

In vivo assessment of carotid wall shear rate using spiral Fourier velocity encoding



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Declaration of Conflict of Interest or Relationship

Joao Carvalho:

I have no conflicts of interest to disclose with regard to the subject matter of this presentation.

Wall shear stress (WSS)

- Prognostic value in carotid artery disease
 - Low WSS Zarinis et al 1983, Circ Res 53:502
 - High WSS Thubrikar and Rubicsek 1995, Ann Thorac Surg 59:1594
 - Oscillatory WSS Ku et al 1985, Arterioscler Thromb Vasc Biol 5:293
- No gold standard



Wall shear stress and wall shear rate

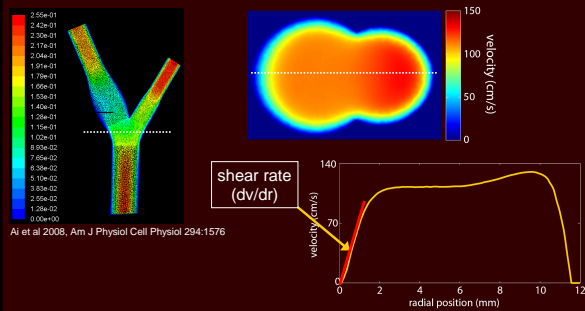
$$\text{WSS} = \mu \times \text{WSR}$$

blood viscosity

wall shear rate

Wall shear rate (WSR)

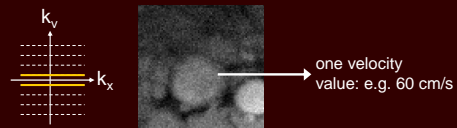
- Radial gradient of velocity (dv/dr) near the wall



MR flow quantitation

→ within a voxel

phase contrast



Fourier velocity encoding (FVE)

