

SPORT-RELATED HAND INJURY: A 21ST CENTURY PERSPECTIVE

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Traditionally gaming has been synonymous with a sedentary lifestyle predominantly enjoyed by avoidant teenagers. Electronic sports, or e-sports, is a rapidly growing industry where professional gamers compete against each other across a range of platforms utilising refined strategy, problem solving and fine motor skills to achieve victory over the opposing team.

Despite its relative infancy, e-sports has grown exponentially since the turn of the millennia with its worldwide audience growing from 115 million viewers in 2015 to 162 million in 2016. (Newzoo, 2016) There has been much contention surrounding the definition of competitive gaming as a sport, with opponents criticising the relative lack of physical exertion in comparison to traditional sports. Contesting whether competitive gaming can be constituted as a ‘sport’ is outside the scope of this letter, yet both traditional and e-sports bring elite professionals together to compete in large arenas enjoyed by audiences globally.

To compete at elite levels, athletes spend between 8-12 hours a day practicing dynamic and repetitive movements using a mouse and keyboard, often associated with sub-optimal posture. (Sharan et al., 2014) Competitive gamers engage in both isotonic and isometric contraction of the upper limb to execute up to 400 fine motor movements per minute and stabilise the wrist-elbow-shoulder girdle respectively. (American Council on Science and Health, 2016) Prolonged and sustained fine motor movement of the upper limb predisposes to the development of repetitive strain injury, chronic tendinopathy, myofascial pain and compressive neuropathy.

There is a growing body of evidence to support the preposition that computer gaming leads to the development of musculoskeletal complications. Early and sporadic case reports coined the terms ‘Nintenditis’ and ‘Playstation thumb’ to describe repetitive strain injury resulting from prolonged time spent playing video games. (Vaidya, 2004) Further evidence from a large cross-sectional study indicated that 15% of adolescences who regularly play computer games had evidence of musculoskeletal pain syndromes and repetitive strain injury on physical examination. Aside from predisposing to the development of repetitive strain injury, the results from a cohort of 120 Malaysian University students suggests that symptoms of carpal tunnel syndrome may be precipitated and perpetuated by gaming. Using the Boston Carpal Tunnel Questionnaire, 65.8% of respondents experienced frequent numbness, 55.8% reported weakness and a further 36.7% reported night-time pain. Aside from physical symptoms, 50% of students further demonstrated functional impairment. (Zain et al., 2013) Further evidence of neuropathy secondary to prolonged computer game use was demonstrated in two case reports in a series published by Yoon et al. (Yoon et al., 2013) Both

patients demonstrated evidence of unilateral ulnar neuropathy at the elbow on ultrasound with normal electrodiagnostic testing following prolonged and sustained computer activity.

Both repetitive strain injury and compressive neuropathy arising secondary to occupational exposure are not unique to gaming cohort, with data suggesting a 73.4-87.7% prevalence of musculoskeletal disorders in instrumentalists. (Lee et al., 2013) The long-established recognition of such pathology in musicians has led to the development of highly specialised multi-disciplinary teams encompassing physiotherapists, hand surgeons and performance psychologists in the management and rehabilitation of such injuries, within the performing arts cohort.

Unlike the performing arts, evidence of compressive neuropathy and chronic tendinopathy within the gaming cohort remains anecdotal and limited to case reports and small case series. However, with the continued growth of e-sports we are beginning to witness a generational change in the cohort of patients sustaining occupational repetitive strain injury, tendinopathy and compression neuropathy, moving away from highly skilled musicians to a spectrum of competitive gamers ranging from hobbyists to elite professionals. The psychosocial complications of injuries are shared between such cohorts, where lasting functional implications can significantly limit careers.

Currently, there are limited services established to treat and rehabilitate occupational injuries sustained by competitive gamers, perhaps due to high turnover of athletes and a reluctance to report physical symptoms. As e-sports continue to gain traction and evolve, the increased prevalence of such injuries will become apparent and specialist services must be prepared to meet this increased demand. Establishing optimal multi-disciplinary management pathways for this unique patient cohort is vital in ensuring adequate care and patient satisfaction. As the demographic of patients sustaining these potentially debilitating injuries continues to evolve, so too should the standard of care we provide to our patients, ensuring functional aspirations and personal preference are incorporated into clinical decision making to optimise outcomes on an individual basis.

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