

Table S1. Characteristics of 22 patients selected for intra- and inter-operator variability assessment.

Patient ID	Image quality	FR op A (Hz)	FR op B (Hz)	Category
1	Suboptimal	19	17	CVDs
2	Suboptimal	20	17	CVDs
3	Optimal	21	18	CVDs
4	Suboptimal	22	22	Healthy
5	Optimal	20	19	CVDs
6	Optimal	20	20	VRFs
7	Optimal	21	21	CVDs
8	Suboptimal	19	19	CVDs
9	Optimal	20	20	VRFs
10	Suboptimal	18	15	CVDs
11	Suboptimal	17	17	Healthy
12	Optimal	17	20	VRFs
13	Optimal	24	25	CVDs
14	Optimal	20	20	Healthy
15	Optimal	22	21	CVDs
16	Optimal	20	20	CVDs
17	Optimal	21	21	VRFs
18	Suboptimal	19	19	CVDs
19	Optimal	19	19	Healthy
20	Optimal	19	19	Healthy
21	Optimal	19	19	Healthy
22	Optimal	21	21	Healthy

Legend: FR= frame rate; Op A= senior operator; Op B= junior operator.

Table S2. Associations between 3D-DHM echocardiographic metrics and vascular risk factors or prevalent cardiovascular disease.

	Prevalent VRFs		Prevalent CVDs	
	aOR* [95 % CI]	p value	aOR* [95% CI]	p value
Echocardiographic metrics				
EDVi 3D (per 10 ml/m²)	0.98 [0.85-1.13]	0.79	1.44 [1.33-1.57]	<0.001
ESVi 3D, (per 10 ml/m²)	1.02 [0.76-1.35]	0.90	2.31 [1.97-2.71]	<0.001
LVEF 3D (per 10%)	0.92 [0.63-1.34]	0.65	0.28 [0.22-0.35]	<0.001
LAEF 3D (per 10%)	0.94 [0.77-1.15]	0.58	0.45 [0.39-0.51]	<0.001
LV mass/m² (per 10 g/m²)	1.03 [0.90-1.18]	0.58	1.50 [1.37-1.64]	<0.001
LAVi, max (per 10 ml/m²)	1.15 [0.96-1.38]	0.11	1.73 [1.55-1.94]	<0.001
LAVi min (per 10 ml/m²)	1.19 [0.87-1.63]	0.26	3.03 [2.48-3.70]	<0.001
SVi (per 10 ml/m²)	0.94 [0.75-1.17]	0.61	0.95 [0.82-1.09]	0.49
LVGF index (per 10%)	0.77 [0.51-1.19]	0.25	0.22 [0.16-0.28]	<0.001
LVM/LVEDV ratio	1.91 [0.59-6.16]	0.27	0.83 [0.39-1.73]	0.61

Legend: *Adjusted analysis for sex and age; EDVi= end-diastolic volume indexed; ESVi= end-systolic volume indexed; LAEF= left atrial ejection fraction; LAVi= left atrial volume indexed; LVEF= left ventricular ejection fraction, LVGFI= left ventricle global function index, LVM= left ventricular mass, Svi= stroke volume indexed.

Table S3. Intra- (A) and inter-operator (B) reliability assessed by Bland-Altman analysis, Interclass Correlation Coefficients, and Coefficients of Variance.

A

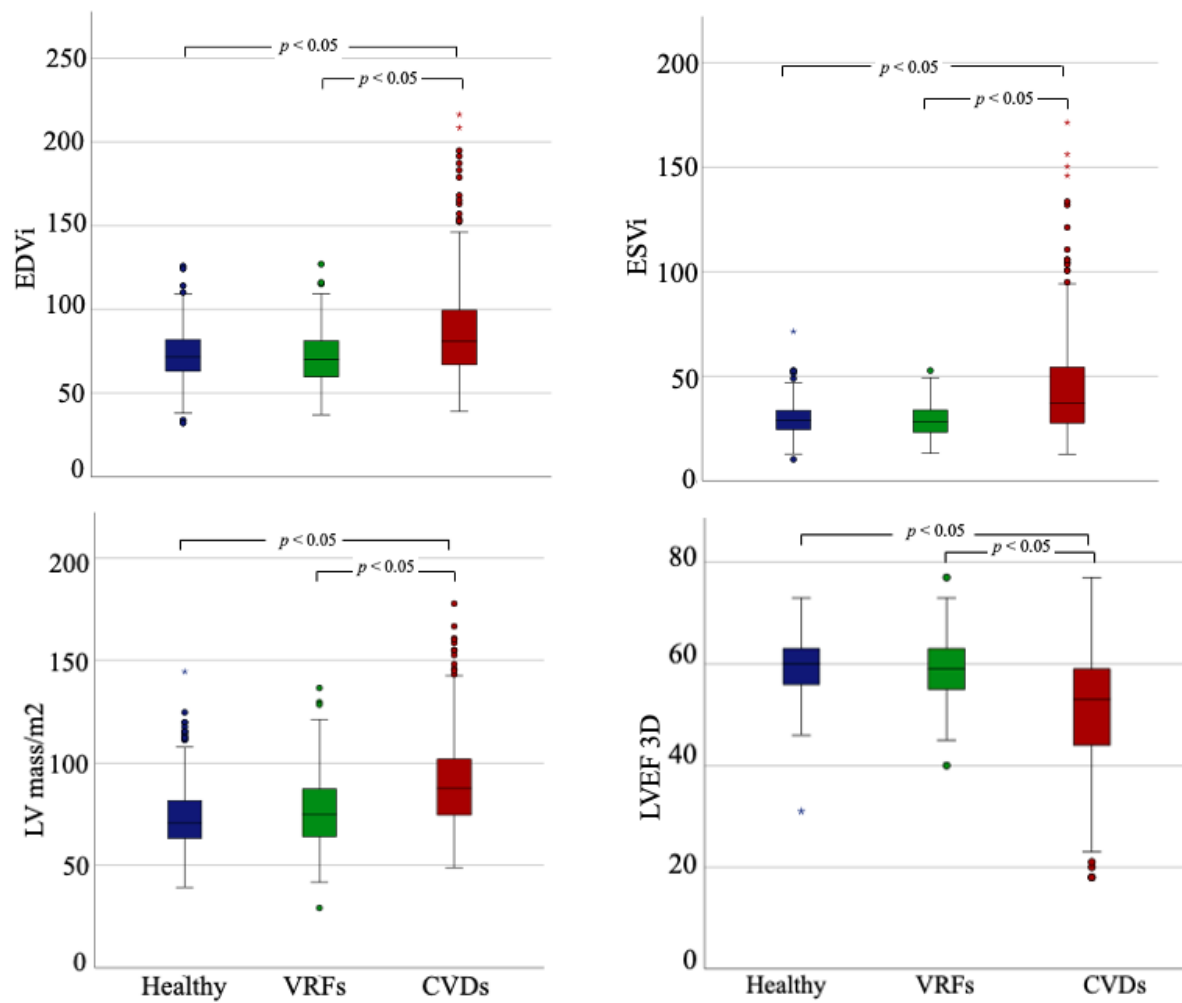
	Bias	LOA	ICC	CoV
EDV	1.5	14.9	99.5%	2.5 ± 2.1%
ESV	-0.5	5.6	99.8%	2.4 ± 1.8%
LVEF-3D	0.5	4.0	97.8%	2.1 ± 1.5%
SV	1.9	13.4	98.4%	4.1 ± 3%
LAVmax	2.1	21.1	93.6%	5.9 ± 6.5%
LAVmin	0.4	11.8	95.7%	8.1 ± 6.2%
LAEF	-0.4	13.7	86.2%	7.1 ± 6.3%

B

	Bias	LOA	ICC	CoV
EDV	5.0	25.6	98.8%	4.3% ± 3.7%
ESV	1.0	15.4	99.2%	5.2% ± 3.8%
LVEF-3D	0.9	8.1	95.4%	4.6 ± 3.6%
SV	5.0	26.2	92.2%	8.2 ± 4.5%
LAVmax	3.7	18.0	94.9%	7.2 ± 6.1%
LAVmin	3.4	10.9	92.9%	11.3 ± 6.3%
LAEF	-1.7	14.1	82.5%	6.5 ± 7.1%

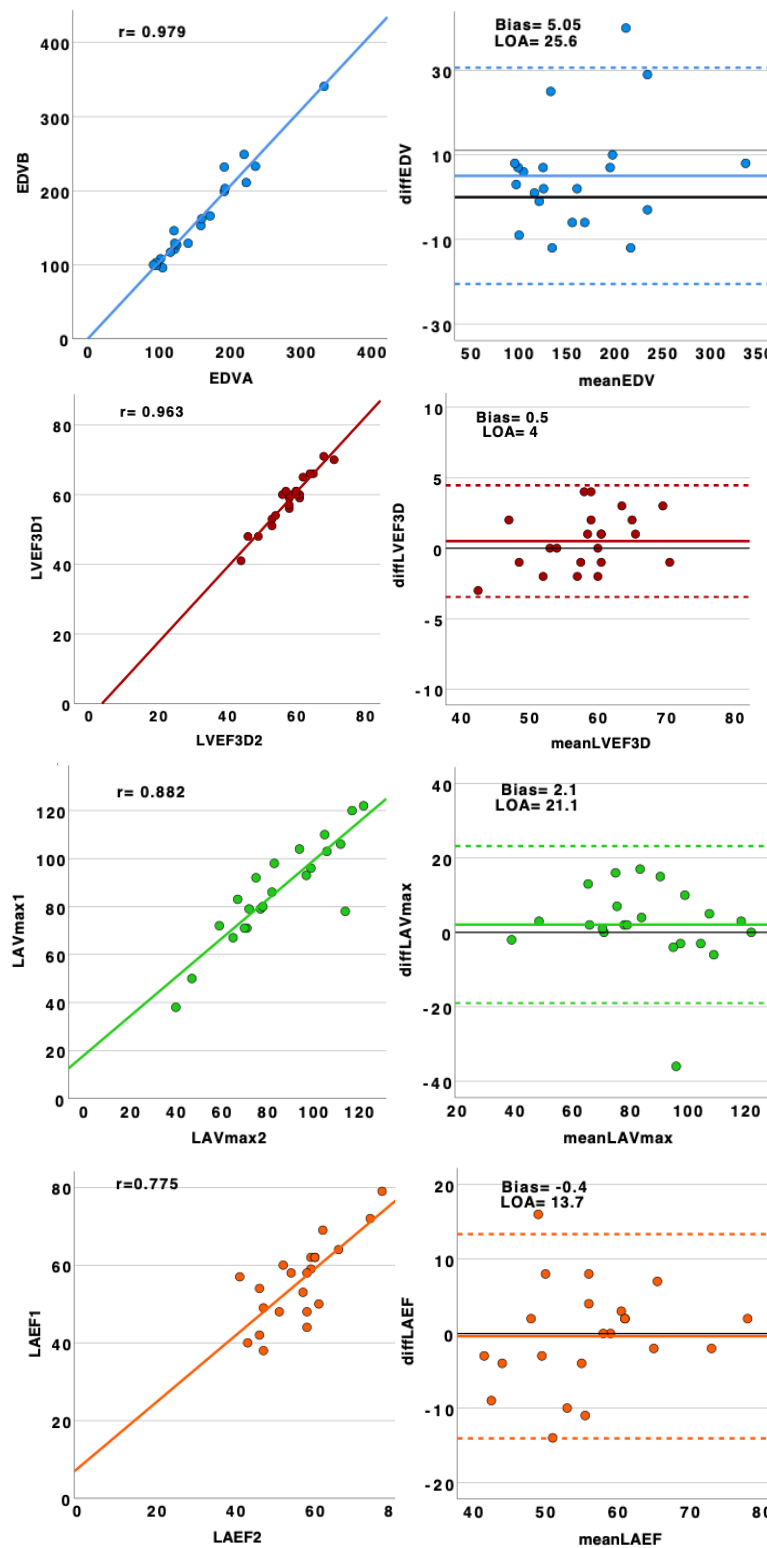
Legend: CoV= Coefficient of variance; EDV= end-diastolic volume; ESV= end-systolic volume; ICC= Interclass correlation coefficients; LAEF= left atrial ejection fraction; LAV= left atrial volume; LOA= limits of agreement; LVEF= left ventricular ejection fraction, LVGFI= left ventricle global function index, LVM= left ventricular mass, SV= stroke volume.

Figure S1. 3D-DHM Echocardiographic metrics stratified according to the presence of VRF and CVDs.



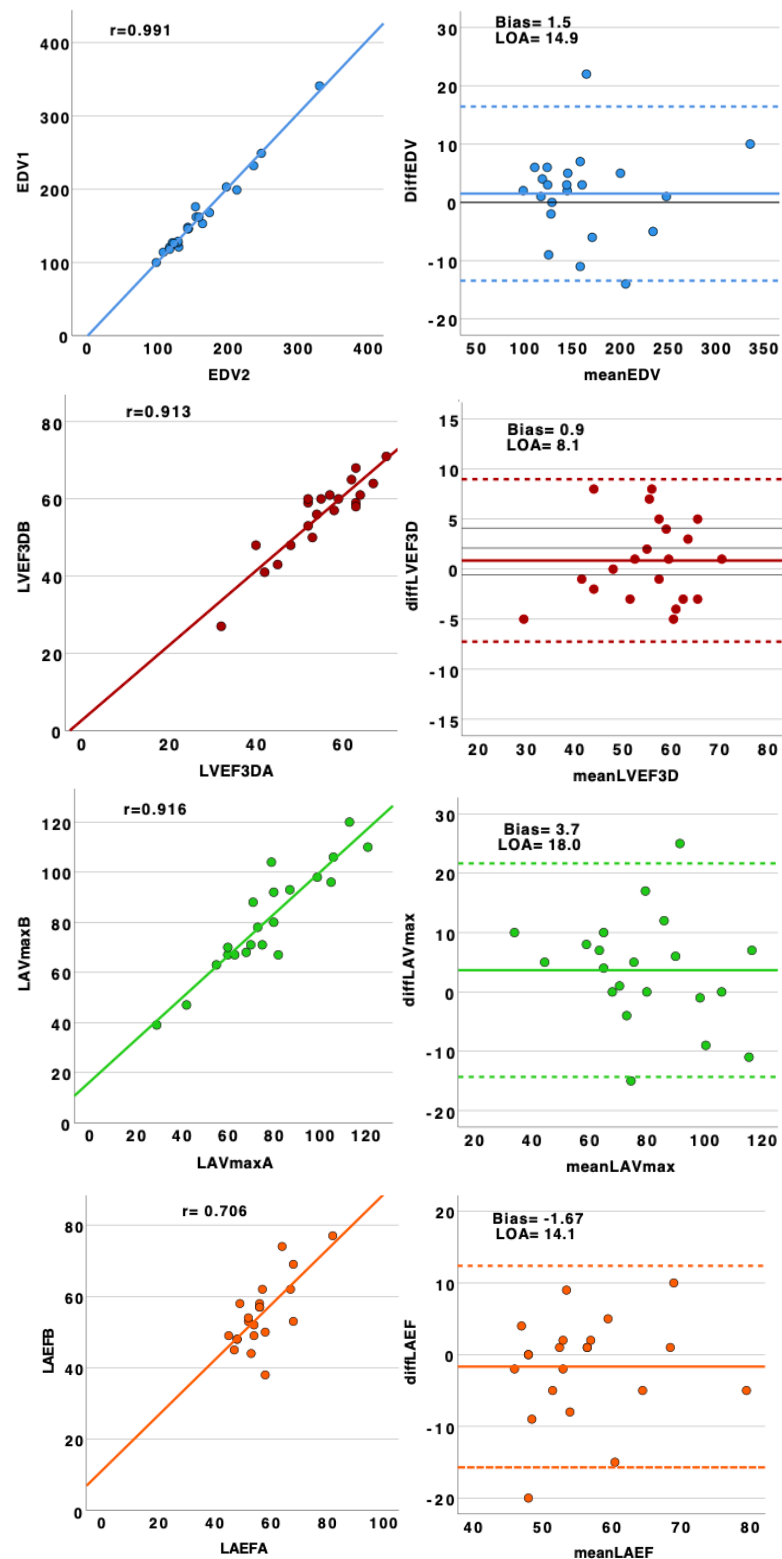
Legend: EDVi= end-diastolic volume indexed; ESVi= end-systolic volume indexed; LVEF= left ventricular ejection fraction.

Figure S2. Intra-operator variability assessed by Pearson's correlation and Bland-Altman Plot.



Legend: EDV= end-diastolic volume; LAEF= left atrial ejection fraction; LAV= left atrial volume; LVEF= left ventricular ejection fraction.

Figure S3: Inter-operator variability assessed by Pearson's correlation and Bland-Altman Plot.



Legend: EDV= end-diastolic volume; LAEF= left atrial ejection fraction; LAV= left atrial volume; LVEF= left ventricular ejection fraction.