Effect of the racket mass and the rate of strokes on kinematics and kinetics in the table tennis topspin backhand

The purpose of this study was to investigate the effect of the racket mass and the rate of strokes on the kinematics and kinetics of the trunk and the racket arm in the table tennis topspin backhand. Eight male Division I collegiate table tennis players hit topspin backhands against topspin balls projected at 75 balls · min⁻¹ and 35 balls · min⁻¹ using three rackets varying in mass of 153.5, 176 and 201.5 g. A motion capture system was used to obtain trunk and racket arm motion data. The joint torques of the racket arm were determined using inverse dynamics. The racket mass did not significantly affect all the trunk and racket arm kinematics and kinetics examined except for the wrist dorsiflexion torque, which was significantly larger for the large mass racket than for the small mass racket. The racket speed at impact was significantly lower for the high ball frequency than for the low ball frequency. This was probably because pelvis and upper trunk axial rotations tended to be more restricted for the high ball frequency. The result highlights one of the advantages of playing close to the table and making the rally speed fast.

By:

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