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Velocities and joint angles during double backward stretched salto performed with stable landing and in combination with tempo salto

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The aim of the study was to compare the values of velocity and joint angles obtained during performance of double salto backward stretched with a stable landing and its combination with salto tempo. Seven top level acrobats (track jumpers) participated in study. Mean values of body height, mass and age had a value of: 170 cm ± 4.0 cm, 72.4 kg ± 3.6 kg, 20.4±1.7 years, respectively. The studies were conducted on a standard acrobatic path (type PTS 2000). Two digital video cameras (240 Hz) and APAS 2000 (Ariel Dynamics Inc.) were used during studies. Markers were placed in ankle, knee, hip, arm, elbow and wrist joints. All marker positions were tracked and reconstructed using the APAS system. Two sequences with the following elements were analysed: round-off - double salto backward stretched (A) and round-off - double salto backward stretched - tempo salto (B). The highest differences between the key components describing performance of presented exercises exist for joint angles during launching and landing position, and resultant velocities during touchdown. In version A the athlete created prerequisites for "gliding" double salto backward stretched by means of the body segments motions, whereas in version B he executes faster motions of the body segments accentuating his actions upon backward rotation of the body. During the final phase of double salto backward stretched in combination with tempo salto the athlete performed courbette "under himself" (almost straight feet are placed in front of vertical line), pushes directly back and in 0,1 s executes stable arm swing upward-backward to tempo salto.

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