



US DEPARTMENT OF DEFENSE
BLAST INJURY RESEARCH PROGRAM
COORDINATING OFFICE

Pain Management and Rehabilitation after Amputation Observation of Limb Movements Reduces Phantom Limb Pain in Bilateral Amputees

Mirror therapy has been shown to be an effective treatment for phantom limb pain (PLP) in unilateral amputees. In mirror therapy, a reflection of the intact limb provides a visual surrogate for the phantom limb and observations of movements of the limb reflection provide sensory feedback that facilitates the reduction of PLP. Mirror therapy is low-cost and non-invasive, but is not possible for bilateral amputees. In a study published in *Annals of Clinical and Translational Neurology*, researchers at CRSR at USUHS investigated whether a novel therapy in which bilateral amputees directly observe another person's limbs moving could be used to reduce PLP. Twenty bilateral LE amputees were randomly assigned to either visual observation ($n = 11$) or mental visualization intervention groups ($n = 9$) and performed movements for 20 min daily for one month. In the visual observation groups, the study participants were asked to replicate the movements of a study investigator while directly observing the investigator's movements. In the mental visualization group, participants were asked to close their eyes and visualize the movements as prompted by investigators while trying to move the phantom limb. Before each daily session, the number of PLP episodes in the last 24 hours, the response to a 100-nm visual analog scale, and the response to the McGill Short-form Pain Questionnaire were recorded. Direct visualization significantly reduced PLP in both legs and may represent a novel low-cost, non-invasive therapy for PLP in bilateral amputees.