

T2 mapping Tables

**Table 3c-ii.1: Correlation of T2 mapping indices with histological substrates.** Agreement expressed as linear R<sup>2</sup> regression index or area under the curve (AUC). MSE – multi spin-echo, T2 GraSE – T2 gradient-spin-echo, EMB – endomyocardial biopsy, LLC – Lake Louise criteria, T2WI – T2 weighted imaging, GRE – global relative enhancement, LGE – late gadolinium enhancement.

	N	Population	Sequence	Histological correlation	Agreement (R <sup>2</sup> ) or AUC	
Fernandez-Jimenez(1)	20	Pigs (I/R injury)	MSE	Water content	Native T2	R <sup>2</sup> =0.75
			T2 GraSE	Water content	Native T2	R <sup>2</sup> =0.73
Carpenter(2)	12	ExVivo Hearts	MSE	Iron content	Native R2 (=1/T2)	R <sup>2</sup> =0.786
Bohnen(3)	31	HF due to suspected chronic myocarditis	T2 GraSE	EMB criteria for myocarditis	LLC T1 mapping (MOLLI 3(3)5(FA 35°) T2 mapping (T2 GraSE)	<ul style="list-style-type: none"> <li>• T2WI 0.56</li> <li>• GRE 0.55</li> <li>• LGE 0.60</li> <li>• Native T1 0.65</li> <li>• Postcontrast T1 0.86</li> <li>• ECV 0.58</li> <li>• T2 map 0.78</li> </ul>
Lurz(4)	129	Suspected myocarditis <ul style="list-style-type: none"> <li>• acute symptoms &lt;14 days</li> <li>• chronic symptoms &gt;14 days</li> </ul>	T2GraSE	EMB criteria for myocarditis	LLC T1 mapping (MOLLI 3(3)5(FA 35°) T2 mapping (T2 GraSE)	Acute symptoms (n=61) <ul style="list-style-type: none"> <li>• LLC 0.56</li> <li>• Native T1 0.82</li> <li>• ECV 0.75</li> <li>• T2 map 0.81</li> </ul>

						<p>Chronic symptoms (n=68)</p> <ul style="list-style-type: none"><li>• LLC 0.53</li><li>• Native T1 0.53</li><li>• ECV 0.61</li><li>• T2 map 0.77</li></ul>
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**Table 3c-ii.2: Correlation of T2 mapping indices with other imaging biomarkers.** SSFP – steady-state free precession, MI – myocardial infarction (STEMI/NSTEMI), AAR – area-at-risk, SPECT – single proton emission computed tomography, STEMI - ST elevation myocardial infarction, NSTEMI - non-ST elevation myocardial infarction, TTCM: tako-tsubo cardiomyopathy, T2WI-STIR - triple-inversion black blood (short tau) fast-spin-echo.

	N	T2 mapping sequence	Population	Imaging biomaker	Outcome/Agreement
Bulluck(5)	18	T2 SSFP	Acute MI	AAR by T2WI/LGE	AUC=0.86
Park(6)	20	T2 SSFP	Acute MI	T2WI	<ul style="list-style-type: none"> <li>• T2 mapping 95%</li> <li>• T2WI 55%</li> </ul>
Langhans(7)	14	T2 SSFP	Acute MI	AAR by SPECT	R=0.94 (threshold of 60msec)
Nassenstein(8)	29	T2 SSFP	STEMI/ NSTEMI	T2WI	<ul style="list-style-type: none"> <li>• T2 map → sensitivity 82%, specificity 94%</li> <li>• T2WI → sensitivity 50.4%, specificity 98%</li> </ul>
Thavendiranathan (9)	30	T2 SSFP	Myocarditis or TTCM	T2WI-STIR	T2 map → sensitivity 94%, specificity 97% (threshold of 59 msec),
Van Heeswijk(10)	11	MSE	STEMI	T2WI	r=0.91
Verhaert(11) <b>Error! Bookmark not defined.</b>	26	T2 SSFP	Acute MI	T2WI	T2 mapping detected edema more frequently than T2WI in infarcted myocardium (96% vs 67%)

**Table 3c-ii.3. Reproducibility for native T2 using various sequences and field strengths. Studies included if reported interstudy reproducibility.** Results are reported as Bland-Altman plots: MD±SD and CoV in brackets when available

<b>T2 mapping (msec)</b>	Wassmuth (12)
<b>Magnetic field</b>	1.5
<b>N</b>	73
<b>Population</b>	Controls
<b>Sequence</b>	T2 SSFP
<b>No of echo images</b>	3
<b>Interobserver V</b>	1.6±1.5
<b>Intraobserver V</b>	1.1±1.0
<b>Interstudy V</b>	(7.6%)

**Table 3c-ii.4. Normal values for native T2 reported for different sequences and magnetic fields. Studies included if n>50 subjects.**  
Mean native T2 values±SD or 95% CI in single mid-ventricular slice, expressed in ms.

	N	Age (years, range)	Sequence	Native T2	
				1.5 T	3.0 T
Wassmuth (12)	73	35±13	mSE	52±5	
	73		T2 SSFP	55±5	
Von Knobelsdorff (13)	58	20-80	T2 SSFP		45.1 (39.3 – 49.5)
Boenner (14)	74		T2 GraSE	Male: 57.5±3.5 Female: 60 ± 3.8	

**Table 3c-ii.5. Proof of concept studies with T2 indices differentiating between health and disease. Studies included if n>25 per patients' group (unless the only study published).** The table reports mean values±SD for each disease entity, sequence type, T2 index, and field strength; includes effect size as a measure of dispersion observed in healthy subjects, as well as the Cohen's d index. Native T2 values are expressed in ms.

Disease model	Sequence	Health (n)		Disease (n)		Effect Size (Cohen's d)
		1.5 T	3.0 T	1.5 T	3.0 T	
<b>Viral myocarditis</b>						
Thavendiranathan(9)	T2prep SSFP	54.5±2.2 (n=30)		Involved 65.2±3.2 Remote 53.5±2.1 (n=20)		4.0 0.33
Radunski(15)	T2prep GraSE	56 (54-60) (n=20)		59(55-65) (n=20)		0.6
Baessler(16)	T2prep GraSE	58.7 ± 4.2 (n=30)		62.1 ± 7.2 (n=31)		0.6
Bohnen(3)	T2prep GraSE	55(54-57) (n=11)		EMB+: 65 (61-70) (n=16) EMB-:59 (55-64) (n=15)		3.6 1.9
Von Knobelsdorff-Brenkenhoff(17)	T2 SSFP	50.2 (49.2–52.0) (n=18)		55.1(53.3–57.2) (n=18)		1.1
<b>Systemic lupus Erythematosus</b>						
Hinojar (active)(18)	T2prep GraSE		45 ± 4 (n=45)		65 ± 8 (n=65)	3.2
Zhang (subclinical) (19)	T2 SSFP	52.8±4.4 (n=12)		58.2±5.6 (n=24)		1.7
<b>TakoTsubo Cardiomyopathy</b>						
Thavendiranathan(9)	T2 SSFP	54.5±2.2 (n=30)		(n=10) Involved 65.6±4.0 Remote 53.6±2.7		3.5 0.2
<b>Cardiac Sarcoidosis</b>						
Greulich 2016 (20)	T2 SSFP	49 (n=26)		52 (n=61)		
Puntmann 2017(21)	T2 GraSE		45±4 (n=21)		54±6 (n=53)	1.8
<b>Acute myocardial infarction</b>						

Wasmuth 2013(12)	T2 SSFP	55±5 (n=28)		(n=28) Involved 73±9 Remote 51±3		2.4 0.97
Verhaert(11)	T2 SSFP	55.5 ± 2.3 (n=21)		(n=27) Involved 69 ±6 Remote 56±3.4		4.65 0.17

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