

FOLLOW-UP OF COLL2-1, COLL2-1NO₂ AND MYELOPEROXYDASE SERUM LEVELS IN MARATHON RUNNERS

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PURPOSE

To determine the influence of marathon on the serum levels of two markers of cartilage degradation, Coll2-1, a peptide of type II collagen triple helix, its nitrated form, Coll2-1NO₂, and of a marker of neutrophils activation, the myeloperoxidase (MPO).

METHODS

Coll2-1, Coll2-1NO₂ and MPO were measured by specific immunoassays in 66 marathon runners without joint pain and aged in mean of 47 (min: 31 - max: 59) years. Sera were taken before and after the marathon. All the subjects were submitted to a questionnaire concerning their physical activity (i.e. training or best performance) and their life style (i.e: diet). The total running distance was 42.195 km. Their performance in the marathon was ranged from 149 to 270 min. The results were expressed as median. The Wilcoxon matched pairs test estimated the difference of each biomarker before and after the course. The correlation between the variation of MPO during the course and the training were calculated by the Spearman test.

RESULTS

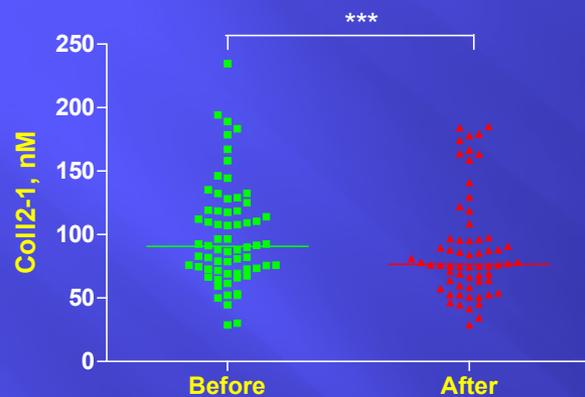


Fig.1: Coll2-1 concentration in marathon runners before and after the course.

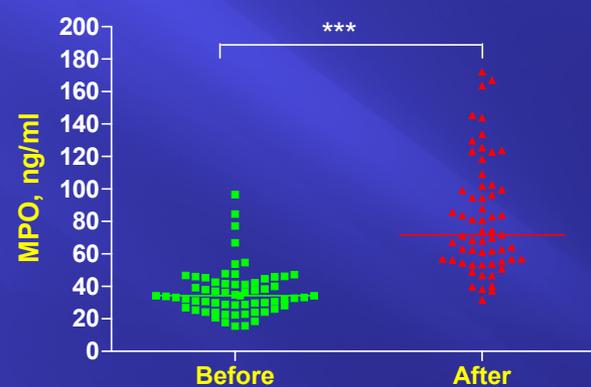


Fig. 2: MPO concentration in marathon runners before and after the course.

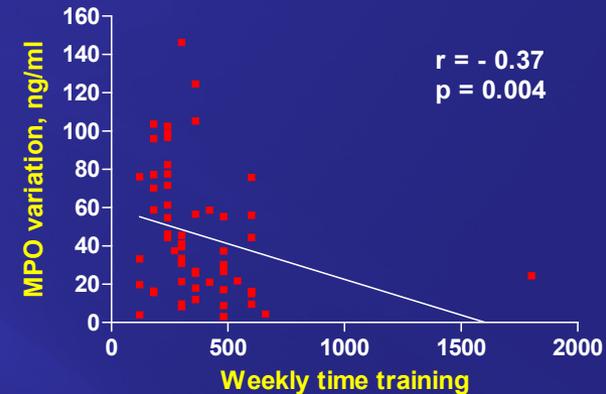


Fig.3: Correlation between the MPO variation during the course and the training time

Before the marathon, the Coll2-1 and Coll2-1NO₂ values were not affected by age, body mass index, sex and performance [Coll2-1NO₂ median: 0.16 (0.05-0.71) nM], while MPO levels were higher in female [median: 41.3 (29.90-96.50) ng/ml] than in male [median: 33.00 (15.60-84.60) ng/ml] ($p < 0.05$). After the marathon, Coll2-1 levels were slightly decreased, Coll2-1NO₂ levels were unmodified [median: 0.15 (0.05-0.61) nM] and MPO levels were doubled compared to the pre-marathon values ($p < 0.001$). The variation of MPO during the marathon was negatively correlated with the training time per week. Before the marathon, there was no correlation between the different biological markers (Coll2-1, Coll2-1NO₂ and MPO). No correlation was observed between Coll2-1 and Coll2-1NO₂ and, the performance or the training.

CONCLUSIONS

Coll2-1 and Coll2-1NO₂ serum levels were not modified by marathon, suggesting that, at least at short-term, this intensive physical activity does not significantly modified cartilage metabolism. Interestingly, serum MPO levels were increased after the marathon and training reduced this elevation. These results suggest that neutrophils were activated during the marathon and that training reduces neutrophils activation during the marathon.