

## Effects of Multiple Concussions on Retired National Hockey League Players

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The purpose of this study was to understand the meanings and lived experiences of multiple concussions in professional hockey players using hermeneutic, idiographic, and inductive approaches within an interpretative phenomenological analysis. The interviewer was an athlete who had suffered multiple concussions, and the interviewees were five former National Hockey League athletes who had retired due to medically diagnosed concussions suffered during their careers. The men discussed the physical and psychological symptoms they experienced as a result of their concussions and how the symptoms affected their professional careers, personal relationships, and quality of life. The former professional athletes related these symptoms to the turmoil that is ever present in their lives. These findings are of interest to athletes, coaches, sport administrators, family members, sport psychology practitioners, and medical professionals, as they highlight the severity of short- and long-term effects of concussions.

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Athletes of all ages and skill levels participate in ice hockey. Despite its popularity, participation in this sport involves the risk of injury due to the aggressive nature of the game, where players can reach speeds up to 30 mph (Flik, Lyman, & Marx, 2005). Musculoskeletal injuries occur frequently and injured athletes follow a predictable rehabilitation timeline. Another type of injury, concussion, is a growing concern in hockey (Benson, Meeuwisse, Rizos, Kang, & Burke, 2011; Echlin et al., 2010). Unlike most musculoskeletal injuries, concussions are invisible (i.e., no swelling, stitches) injuries (Bloom, Horton, McCrory, & Johnston, 2004), and often there is no timeline for recovery (McCrory et al., 2009). Furthermore, concussed athletes cannot resume activity until their physical symptoms have subsided (McCrory et al., 2009). These unique attributes of concussions likely present novel challenges for sport psychology researchers and practitioners, especially since little is known about how athletes describe and make sense of their experiences of the invisible, persistent facets of concussion.

Echlin and colleagues (2010) measured concussion incidence among Canadian Junior ice hockey players. The authors found these athletes suffered 21.5 concussions per 1000 athlete exposures, a rate 3.3 times higher

than previously thought. In addition to the growing number of concussions, Benson and colleagues (2011) found that multiple concussions caused National Hockey League (NHL) players to miss lengthier periods of time and experience more severe postconcussion symptoms. Commonly reported postconcussion physical symptoms are headaches, dizziness, fatigue, and sensitivity to light (e.g., Benson et al., 2011; Echlin et al., 2010; McCrory et al., 2009). However, there is evidence that athletes may also encounter psychological postconcussion symptoms, including, but not limited to depression, isolation, and anxiety (Chen, Johnston, Petrides, & Ptito, 2008; Johnston et al., 2004). An anecdotal account from Gulli (2011) reported that former professional hockey players experienced symptoms of depression, anxiety, and in some cases suicidal ideation after suffering a concussion. In partial support of this finding, functional magnetic resonance imaging scans of concussed individuals have indicated similar neural responses in brain areas commonly linked with major depression (Chen et al. 2008). Understanding the link between concussion and depression symptoms from the athletes' perspectives would complement this medical mapping and help to inform tailored, individualized psychological skills programs.

Depression and anxiety symptoms may also be perpetuated if severe postconcussion symptoms lead to career termination for athletes in elite and professional sport. Athletes who suffered injury-based career termination have had a more difficult transition to postcareer retirement compared with those who had control over their retirement (Taylor & Ogilvie, 1994; Werthner & Orlick, 1986). Emotional responses of

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