Correlation between Histology of Collagen Fiber and Muscle Strength in Athletes with Joint Hypermobility

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Starting from the relation between articular hypermobility and injuries in artistic gymnastics whose occurrences are among the highest indexes within the sports activities, my objective was to verify whether athletes with articular hypermobility develop a decrease in their muscular strength when compared to a control group of athletes. Forty three high performance athletes (age ± sd, 16 ± 4 years) from clubs in the Sate of Sao Paulo were selected and divided into two groups: hypermobile (n=27) and control (n=16), through Beighton Scale which allows the possibility to verify any generalized looseness in the ligament of the conjunctive tissue. The predominance of articular hypermobility in the population studied was 62.7%, while among athletes who practice other sports activities it varied from 10 to 30%. Among men (n=25), the prevalence was 48% and among women (n=18) it was 83.3%. Afterwards, 29 athletes were subjected to an isokinetics evaluation in dynamometer in order to measure the peak of torque (the intensity of the strength) and the resistance of the muscular group of the knee joint. Surprisingly, the results of this evaluation pointed to an increase in the muscular strength in athletes with hypermobility when compared to the control group: torque of the = 3,07 ± 0,5 vs 2,67 ± 0,4 N.m/kg, control group (p=0,04); hypermobile group work = 3,63 ± 0,5 vs 3,23 ± 0,6 N.m/kg control group (p = 0,09). The results of the articular hypermobility permanence and strength observed show the importance of this research and demand an investigation in the structures that constitute the muscles. In order to do so, I intend to analyse the collagen fibers type III, IV and VI through muscle biopsies, followed by immunohistochemical analysis.

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