Somatotype-variables related to muscle torque and power output in female volleyball players

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Abstract: The purpose of this study was to investigate the relationship between somatotype, muscle torque, maximal power output and height of rise of the body mass centre measured in akimbo counter movement jump (ACMJ), counter movement jump (CMJ) and spike jump (SPJ), and power output measured in maximal cycle ergometer exercise bouts in female volleyball players. Fourteen players participated in the study. Somatotype was determined using the Heath-Carter method. Maximal muscle torque was measured under static conditions. Power output was measured in 5 maximal cycle ergometer exercise bouts, 10 s each, at increasing external loads equal to 2.5, 5.0, 7.5, 10.0 and 12.5% of body weight (BW). All jump trials (ACMJ, SPJ and CMJ) were performed on a force plate. The mean somatotype of volleyball players was: 4.9-3.5-2.5. The values of sum of the muscle torque of left upper extremities was significantly correlated only with mesomorphic component. Mesomorphic and ectomorphic components correlated significantly with values of maximal power measured during ACMJ and CMJ. Power output measured in maximal cycle ergometer exercise bouts at increasing external loads equal to 2.5, 5.0 and 7.5% of BW was significantly correlated with endomorphy, mesomorphy and ectomorphy.

key words: female, volleyball players, somatotype, strength, power, jump