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Quantitative Myocardial Magnetic Resonance Imaging

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Quantitative Myocardial Magnetic Resonance Imaging

Pandji Triadyaksa

university of
groningen

Quantitative Myocardial Magnetic Resonance Imaging

PhD thesis with summary in Dutch. The research described in this thesis was performed at the Graduate School of Medical Science, University of Groningen, the Netherlands. The publication of this thesis was financially supported by University of Groningen, University Medical Center Groningen.

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university of
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Quantitative Myocardial Magnetic Resonance Imaging

PhD thesis

to obtain the degree of PhD at the
University of Groningen
on the authority of the
Rector Magnificus Prof. C. Wijmenga
and in accordance with
the decision by the College of Deans.

This thesis will be defended in public on

Wednesday 9 February 2022 at 12.45 hours

by

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A promise fulfillment to my late father

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Abbreviations and acronyms

AHA	American Heart Association
AIF	Arterial Input Function
BMI	Body Mass Index
BSA	Body Surface Area
CAD	Coronary Artery Disease
CI	Confidence Interval
CMD	Coronary Microvascular Dysfunction
CNR	Contrast-to-Noise Ratios
CoV	Coefficient of Variance
CT	Computed Tomography
DP	Distributed Parameter
DSC	Dice Similarity Coefficient
ECG	Electrocardiogram
ECV	Extracellular Volume
EDV	End-Diastolic Volume
EES	Extracellular Extravascular Space
EF	Ejection Fraction
EPI	Echo-Planar-Imaging
ESV	End-Systolic Volume
ETM	Extended Toft
FA	Flip Angle
FOV	Field of View
GRAPPA	GeneRalized Autocalibrating Partial Parallel Acquisition
GRE	Gradient-Echo
ICC	Intraclass Correlation Coefficient
IRF	Impulse Response Function
IQR	Interquartile Range
LA	Left Atrium
LAD	Left Anterior Descending

LCx	Left Circumflex Artery
LGE	Late Gadolinium Enhancement
LoA	Limit of Agreement
LV	left Ventricle
LVEF	Left Ventricular Ejection Fraction
LVBP	Left Ventricle Blood Pool
MAD	Median Absolute Deviation
MBF	Myocardial Blood Flow
MGE	Multigradient Echo
MOLLI	Modified Look-Locker Inversion Recovery
MRI	Magnetic Resonance Imaging
MTT	Mean Capillary Transit Time
NEX	Number of Excitation
NF	Noise Factor
RA	Right Atrium
RCA	Right Coronary Artery
RF	Radio Frequency
ROI	Region of Interests
RV	Right Ventricle
RVBP	Right Ventricle Blood Pool
SD	Standard Deviation
SI	Signal Intensity
SoS	Sum of Square
SNR	Signal-to-Noise Ratio
SSFP	Steady-State Free Precession Pulse
T1	Longitudinal Relaxation Time
T2*	Transverse Relaxation Time
TE	Echo Time
TI	Inversion Time
TR	Repetition Time
VFC	Vector Field Convolution

Introduction