



THROWING AND JUMPING PERFORMANCE (KINEMATICS AND KINETICS) IN SPORT GAMES AND THE TRANSFER INTO PRACTICE

Herbert WAGNER

University of Salzburg, Austria

In sport games, jumping and throwing are fundamental skills that determine performance. To understand the sequence of jumping and throwing, and how these movements influence performance, is important for coaches, players, scientists, and other health professionals. Consequently, we determined parameters that influence jump height and throwing velocity, detected differences between different jumping and throwing techniques and evaluated differences in kinematics and movement variability among different throwing and jumping techniques and skill levels.

Fifty-four experienced and elite male and female team handball, volleyball and beach volleyball players were analysed in four different studies. To determine kinematics and kinetics we used 8-12 MX13 Vicon cameras (250 Hz) with a cluster marker set, two AMTI force plates (2000 Hz), and a Full-Body 3D model in Visual3D. To determine movement variability we calculated the standard deviation on a point-by-point basis over vector lengths of the normalized angles and angular velocities.

The results of our studies showed that jumping and throwing performance is strongly influenced by an optimal technique that elite athletes are able to adapt to different conditions (e.g. sand vs. indoor court) and that movement variability is due to different techniques and skill levels. In my talk, I will overview the recent findings in jumping and throwing performance in sport games and how to use this scientific knowledge to improve practical coaching instructions.