



BIOMECHANICAL STUDY OF RISK FACTORS INVOLVED IN THE OCCURANCE OF PATELLAR TENDONITIS –APLICATIONS IN PERFORMANCE SPORT

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Aim – this study consists in the constructing of a tridimensional musculoskeletal model for the attack hit and the quantification of mechanical stress, in order to prevent traumatism in the knee joint. Goal: Minimizing the risk of patellar tendonitis through prophylactic exercises that improve the muscular pattern. Material and methods. This study was conducted for a 9 month period on the feminine batch pertaining to the volley team of the Sport Club “Universities Craiova”. For this research we used the AMTI MSA 6 force platform and the software application “Anybody”. By using the force platform AMTI MSA 6 it became possible to determine the reaction force of the ground according to the position of the centre of gravity at the time of the jumping and landing, after executing an attack hit. The software “Anybody” allowed the 3D musculoskeletal modelling and the calculation of the forces of the muscles involved, prior and after the application of the prophylactic exercises. Conclusions. The improvement of the values of muscular forces demonstrates the efficiency of the prophylactic exercises: for the quadriceps femoris we obtain an increase of 13,79%, for gastrocnemius 14,76%, for hamstring muscles a value of 14%, for rectus femoris 15,06% and for the gluteus major 14,63%. For the entire experimental batch, at the moment of jumping, there was a reduction of the compression force by 38,48% for the dominant inferior limb, by 34,06% for the non-dominant inferior limb. At the moment of landing, there was a difference of 38,51% for the dominant limb and a difference of 28,82% for the non-dominant limb. By analyzing the evolution of compression forces, after Z, at the level of knee joint, after the application of prophylactic program. We find a decreasing of pressure forces by a better distribution of this force for the entire inferior limb joint, decreasing in this way the risk of trauma production by overtraining. Key words - risk factors, prevention, patellar tendonitis

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