



## SUMMARY AND CONCLUSION

Under extreme exercise conditions increased IGFBP-3 proteolysis can not fully compensate the effects of decreased t-IGF-I and increased IGFBP-1 on circulating IGF-I bioavailability.

## INTRODUCTION

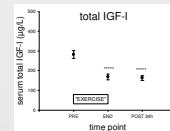
Ultra-endurance exercise during 6 days is related to negative energy balance. The effects on the circulatory components of the IGF-IGFBP system were investigated.

## DESIGN

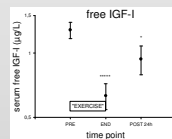
**Subjects:** 10 men and 8 women ( $32 \pm 1$  years, BMI 24 [20-26]  $\text{kg} \cdot \text{m}^{-2}$ ) performed ultra-endurance exercise (mainly running, kayaking, biking, climbing). Median duration of the race was 6.3 (range 5.2-7.3) days. Blood samples were drawn before (PRE; n=18), at the end of (END; n=18) and 24 hours after (POST24h; n=12) the race. Food and drink intake was ad libitum.

## RESULTS

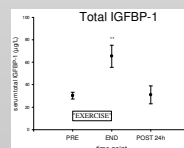
Median energy expenditure (method modified from Weir *et al* 1949) was 77047 (range 64235-113845) kcal during the race (n = 6). Body weight decreased by  $1 \pm 1\%$ . Energy intake was registered in 3 men and covered 75, 85 and 87 % of the energy expenditure during the race.



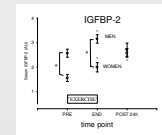
**Total IGF-I (RIA)** decreased by 44 (62-97) % during the race and remained decreased at POST 24h. The decrease in t-IGF-I was most marked in subjects with the largest energy deficit (n = 3 available).



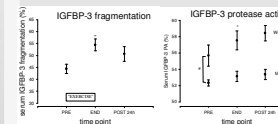
**Free IGF-I (DSL ELISA)** decreased by  $50 \pm 5\%$  during the race and remained decreased at POST 24 h. Free IGF-I was 0.4 (0.1-1.0) % of total IGF-I at PRE and did not change significantly.



**IGFBP-1 (DSL ELISA)** increased by  $127 \pm 36\%$  during the race and had returned back to basal levels at POST 24h. At PRE, IGFBP-1 correlated negatively with f-IGF-I. No correlation was found at END or post 24h.

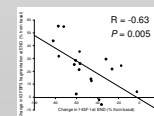


**IGFBP-2 (W/B)** increased by  $29 \pm 9\%$  during the race. In women, IGFBP-2 levels remained elevated at POST 24h.



**Serum IGFBP-3 fragmentation (W/B)** increased by  $23 \pm 4\%$  during exercise.

**Serum IGFBP-3 protease activity (protease assay)** increased significantly only in women.



There was a correlation between the increase in serum IGFBP-3 fragmentation and the decrease in t-IGF-I during the race.