

Oxidative Stress and Aging

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An increased formation of oxygen derived free radical species (ROS) and nitrogen derived free radical species (RNS) accompanied by a decrease in the effectiveness of the antioxidative defense mechanisms is a kind of 'physiological' aging process. Several sources for the generation of ROS (e.g. cytochrome C oxidase, xanthine oxidase, NADPH oxidase) and RNS (e.g. nitric oxide synthases) have been identified and a number of gender differences have been described. These studies indicate that the mechanisms involved in ROS/RNS formation are less and that the anti-oxidative defense mechanisms may be stronger in women as compared to men, at least during premenopause. An increase in oxidative stress has been also described during intensive physical exercise. The present talk will focus on gender differences on oxidative stress especially at older age and will address the question whether regular physical activity may provide an anti-aging (or a 'healthy' aging) concept for men and women by improving the antioxidative defense mechanisms.