Physiologists Playing with Protons

Magnetic Resonance Imaging of the lung is not commonly used because of the combined effects of low proton density (the lung is mostly full of air) and rapid signal decay from magnetic susceptibility effects from the myriad of air-tissue interfaces. Nevertheless, proton MRI is an attractive imaging modality, as it carries no dose of ionizing radiation making it suitable for studies in which repeated imaging is required. Our group has developed methods to quantitatively measure lung density (providing a measure of air to tissue ratio), perfusion without the use of exogenous contrast agents, and ventilation using only O₂ as a contrast agent. Together these allow quantitative insight into the primary function of the lung, gas exchange.

Bio: Dr Prisk has been at UCSD since 1983 and is a Professor in the Division of Physiology of the Department of Medicine and in the Department of Radiology. His undergraduate training is in physics from the University of Canterbury, New Zealand, and he then completed a PhD in physiology at the University of Otago, New Zealand. After coming to UCSD he was principally involved with studies of the lung in the absence of gravity through direct studies in zero gravity on astronauts on board the Space Shuttle and more recently on the International Space Station. These studies remain the definitive body of work on the effects of spaceflight on the human lung. In 2003 Dr Prisk was awarded the Doctor of Science degree from the University of Otago for his studies on the lung in space.

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All Welcome