A Relationship between Dart-Throwing Motion Plane ROM and the DASH Score after Distal Radius Fracture

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Purpose: The purpose of this study was to examine the relationship between dart-throwing motion (DTM) plane range of motion (ROM) and DASH score in patients with distal radius fractures.

Methods: The subjects were 18 patients who underwent treatment for distal radius fractures. Evaluation criteria included ROM (flexion-extension, radioulnar deviation, pronation-supination, and DTM plane), and grip strength. Grip strength of the injured wrist is expressed as a percentage of the grip strength of the uninjured wrist. DTM plane ROM was measured using the developed goniometer. We evaluated the activities of daily living (ADL) on the basis of the DASH score, which was used to access the locomotorium disease of the upper limb. Statistical analyses were performed to identify possible correlations between DASH score and the ROM and grip strength.

Results: Correlations were observed between DASH score and the DTM plane ROM ($r = -0.681$, $p = 0.002$) and grip strength ($r = -0.488$, $p = 0.040$). We found no statistical relationship between the DASH score and the other ROM.

Conclusion: The present study suggested that DTM plane ROM and grip strength are important for the recovery of ADL in patients with distal radius fractures. The movement direction that is most commonly involved in movements along the DTM plane after a fracture of the distal radius is the most important movement direction.