Effects of repeated whole-body cold exposures on serum concentrations of growth hormone, thyrotropin, prolactin and thyroid hormones in healthy women.

Smolander J¹, Leppäluoto J, Westerlund T, Oksa J, Dugue B, Mikkelsson M, Ruokonen A.

Abstract

Cold therapy is used to relieve pain and inflammatory symptoms. Humoral changes may account for the pain alleviation related to the cold exposures. The aim of the present study was to examine the effects of two types of cold therapy, winter swimming in ice-cold water (WS) and whole body cryotherapy (WBC), on the serum levels of the growth hormone, prolactin, thyrotropin and free fractions of thyroid hormones (fT3, fT4). One group of healthy females (n = 6) was exposed to WS (water 0-2 degrees C) for 20 s and another group (n = 6) to WBC (air 110 degrees C) for 2 min, three times a week for 12 weeks. Blood samples used for the hormone measurements were taken on weeks 1, 4 and 12 before and 35 min after the cold exposures and on the days of the respective weeks, when the cold exposures were not performed. During the WS treatments, serum thyrotropin increased significantly at 35 min on weeks 1 (p < 0.01) and 4 (p < 0.05), but the responses were within the health-related reference interval. During the WS, the serum prolactin measured at 35 min on week 12 was lower than during the control treatment, and no changes in fT3 or fT4 were observed. During the WBC, no changes in the serum levels of the studied hormones were observed during the 12 weeks. In conclusion, repeated WS and WBC treatments for healthy females do not lead to disorders related to altered secretions of the growth hormone, prolactin, thyrotropin, or thyroid hormones.