

Abstract Submitted
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Assessment of Reynolds stress using 4D Flow MRI for estimating the irreversible pressure drop across a stenosis. HOJIN HA, Kangwon National University — This study demonstrates novel geometry-independent quantification of the irreversible pressure drop across stenoses by quantifying the amount of turbulence production. Based on 4D Flow MRI-based assessment of turbulence mapping using a six-directional icosahedral (ICOSA6) flow encoding scheme for measuring the complete Reynolds stress tensor, the feasibility of 4D Flow MRI for the quantification of irreversible pressure loss was investigated in a range of voxel sizes and signal-to-noise ratios (SNR) by simulating 4D Flow MRI based on data from computational fluid dynamics (CFD). The geometry-independency of the estimation of turbulence production and corresponding irreversible pressure drop was investigated using several stenoses. Finally, experimental acquisitions using 4D Flow MRI with ICOSA6 flow encoding were used to demonstrate the assessment of the irreversible pressure drop.

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