

## **Shoulder Arthroscopy After a Proximal Humeral Fracture Malunion: Athlete Care and Clinical Medicine in Middle-Aged Athletes**

ANNA MCDUFFIE<sup>1</sup>, GEORGOS TSIKOURIS<sup>2</sup>, NIKOLAOS GRAVVANIS<sup>2,3</sup>, THEOFANIS PAPADAKIS<sup>2</sup>, LISA VICENCIO<sup>1,4</sup>, & ANDREAS STAMATIS<sup>1</sup>

<sup>1</sup>Exercise and Nutrition Sciences; SUNY Plattsburgh; Plattsburgh, NY

<sup>2</sup>Athens Kolonaki Kalamata Orthopaedic & Sports Medicine Institute (AKKOSMI); Athens, Greece

<sup>3</sup>Sports Medicine; General Hospital of Nikaia; Athens, Greece

<sup>4</sup>Athletic Training; SUNY Plattsburgh; Plattsburgh, NY

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*Category: Undergraduate*

*Advisor / Mentor: Stamatis, Andreas (astam004@plattsburgh.edu)*

### **ABSTRACT**

Malunion of the proximal humerus is operationally defined as healing of the fractured bone in a non-anatomical position, resulting in a painful and disabling deformity (e.g., a bone being shorter than normal, twisted or rotated in a bad position, or bent), which affects the range of motion (ROM) and functional movement. A correction and functional restoration are often needed in athletes, since their profession requires superior physical functioning. Shoulder arthroscopy has evolved dramatically over the past 15 years and has been used in cases of malunion of the humerus in athletes. However, there is a scarcity of evidence concerning middle-aged athletes. **PURPOSE:** To examine the benefits of shoulder arthroscopy after a proximal humeral fracture unified in malposition in middle-aged athletes. **METHODS:** Physical examination and imaging evaluation using 3D Computed Tomography(3D-CT), Magnetic Resonance Imaging (MRI), and shoulder radiographs (anteroposterior, internal rotation, and lateral scapular view) were used to evaluate shoulder dysfunction after proximal humeral fracture in malposition. Fourteen athletes (9 males, 5 females;  $M_{age} = 43.1$ ,  $SD = 3.5$ ) were included in this research. According to Neer classification before surgery, 11 (78%) had one part displaced and the rest three (22%) had two parts displaced. Post-operative clinical results were evaluated with self-reported pain score (1-10), UCLA scores, and shoulder abduction ROM measured with a goniometer. **RESULTS:** There was significant difference in pain scores ( $M_{before} = 8$ , Range: 6-9;  $M_{after} = 4$ , Range: 2-6;  $p < .001$ ), in UCLA scores ( $M_{before} = 12$ , Range: 9-16;  $M_{after} = 28$ , Range: 20-31;  $p < .01$ ), and in shoulder abduction ROM ( $M_{before} = 80$ , Range: 70-100;  $M_{after} = 135$ , Range: 120-150;  $p < .05$ ). **CONCLUSION:** Our research provides evidence for clinical translation in improving health outcomes in middle-aged athletes with a history of proximal humeral fracture union in malposition: shoulder arthroscopy can be simultaneously beneficial in terms of decreasing pain level, increasing ROM, and restoring limb function.