

The marathon, a hard event for your knees?

The distance of the marathon is 42,195 km. This distance was run for the first time during the Olympic Games of London in 1908 because of the desire of His Majesty the King Edouard VII which wished to see the warm up of the participants to the competition in front of his palace. Before the OG of London, the original distance was only 40 km, the route between Marathon and Athens. The 42,195 became officially the distance which we know since the Olympic Games of Paris in 1924.

Participate in a marathon is no longer a challenge for anyone because every runner who starts a regular training will one day compete on this mythical distance. But this effort is straining the joint surfaces of the lower limbs, especially the knees, because of repeated microtrauma (about 30.000 steps). Generally, the competition takes place on the asphalt of the largest cities around the world, particularly increasing the harshness of the shocks, 3 to 4.5 times the body weight depending on the speed of the competitor.

A small study suggests that the knee of the marathon runners are strained severely because of this type of competition. It included ten young amateur marathon runners (average age, $28,7 \pm 3,97$ years) which benefited each of three MRI of knees, the first one less than 48 hours before a marathon, second one after this event and the last one 4 weeks later. The morphological imaging before the marathon had revealed no significant joint lesion.

THE MRI was interested in sequences measured in T2 by setting as zones of interest on the tibiofemoral and patellofemoral compartments. The global values of T2 obtained following the marathon were slightly superior to those of the state before the competition, namely $30,47 \pm 5,16$ versus $29,84 \pm 4,97$ ms ($p < 0,05$). On the other hand, the values of the basal state and those (recorded 4 weeks later) were similar, namely $29,84 \pm 4,97$ versus $29,81 \pm 5,17$ ms, $p = 0,855$). The

regional analysis highlighted a more labeled decrease of T2* at the site of the compartment tibiofemoral medial ($p < 0,001$) due to marathon's consequences.

This small study, which focuses on a small staff, suggesting that the marathon knees undergo overload phenomenon during the competition. High frequency repetitive mechanical stress could cause significant but transient changes in T2 in certain joint areas.

The clinical significance of these anomalies remains to establish. The reduction of the T2 response at the medial tibiofemoral compartment can simply reflect a high joint overload) during this long running especially as it is transient. A premature degeneration of the cartilage seems not probable and this study should not decrease the attraction which exercises the marathon to number of our contemporaries. Indeed other studies demonstrate that when the weekly kilometeric "pensum" is lower than 60 km, the risk of early degeneration of the cartilage in connection with the sports activity is almost worthless.

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Reference

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