The Effects of Target Location on Upper Body Kinematics During 3D Seated Reach Considering the Range of Motion

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The objective of this study is to investigate the effects of target location on upper body kinematics and coordination in 3D seated reach over an extensive range of motion. Sixteen subjects reached to 64 targets distributed in the right hemisphere over four azimuths, with four heights and four radial distances from the right shoulder. The results showed that 1) all the joints didn't start to move and stop simultaneously 2) when the target was located in the sagittal plane, the hand movement preceded the movements of the AC-J, C7 and sternum joints, while there were no delays between most joints when the target was located laterally 3) when the target distance corresponded to a near maximum reach, there were no lags between the onsets of the hand and the trunk related joints. The results can be applied to develop a new, seated reach prediction model that takes inter-segment delays into account.

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