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Is exercise cortisol response of endurance athletes similar to levels of cushing's syndrome?

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Several theories exist as to the mechanism causing the development of the Overtraining Syndrome in athletes. One theory proposes hypercortisolemic states (e.g., "pseudo" Cushing's Syndrome type-condition) brought on by intensive exercise training and the stress of sporting competitions results in neuroendocrine dysfunctions and subsequent physiological compromise. We wondered whether stressful exercise could provoke changes in cortisol to the magnitude of that seen in Cushing's Syndrome patients. Therefore we conducted a study to determine if the cortisol levels in highly trained endurance athletes in response to a stressful exercise bout compared to that found in Cushing Syndrome patients. Cortisol levels were examined in physically active men at rest, and after intensive, prolonged exercise (~85 min at 75% VO2max) and compared to that of Cushing's patients at rest. Results showed exercise does significantly ($p<0.001$) and substantially elevate cortisol to near Cushing's Syndrome levels. However, the cortisol response to exercise in athletes is highly transient and abates rapidly. The present findings support that cortisol responses to exercise such as what endurance athletes might encounter in their sporting competition (or during an intensive exercise training session) can elevate cortisol to the levels seen in Cushing Syndrome patients (i.e., for only a short period of time).

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