

Meeting abstract

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## 2007 Blood oxygen level-dependent MRI in myocardium and skeletal muscle at 1.5 T and 3.0 T

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from 11<sup>th</sup> Annual SCMR Scientific Sessions  
Los Angeles, CA, USA. 1–3 February 2008

Published: 22 October 2008

*Journal of Cardiovascular Magnetic Resonance* 2008, **10**(Suppl 1):A276 doi:10.1186/1532-429X-10-S1-A276

This abstract is available from: <http://jcmr-online.com/content/10/S1/A276>

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### Background

Blood-oxygen level dependent (BOLD) cardiac magnetic resonance imaging (CMR) is a potential diagnostic tool to differentiate ischemic from non-ischemic myocardium.

### Methods

T2\* values of the myocardial and calf muscle were measured and compared between 1.5 T and 3 T to quantify the respective changes in the tissue T2\* property, its dependency on the spatial resolution and to assess the sensitivity of the different field strength for hypoxia. T2\* mapping of the calf muscle was performed in 15 volunteers before, during and after no-flow ischemia of the leg. In 23 healthy volunteers T2\* maps of the myocardium were generated. Additionally, T2\* was measured during adenosine infusion in eight volunteers.

### Results

Mean myocardial T2\* at 1.5 T was  $47.96 \pm 10.69$  ms and at 3 T  $20.44 \pm 4.49$  ms. After obstruction of the leg the T2\* reduction of the calf at 1.5 T was 3.4% ( $p = 0.001$ ) and 13.0% at 3 T ( $p < 0.0001$ ). T2\* relaxation increased significantly during adenosine at 1.5 T and 3 T ( $p < 0.0001$ ).

### Conclusion

T2\* quantification at 1.5 T and 3 T yields a linear relationship. No significant difference could be observed between breath hold and respiratory navigator gated techniques indicating the feasibility of T2\* quantification at high spatial resolution. The T2\* decrease during hypoxemia of the

calf and the increase during hyperemia of the myocardium indicate that our presented protocol could possibly be applied for evaluation of inducible myocardial ischemia.