

Institute of Aerospace Medicine
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Determination, regulation and importance of blood volume adaptations to exercise training

The presentation will focus on the determination, regulation and importance of blood volume adaptations to exercise training. First the theory and practical aspects of the carbon monoxide (CO) rebreathing method for the determination of total hemoglobin mass in humans will be presented. This will be followed by a discussion on the mechanisms facilitating exercise training induced increases in red blood cell volume. Some of these are of relevance for bedrest and space flight. A third part will cover the importance of exercise training induced increases in plasma and red blood cell volume in terms of maximal cardiac output and VO₂max. These three points will be discussed based on published work. Finally the importance of peripheral, i.e. skeletal muscle adaptations to human metabolism will be discussed based on ongoing work.