

## **The Effectiveness of a Dynamic Stability Therapy Protocol in the Treatment of Carpometacarpal Arthritis**

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**INTRODUCTION:** The purpose of this study was to determine the effect of a dynamic stability home exercise program (HEP) on thumb strength, function, and pain in carpometacarpal (CMC) arthritis patients. We hypothesized that the regimen would result in improved strength, function, and pain in earlier stages of radiographic CMC arthritis.

**METHODS:** Individuals presenting with isolated CMC arthritis to an orthopaedic clinic from 2018 to 2020 were enrolled in a prospective study. Exclusion criteria included a history of previous thumb surgery, thumb fracture, or an intra-articular corticosteroid injection. The cohort was divided into two groups based on Eaton-Littler arthritis stages: low-grade arthritis (LGA) for stages I and II and high-grade arthritis (HGA) for stages III and IV. Outcome measures included joint range of motion (ROM), grip strength, oppositional pinch strength (OPS), appositional pinch strength (APS), Visual Analog Scale for pain (VAS), the Michigan Hand Outcomes Questionnaire (MHQ), and the Quick Disabilities of Arm, Shoulder, and Hand Outcome Measure (QuickDASH).

**RESULTS:** Eighty patients were enrolled. In HGA patients, OPS increased significantly from  $8.0 \pm 3.9$  lbs. at baseline to  $13.1 \pm 8.0$  lbs. at 6 months ( $p=0.0352$ ). Both HGA and LGA patients demonstrated significant improvement in MHQ Pain that was sustained at 6 months ( $p<0.0001$ ). There was a greater improvement in MHQ ADLs and QuickDASH scores in HGA patients than LGA patients ( $p=0.0038$  and  $p=0.0449$ , respectively). HGA patients achieved MCID for MHQ Overall, MHQ Satisfaction, MHQ Work Performance, MHQ ADLs, and QuickDASH scores.

**DISCUSSION AND CONCLUSION:** At six months follow up, a dynamic stability HEP resulted in decreased pain in all CMC arthritis stages but did not meet the MCID for VAS or the MHQ Pain subscore. Patients with HGA demonstrated a significant improvement in functional outcomes over time with greater improvements in OPS, the MHQ ADLs score, and the QuickDASH score.