Risking Injury: Exploring the Relationship between Risk Propensity and Injuries among an Australian Rules Football Team

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Abstract : Australian Rules Football (ARF) is an invasion based, contact field sport with over one million participants. The contact nature of the game increases exposure to all injuries, including head trauma. Evidence suggests that both concussion and sub-concussive traumas such as head knocks may damage the brain, in particular the prefrontal cortex. The prefrontal cortex may not reach full maturity until a person is in their early twenties with males taking longer to mature than females. Repeated trauma to the pre-frontal cortex during maturation may lead to negative social, cognitive and emotional effects. It is also during this period that males exhibit high levels of risk taking behaviours. Risk propensity and the incidence of injury is an unexplored area of research. Little research has considered if the level of player's (especially younger players) risk propensity in everyday life places them at an increased risk of injury. Hence the current study, investigated if a relationship exists between risk propensity and self-reported injuries including diagnosed concussion and head knocks, among male ARF players aged 18 to 31 years. Method: The study was conducted over 22 weeks with one West Australian Football League (WAFL) club during the 2015 competition. Pre-season risk propensity was measured using the 7-item self-report Risk Propensity Scale. Possible scores ranged from 9 to 63, with higher scores indicating higher risk propensity. Players reported their self-perceived injuries (concussion, head knocks, upper body and lower body injuries) fortnightly using the WAFL Injury Report Survey (WIRS). A unique ID code was used to ensure player anonymity, which also enabled linkage of survey responses and injury data tracking over the season. A General Linear Model (GLM) was used to analyse whether there was a relationship between risk propensity score and total number of injuries for each injury type. Results: Seventy one players (N=71) with an age range of 18.40 to 30.48 years and a mean age of 21.92 years ($\pm$2.96 years) participated in the study. Player's mean risk propensity score was 32.73, SD $\pm$8.38. Four hundred and ninety five (495) injuries were reported. The most frequently reported injury was head knocks representing 39.19% of total reported injuries. The GLM identified a significant relationship between risk propensity and head knocks (F=4.17, p=.046). No other injury types were significantly related to risk propensity. Discussion: A positive relationship between risk propensity and head trauma in contact sports (specifically WAFL) was discovered. Assessing player's risk propensity therefore, may identify those more at risk of head injuries. Potentially leading to greater monitoring and education of these players throughout the season, regarding self-identification of head knocks and symptoms that may indicate trauma to the brain. This is important because many players involved in WAFL are in their late teens or early 20's hence, may be at greater risk of negative outcomes if they experience repeated head trauma. Continued education and research into the risks associated with head injuries has the potential to improve player well-being.

Keywords : football, head injuries, injury identification, risk
Conference Title : ICSEHS 2016 : International Conference on Sport, Exercise and Health Sciences
Conference Location : Vancouver, Canada
Conference Dates : August 04-05, 2016