PART C

INJURIES OF THE UPPER EXTREMITY

Edited by Nebojsa Popovic

PREFACE

Nebojsa Popovic

The upper extremity is the primary source of functional disability in athletes whose careers depend on superb overhead motion. Having been a high level handball player for nearly 20 years, and working as a team doctor for another 30 years, I can assure the reader that every single handball player experienced at least one significant episode of dominant shoulder pain, one or two acute finger injuries and some elbow problems.

The muscle, bones and joints of the shoulder, elbow, wrist and hands work as a unit to perform the remarkable neuromuscular behavior necessary for athletes' overhead motions. The throwing motion is similar among various sports such as baseball, javelin, handball, and waterpolo and for that reason, biomechanics of each phase of the throwing motion in the various sports was explained by many high quality studies on baseball pitching motion. The shoulder positions the arm and supplies power intrinsically, using the muscles of the shoulder joint complex, and extrinsically by harvesting the energy generated by the remainder of the athlete's body. The elbow helps to pre-position the hand and provide force. The wrist and hand are the final common pathway. The wrist and hand also grip objects and perform fine manipulation. As knowledge about the biomechanical aspects of the throwing motion in different sports has increased, so too has our understanding of the concomitant pathological conditions.

The first chapter opens with an excellent overview "Throwing is the most important thing humans have ever done" — a statement I imagine has the support of millions of baseball fans. The next papers lead us to the controversy surrounding the best operative technique to treat anterior shoulder instability in athletes. Authors compare the trade-offs required to limit recurrence rate while aiming for the least aggressive operative technique. We approached the controversy by asking two of the most dedicated proponents of two influential shoulder treatment camps to describe their reference technique and to present their clinical result. Dr Gilles Walch, the leading French shoulder surgeon describes the open Latarget technique accompanied with step-by-step wonderful drawings. Craig Bottoni, the US shoulder surgeon reports his experience with arthroscopic Bankart repair. At the elite level, as "swimmer's shoulder" is associated with 1.5 million stroke cycle per arm per year, it comes as no surprise that the shoulder in these athletes is the most commonly injured joint with reported prevalence as many as nine of ten. This chapter also covers: the under-recognized condition of subscapularis tendon tears which has a prevalence of nearly 50% in all patients undergoing arthroscopic shoulder surgery and management of the long head of biceps, the most controversial tendon in the shoulder. Treatment principles are a real highlight in these two papers. I don't want to forget to emphasize that shoulder pain is not all treated surgically and the best outcomes occur when we surgeons collaborate closely with physiotherapy, as outlined in the paper: Conservative care is the best option for "usual" shoulder pain, but what that look like?

The second chapter focuses on elbow injuries in athletes. The pattern of elbow injuries can be either acute or most often overuse with biomechanics that are sport specific. The acute elbow macro-trauma in athletes are difficult to manage due to the high degree of bony congruity, the close continuity of muscle to the capsule, the comminuted fracture patterns, and the unique response of the elbow capsule to trauma. Overuse injuries of the elbow in recent decades have shown, in the

literature, increasing interest focusing with much more in depth understanding of elbow kinetics and kinematics and subsequent pathophysiology not only in baseball but as well in handball, tennis and waterpolo. In this chapter, "throwing elbow" is presented through two different sports — tennis elbow and handball elbow. Handball elbow has two completely different mechanism of injury — throwing typically for field players and also the mechanism of hyperextension typical for goalkeepers. I was fascinated to read some very special papers that stayed unrecognized in the literature for a long time. At the end of the chapter colleagues from Italy address osteochondritis dissecans lesion of the athletes elbow and their surgical treatment experience with implanting osteochondral autograft plugs into selected lesion.

The hand and wrist are an integral part of throwing, blocking and tackling and athletes achieve this function through humans' unique arrangement of bony and ligamentous structures. Hand and wrist injuries contribute around 9% of all athletics injuries. They present more frequently in adolescent athletes then in adults. Most acute fingers injuries occur in ball handling sports such as volleyball, handball and basketball. In this chapter, authors are guiding you to better understand the importance of accurate diagnostic imaging of wrist and hand injuries: radiography, ultrasound, CT, MRI, and MRI arthrography and their indications. Tennis players suffer from overuse injuries of wrist, handball players are more exposed to acute finger injuries because the hand acts as a instrument to launch and, more specifically, to receive the ball. Our final sport-specific paper relates to hand injuries in boxing — these are much more common than was previously recognized. Appropriate treatment needs to be instituted early to prevent later bone deformation.

We close this chapter by addressing the very intriguing question, "Should we be repairing all scaphoid fractures in the athletes?". What could be the common message of our distinguished authors in this chapter on wrist and hand injuries in athletes? By virtue of its dominant role in many sports, the hand is vulnerable to a wide variety of injuries. Early and accurate diagnosis is critical. Hand and wrist injury treatment in athletes is a team effort among the hand and wrist surgeon, the specialised physiotherapist, the expert radiologist. In this clinical context, shared decision making between athletes and medical staff is essential when trying to find the right balance between the temptation of immediate return to play and the real risk of long-term sequelae.

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