

KINESTHETIC COMPENSATION FOR MANUAL CONTROL IN ROTATED FRAMES OF REFERENCE: ROLE OF USER AWARENESS AND MULTIAXIS MISALIGNMENT

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Users' awareness of the availability of frame of reference information manual kinesthetic cues has been studied in teleoperations conditions in which large rotations between display and control coordinates have been introduced. We now demonstrate that the kinesthetic cueing phenomenon, reported last year to greatly reduce control difficulty, appears to require that users be explicitly instructed in its application for its complete effect to be manifest. The cueing thus appears to be much more cognitively mediated than previously suspected. New experiments still confirm that the cue appears to be equally effective when provided by either the left or right hand, at least with respect to efficiency of movement. Anisotropies in the effectiveness of the cue may, however, exist with respect to speed of movement. Experiments studying the effectiveness of the cue in multiaxis misalignment situations have begun and preliminary reports will be presented.