KINEMATICS TECHNIQUES DIFFERENCES IN SELECTED HORIZONTAL BAR MANEUVERS

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INTRODUCTION: Performance on the horizontal bars largely depends on swings which are fundamental to executing various skills. The kinematics of swings plays an important role in preliminary execution to predetermine the skill performed, thus, swings may differ from one performing skill to another. The purpose of this study was to investigate the technical differences of the swings when the gymnast performs three different skills on the horizontal bars. these are:1) the backward giant swing (BGS); 2) tkatchev (TC); 3) double back somersault dismount (DBSD).

METHODS: The best three trials of the Egyptian championship in gymnastics for the best three ranking were filmed at 50 frames per second on the saggital plane of the swings. A computer program was used for digitizing and analyzing these kinematics variables: Hip Angle (HA), Shoulder Angle (SH), Radius (R), and Angular velocity (AV).

RESULTS: The descriptive result as a qualitative approach indicates that the rate of change of hip and shoulder angular displacement and radius in (TC) skills were larger than the (BGS) and (DBSD) skills, while the fastest (AV) was recorded in the (DBSD), (BGS) and (TC) respectively. In addition, figures and angles time relations were discussed.

CONCLUSIONS: It is concluded that performing (BGS) skill is easier than the other skills, due to a lower number of kinematics changes during execution; therefore it is suggested that skills for the (BGS) maneuver should be taught to beginners before any other skills.