

Response to reviewer's Manuscript NO: 40901

Reviewer #1 - Reviewer's code: 01204088

We thank the reviewer for his/her helpful comments for improving our manuscript.

Muser et al. reviewed clinical applications of feature-tracking cardiac magnetic resonance imaging. Figure 2 is missing in the 40901-Manuscript File. Purposes of the review in the abstract and introduction are slightly different. In the abstract, they say they reviewed the basic principles, clinical applications, accuracy, and reproducibility of cardiovascular magnetic resonance myocardial feature tracking, highlighting its prognostic implications. In the introduction, they will focus on CMR feature tracking (CMR-FT) imaging of myocardial strain summarizing its basic principles, current clinical applications and future perspectives. Accuracy, reproducibility, and prognostic implications are mentioned only in the abstract, and future perspectives are mentioned only in the introduction. I think they do not have to be identical, but it is better they are not so different. Title page, line 4. Name of the country of this facility will be required.

As correctly pointed out by the reviewer, we have realized there was a typo in the numeration of figures that was corrected in the revised version of our manuscript.

We have also added the name of the country of the facility that was missing it and we have rephrased the purpose of our review both in the abstract and in the introduction as follow:

The purpose of this article is to review the basic principles, current clinical applications and future perspectives of cardiovascular magnetic resonance myocardial feature tracking, highlighting its prognostic implications (**page 2**).

In the present review we will focus on CMR feature tracking (CMR-FT) imaging of myocardial strain summarizing its basic principles, current clinical applications and future perspectives (**page 3**).

Reviewer #2 - Reviewer's code: 03650274

We thank the reviewer for his/her helpful comments for improving our manuscript.

The article is well written, and the research topic is very interesting. I recommend acceptance after corrections of some typos and improvement in English language.

According to the reviewer's suggestion we have carefully revised our manuscript and corrected the typos (see also response to reviewer #1).

Reviewer #3 - Reviewer's code: 00227375

We thank the reviewer for his/her helpful comments for improving our manuscript.

This is an excellent systematic review about cardiac magnetic resonance feature tracking imaging of myocardial strain. This manuscript is nicely structured and well written. I have a few minor comments about this manuscript. Please consider the following comments.

1. Figure 2 seemed to be found nowhere.

We have realized that a typo occurred while numerating the figures, we have corrected the typo in the revised version of our manuscript (see also response to the reviewer #1).

2. Feature Tracking Normal Values, last line Correct “[13] [14] [15] [12]” to “[12] [13] [14] [15]”.

We have corrected the typo according to the reviewer's suggestion.

3. References [2] Correct “Caforio ALP” to “Caforio AL”. [6] Correct “Ibrahim E-SH” to “Ibrahim el-SH”. [8] Correct “Gotte MJW” to “Gotte MJ”. [34] Correct “Moon JCC” to “Moon JC”. [34] Correct “Coats AJS” to “Coats AJ”. [36] Correct “Keller MGP” to “Keller MG”. [44] Correct “te Riele ASJM” to “te Riele AS”.

We have corrected the typos according to the reviewer's suggestion.

Reviewer #4 - Reviewer's code: 03732022

We thank the reviewer for his/her helpful comments for improving our manuscript.

The authors reviewed the role of CMR feature tracking as a potentially useful time saving sequence/protocol with CMR, in imaging cardiovascular disease. The review was thorough, but this imaging feature has not been proven in its clinical utility (e.g. accuracy/ reproducibility/ discriminative ability) beyond current protocols/sequences in CMR and the authors have acknowledged this. It is likely that the utility of this feature, if any, will be suited for a niche patient population. There are minor spelling errors eg debatable (instead of debating).

According to the reviewer's suggestion we have carefully revised our manuscript and corrected the typos (see also response to reviewers #1 and #2).

Reviewer #5 - Reviewer's code: 40901

We thank the reviewer for his/her helpful comments for improving our manuscript.

Dr. Muser and colleagues made a comprehensive review for the topic of Clinical Applications of Feature-Tracking Cardiac Magnetic Resonance Imaging. In general, the paper was well written. However, and minor revision is needed. 1. Figure 2 is missed. 2. On line 16, page 6, a typo should be corrected to "36-months". 3. A table is suggested to be added and summarize the CMR derived strain parameters in the prediction of clinical events regarding ischemic heart disease and idiopathic cardiomyopathy for the general cardiologists.

We have realized that a typo occurred while numerating the figures, we have corrected the typo in the revised version of our manuscript (see also response to the reviewers #1 and #3).

According to the reviewer's suggestion we've also corrected the typos and added a table summarizing the utility of CMR feature tracking in risk stratification of patients with ischemic and non-ischemic cardiomyopathy (see below).

Table 1. Principal studies analyzing the prognostic role of CMR-feature tracking in patients with ischemic and non-ischemic cardiomyopathy.

Study	N. of patients	Heart disease	Parameters analyzed	Outcome	Occurrence of outcome, %	Independent predictors of the outcome event (HR)	Follow-up duration
Gavara et al. 2017 [28]	323	IHD (recent STEMI)	GLS GCS GRS n. segments with altered LS n. segments	cardiac death, readmission for heart failure and reinfarction	17	GLS (1.21)	36 months (median)

			with altered CS n. segments with altered RS LVEF LGE MVO				
Nucifora et al. 2018 [29]	180	IHD (recent STEMI)	GCS LVEF LGE MVO	cardiovascular death, aborted SCD and hospitalization for heart failure	22	GCS (1.16)	95 months (median)
Muser et al. 2017 [30]	130	IHD (recent STEMI)	mechanical dispersion LVEF LGE MVO	cardiovascular death, aborted SCD and hospitalization for heart failure	20	mechanical dispersion (1.39)	95 months (median)
Buss et al. 2015 [35]	210	IDCM	GLS GCS GRS Mean LS Mean CS Mean RS LVEF LGE	Composite of cardiac death, heart transplant and aborted SCD	12	GLS (1.27) Mean LS (5.44)	5.3 years (median)

Riffel et al. 2016 [36]	146	IDCM	long axis strain LVEF LVEDV LGE	Composite of cardiac death, heart transplant and aborted SCD	16	long axis strain (1.28) LVEDV/BSA (1.01) LGE (2.51)	4.3 ± 2.0 years
Romano et al. 2017 [37]	470	IHD + IDCM	GLS LVEF LGE	All-cause death	20	GLS (2.35) LVEF (0.95)	4 years (median)
Romano et al. 2018 [38]	1012	IHD + NICM	GLS LVEF LGE	All-cause death	13	GLS (1.89)	4.4 years (median)
Pi et al. 2018 [39]	172	IDCM	GLS GCS GRS LVEF LGE	Composite of cardiac death and heart transplant	25	LGE (4.73)	47 months (median)

IHD: ischemic heart disease; STEMI: ST-elevation myocardial infarction; GLS: global longitudinal strain; GCS: global circumferential strain; GRS: global radial strain; LVEF: left ventricular ejection fraction; LGE: late gadolinium enhancement; MVO: microvascular obstruction; SCD: sudden cardiac death; IDCM: idiopathic dilated cardiomyopathy; LVEDV: left ventricular end diastolic volume; BSA: body surface area

Reviewer #6 - Reviewer's code: 02446706

We thank the reviewer for his/her helpful comments for improving our manuscript.

The authors are to be congratulated with their work. There some minor concern regarding the abbreviations used in this review. Please cite all abbreviation full out when present for the first time in the text. Page 6: Line 27: SCD Page 7: Line 5: WMA Page 11: Line 20: BAV. Page 12: Line 6: LVs Minor errors: Page 4: Figure 2 is missing. Please add images of fig.2 or re-number the current figures. Page 6: Line 18: Please consider months instead of monyhs.

According to the reviewer's suggestion we've corrected all the above-mentioned typos.

Reviewer #7 - Reviewer's code: 02565578

The authors reviewed the basic principles, clinical applications, accuracy, and reproducibility of cardiovascular magnetic resonance myocardial feature tracking. First of all, I need to point out that I am not an expert in diagnostic imaging. Nevertheless, I have found this review very comprehensive, informative and practical, both from technical and medical point of view. More effective paraphrasing of the referenced works would be advisable in order to avoid high similarity to other articles. Otherwise, I have no further comments to make.

We thank the reviewer for his/her helpful comments for improving our manuscript.

Reviewer #8 - Reviewer's code: 03491752

Dear the authors I want to thank you for your excellent work in writing this comprehensive and well written manuscript I personally do not have any concerns about this manuscript

We thank the reviewer for his/her helpful comments for improving our manuscript.