Using the capture-recapture approach to estimate the incidence of unintentional musculoskeletal injuries among Naval Special Warfare Sea, Air and Land Operators

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**Background/purpose:** Injury epidemiology studies among military populations utilize either self-reported or medial chart reviewed injury data. Self-reported data are prone to issues with recall, and medial chart reviewed data are available only if medical care was sought. The purpose of this study was to use the capture-recapture (CRC) approach to estimate the ascertainment-corrected incidence of unintentional musculoskeletal injury among a sample of Naval Special Warfare Seal, Air and Land Operators.

**Methods:** Capture-recapture analysis was conducted by application of the Chapman modification of the Peterson estimator to two sources of unintentional musculoskeletal injury data: self-reports and medical chart reviewed data, to estimate the cumulative incidence during a one year period. Injuries were analyzed further according to injury type.

**Results:** Data were available for 105 subjects (age: 28.4, 5.7 (mean, standard deviation)). The number of subjects identified as injured during a one year period were 30 and 26 in the self-reported and the medical chart reviewed data respectively, while the CRC estimate of the number of injured subjects was 48.2 (95% CI 38.9, 57.5). The overall, medical chart and self-report ascertainment percent were 82.9, 53.9 and 62.2, respectively. The CRC cumulative incidence during a one year period was 45.9 (95% CI 37.1, 54.8), while the medical chart and self-reported incidence was 24.8 and 28.6. When various injury types were analyzed separately, overall ascertainment was high for fractures (84.5%), while it was low for less severe injuries such as strain (23.0%).

**Conclusion:** The overall ascertainment was generally good, but varied by injury type. Further investigation of the utility and methods of the CRC technique to assess the validity of unintentional musculoskeletal injury data obtained from military populations is needed.

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