

Inflammatory, hematological and oxidative stress responses in 160 to 246 km ultramarathons #24

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Every race with distance higher than marathon is called ultramarathon. There are short ultramarathons, with a distance of 50 to 100km, such as the "Comrade Marathon" in South Africa (89km). On the other hand there are the long ultramarathons ranging from 100 to 1600km. Among these we can highlight the "Western States Endurance Run" (160km) in California/USA; the "Badwater Ultramarathon" (216 km) in California/USA and the "Spartahlon Ultramarathon" (246 km) in Greece. This literature review aimed to verify the inflammatory, hematological and oxidative stress responses particularly induced by these ultramarathons ranging from 160 to 246 km. These races present long distance and moderate intensity exercise characteristic, with potential systemic inflammatory response. There are pronounced increase in post-race pro and anti-inflammatory cytokines such as interleukins 10, 1ra, 6 and 8, as well as C-reactive protein, representing the acute phase of inflammation. In terms of post-race hematological responses, pronounced increase in white cell count are observed, indicating pronounced disturbance in the count of immune cells, and reduction in the count of red blood cells and platelets. In terms of oxidative stress, both pro and antioxidant capacities are affected post-race. Lipid hydroperoxides and 8-iso-prostaglandin-F2a, markers of oxidative stress related to lipid peroxidation, as well as biomarkers of antioxidant capacity as total antioxidant capacity, uric acid and bilirubin, are increased. Thus we can conclude that 160 to 246 km ultramarathons trigger inflammatory responses, disturbance in the counting of blood cells and oxidative stress. This knowledge provides the basis both for training prescription as a recovery after the race for the athletes and their coaches.

Key words: ultramarathon; cytokines; immune cells; lipid peroxidation.