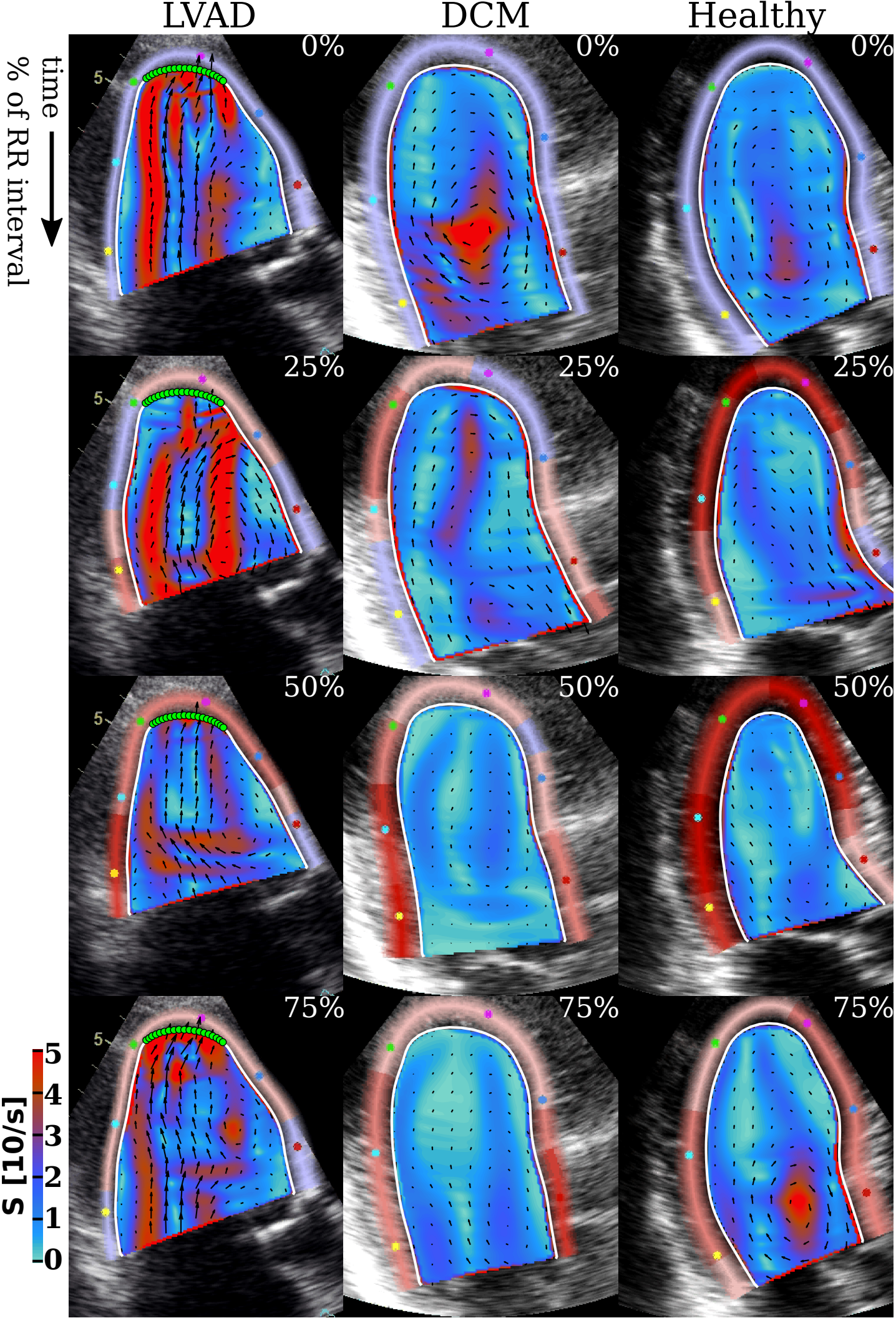
Supplemental Table 1. Flow indices variation in the ramp study

		β	**ANOVA P value**
Vortex Circulation (cm^2/s)	CCW	0	
	CW	0	
Vortex Radius (cm)	CCW	0	
	CW	0	
Vortex Centroid Location (nd)	CCW	-10^{-4}	
	CW	0	
Pulsatility Index (nd)		$-3\ 10^{-4}$	0.02
Residence Time (sec)	Avg	0	
	Max	$2\ 10^{-4}$	
Size of regions with T_R > 2 sec (%)		0	
CSI (100/s)	Avg	0.01	
	Max	0.2	
Size of regions with *CSI* > 200/s		0.01	

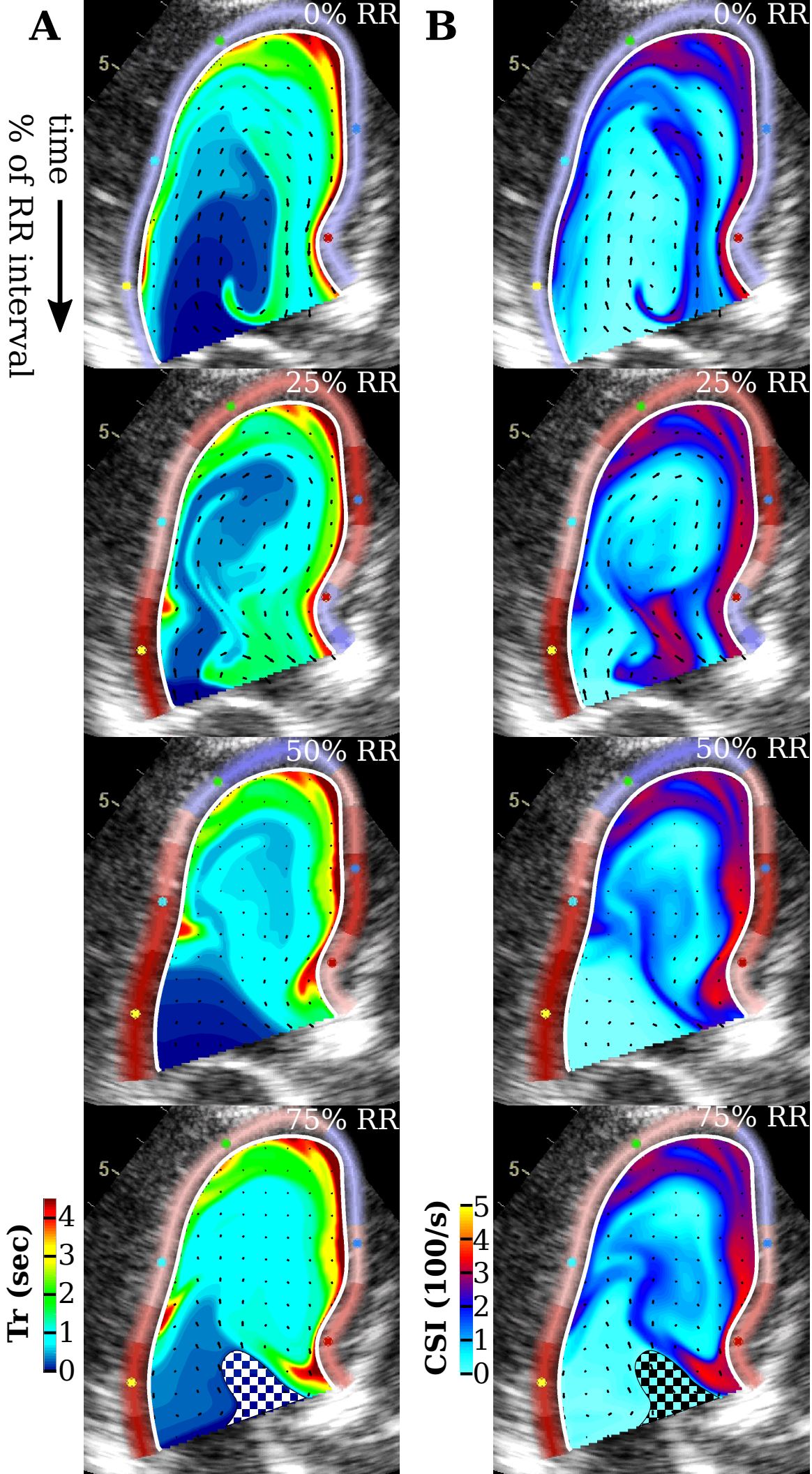
T_R: Residence Time, CSI: Cumulated shear index, β: fixed effect estimates coefficient.


LVAD
DCM
Healthy
time
% of RR interval
0%
25%
50%
75%
5
4
3
2
1
0
S [10/s]

Supplemental Figure 1. Instantaneous shear - Panel A: instantaneous shear maps at different time instants within the cardiac cycle (as % of RR interval) for the same cases of Figure 1A.

time
% of RR interval
Vel (m/s)
-0.5
-0.4
-0.3
-0.2
-0.1
-0
Tr (sec)
-4
-3
-2
-1
-0
CSI (100/s)
-5
-4
-3
-2
-1
-0

Supplemental Figure 2. Blood flow velocity, TR and CSI maps in the LV of one patient implanted with the Heartmate 3 device. The left column shows velocity maps with vortices highlighted at different time instants within the cardiac cycle (as % of RR interval). The center and right columns show maps of, respectively, the residence time and cumulative shear index in the same LV at the same instants of time.


A
B
time
% of RR interval
0% RR
25% RR
50% RR
75% RR
Tr (sec)
4
3
2
1
0
CSI (100/s)
5
4
3
2
1
0

Supplemental Figure 3. TR and CSI maps with aortic insufficiency - residence time maps (A) and cumulative shear index maps(B) for a representative dilated heart with aortic insufficiency at different time instants within the cardiac cycle (as % of RR interval). The checkered region highlights the blood entering the LV through the aortic valve.