

# Using the capture-recapture method to estimate the incidence of musculoskeletal injuries among Army Soldiers

## Authors

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**Background/purpose:** Injury epidemiology studies in military populations utilize either medical chart reviewed or self-reported injury data. Medical chart reviewed injury data may not be complete if subjects do not seek medical care. Injury self-reports may suffer from issues with recall, especially for older and less severe injuries. The purpose of this study was to combine medical chart reviewed and self-reported data using the capture-recapture (CRC) approach to estimate the ascertainment-corrected incidence of musculoskeletal injury among a sample of Army Soldiers.

**Methods:** CRC analysis was conducted by using the Chapman modification of the Peterson estimator to two sources of unintentional musculoskeletal injury data: medical chart reviews and injury self-reports, to estimate the cumulative incidence during a one year period.

**Results:** Injury data were available for 287 subjects (age:  $27.5 \pm 6.3$  years (mean  $\pm$  standard deviation), gender: males 88.2%). The cumulative incidence of musculoskeletal injuries during a one year period was 17.8% in the medical chart reviews and 19.5% in the injury self-reports. The CRC estimate of the cumulative incidence was 54.0% (95% confidence interval: 38.5%, 69.5%). The overall, medical chart review and self-report ascertainment percent were 57.4%, 32.9% and 36.1%, respectively. When various injury types were analyzed separately, overall ascertainment varied by injury type. The overall ascertainment percent were 75.0% for fractures, 53.8% for sprains, 43.8% for strains, and 35.8% for pain/spasm/ache.

**Conclusion:** The overall ascertainment was moderate, and varied by injury type. There is a need for further investigation of the application of the CRC method to musculoskeletal injury data in military populations. Assessment of the relative benefits of musculoskeletal injury data obtained using various methods of ascertainment such as medical chart reviews and injury self-reports in military populations is also needed.