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Inflammatory, oxidative stress and compromised immunity: A perspective on the high intensity sustained aerobic physical activity

Sustained aerobic physical activities like long distance running, long distance cycling, especially the ultra-endurance efforts could induce severe oxidative and inflammatory stress on the several tissues of the body. Mitochondrial oxidative stress due to high levels of beta oxidation could cause for release of oxidants which may cause for damage of cell membranes, proteins including DNA. Severe and sustained aerobic activities may also cause for high levels of inflammation that may promote pro inflammatory cytokines presence in circulation. Several studies confirmed that both the controlled inflammatory and oxidative stress are essential for enhanced immunity and hormesis, especially the mitochondrial hormesis, anti-telomere truncation that may be anti-aging, which is very specific derivative from physical activity. Scientific studies indicate that, apart from the chronic effects of high inflammatory and oxidative stress and consequent immune suppression issues, the open window theory also suggests that there may be temporary suppression in mucosal immune proteins causing compromised immunity, especially the respiratory tract, leading to easy infections to the respiratory tract of the people who involve in high intensity sustained aerobic activities like ultra-endurance marathons and cycling events. Elite sportspersons and also general fitness enthusiasts need to be very scientific in managing their training as well the competition efforts. The recent trend of novice runners participating in marathon events for fitness and health needs more careful scientific training and recovery. Optimal adaptation may be essential for tolerance of high levels of oxidative and inflammatory stress during the high intensity sustained marathon events. Nutraceuticals may play significant role both in terms of providing anti-oxidative and immune strength, may also help in terms of achieving elite sports performances. High intensity sustained aerobic activity training and participation require scientific monitoring to avoid possible risks of health and also negative effects on performances during competition.

Biography

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