

Deteriorating Cardiac Function Among RCMP

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Why study changes in cardiac function among RCMP during their first three years of service?

Royal Canadian Mounted Police (RCMP) frequently encounter potentially psychologically traumatic events (PPTs) which include direct (e.g., happened to me) or indirect (e.g., part of my job) exposure to actual or threatened death, serious injury, or sexual violence, and subsequently demonstrate an increased risk of developing posttraumatic stress injuries (PTSI).

Common PTSIs among RCMP members include posttraumatic stress disorder, generalized anxiety disorder, and major depressive disorder, and conditions related to PTSIs, such as alcohol use disorder, although associations between PPT exposure and physical comorbidities such as neurological and cardiovascular conditions have also been evidenced.

Assessments of cardiac function at pre-training and pre-deployment indicated that RCMP cadets exhibited excellent cardiovascular health, but no longitudinal assessments of cardiac function had been conducted prior to the current study.

The current study

The current study was designed to assess for changes in cardiac function among RCMP within their first three years of field service. Participants ($n=96$) were mostly male (71.6%), men (71.6%), and White (85.6%), with a mean age of 30.22 ± 6.22 years.

Measurements of cardiac function were obtained using seismocardiography. Participants were instructed to collect 60 seconds of data each day at a consistent time. The current study includes values from a single recording captured within 30 days of a participant's annual assessment interval (i.e., one recording from pre-deployment, 1-year follow-up, 2-year follow-up, and 3-year follow up).

A series of unadjusted and covariate adjusted linear mixed models (LMMs) were conducted to assess for changes in measures of cardiac function over time.

Additionally, the point prevalence of possible ventricular diastolic dysfunction derived from the myocardial performance index (MPI) value at each of the annual assessment intervals was computed utilizing the 97.5th percentile for normal cardiac function estimated from normative samples.

Results

The current results suggest that despite considerable variations in individual trajectories among RCMP officers in their first 3 years of service, measures of diastolic cardiac function began to change as early as the second year of service, with compensatory changes in systolic function occurring concurrently, or observed after the third year of service.

- 0% of the sample at both pre-deployment and 1-year follow-up demonstrated MPI values suggestive of altered myocardial function.
- 5.7% of the sample at 2-year follow-up demonstrated MPI values suggestive of altered myocardial function.
- 38.3% of the sample at 3-year follow-up demonstrated MPI values suggestive of altered myocardial function.

Consistent with a priori pre-registered hypotheses, the current results demonstrate longitudinal changes in cardiac function, albeit at a rate that seemingly exceeds what would be considered consistent with healthy aging.

Conclusions

The current study is the first longitudinal examination of changes in cardiac function among RCMP officers during their first three years of field service and supports the recognition of deteriorations in cardiac function as a PTSI.

Incorporating best-practice cardiac rehabilitation exercise prescription guidelines tailored to the maintenance of diastolic function into occupational health and wellness programs may support a reduction in the risk of cardiovascular conditions and comorbidities among RCMP officers and other high-risk occupational populations.

The current results also bolster notions that PTSI prevalence among RCMP is related to service experiences, and support the continued development and deployment of organization-level PTSI mitigation strategies for all RCMP.

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Read the full study here:

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The RCMP Longitudinal
PTSD Study



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