s ¯π¼π· šŒÉ· Œ _ ÁšŒÉ· π

Managing Repetitive Strain Injuries in Policing

Jennifer Butz, BSc.P.T., CAFCI, Cert. MDT, CGIMS
Integrated Health and Wellness Physiotherapist
Regina Police Service

v π1 πšGJCE4π z š¯ †Œ M◊Ð¯ Ğ¨ v z M·π2 πΔ·Eπ≥

A general term for painful conditions affecting muscles, tendons, nerves, and joint caused by repetitive movements, prolonged overuse or prolonged static postures.

v π1 πšGJCE4π z š¯ †Œ MÐ¯Ğ· v z M

The Canadian Centre for Occupational Health and Safety identifies that RSIs are a significant problem in Canadian workplaces, affecting an estimated 15% of the population at any given time.

This translates into approximately *4.5 million Canadians* annually.

Risk Factors for RSI

Risk Factors	Level	Description
Prolonged Sitting	Low	≤ 4 hours/day and <1 year
Bending/Twisting	Moderate	≤ 4 hours/day and 1-10 year or > 4 hours/day and ≤ 5 years
	High	≤ 4 hours/day and >10 years or > 4 hours/day and >5 years
Whole Body Vibration	Low	≤ 4 hours/day and ≤ 1 year
Lifting	Moderate	≤ 4 hours/day and 1-5 year or > 4 hours/day and ≤ 2.5 years
	High	≤ 4 hours/day and >5 years or >4 hours/day and >2.5 years

JOURNAL ARTICLE

Shoulder Pain of Spinal Source in the Military: A Case Series FREE

Joseph A Hathcock, PT, DPT SP, USA, Chris W Boyer, PT, DPT SP, USA,
Jamie B Morris, PT, DPT, DSc SP, USA

Military Medicine, Volume 187, Issue 9-10, September-October 2022, Pages e1240–e1246, https://doi.org/10.1093/milmed/usab059

Musculoskeletal injury (MSI) places an overwhelming burden on U. S. Military combat readiness, accounting for 53% to 75% of all medically non-deployable service members (SMs).[1] In 2019, upper extremity MSIs were the third most common complaint at military medical encounters.[2] Additional data demonstrate that military shoulder injuries comprise 63% of upper extremity MSIs, with 82% of cases resulting from shoulder overuse.[3]

Prevalence of current chronic pain in Royal Canadian Mounted Police cadets

Robyn E Shields [a,b,✉], Taylor A Teckchandani [a], Katie L Andrews [a], Billea Ahlgrim [c], Danielle M Caissie [c], Chet C Hembroff [c], Jolan Nisbet [a], Gordon J G Asmundson [b], Gregory P Krätzig [c], R Nicholas Carleton [a,b]

▸ Author information ▸ Article notes ▸ Copyright and License information

PMCID: PMC11195451 PMID: 38915304

- Prevalence of lower back pain was higher in RCMP (54%) than in cadets (34.2%), likely due to duty-related experiences and repeated activities, such as wearing duty belts, prolonged sitting, and time spent in police vehicles

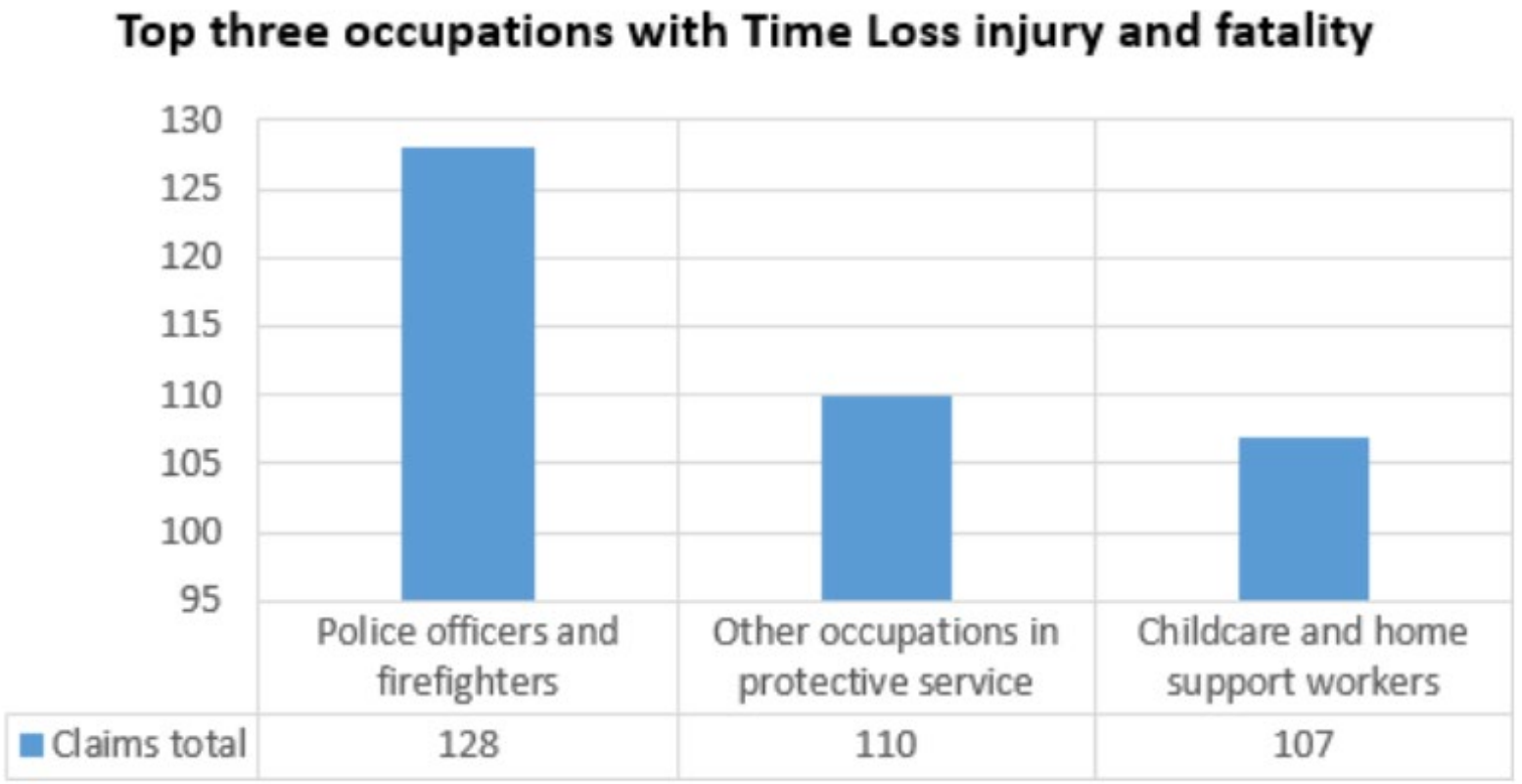
ï - + z †, ÿ †šÆÃ¾ †·

"Work injuries may arise from repetitive activities and/or poor ergonomics resulting in repetitive strain injuries"

ï - + z †, ÿ†šÆÃπ¾†· z š†š, πюъюя

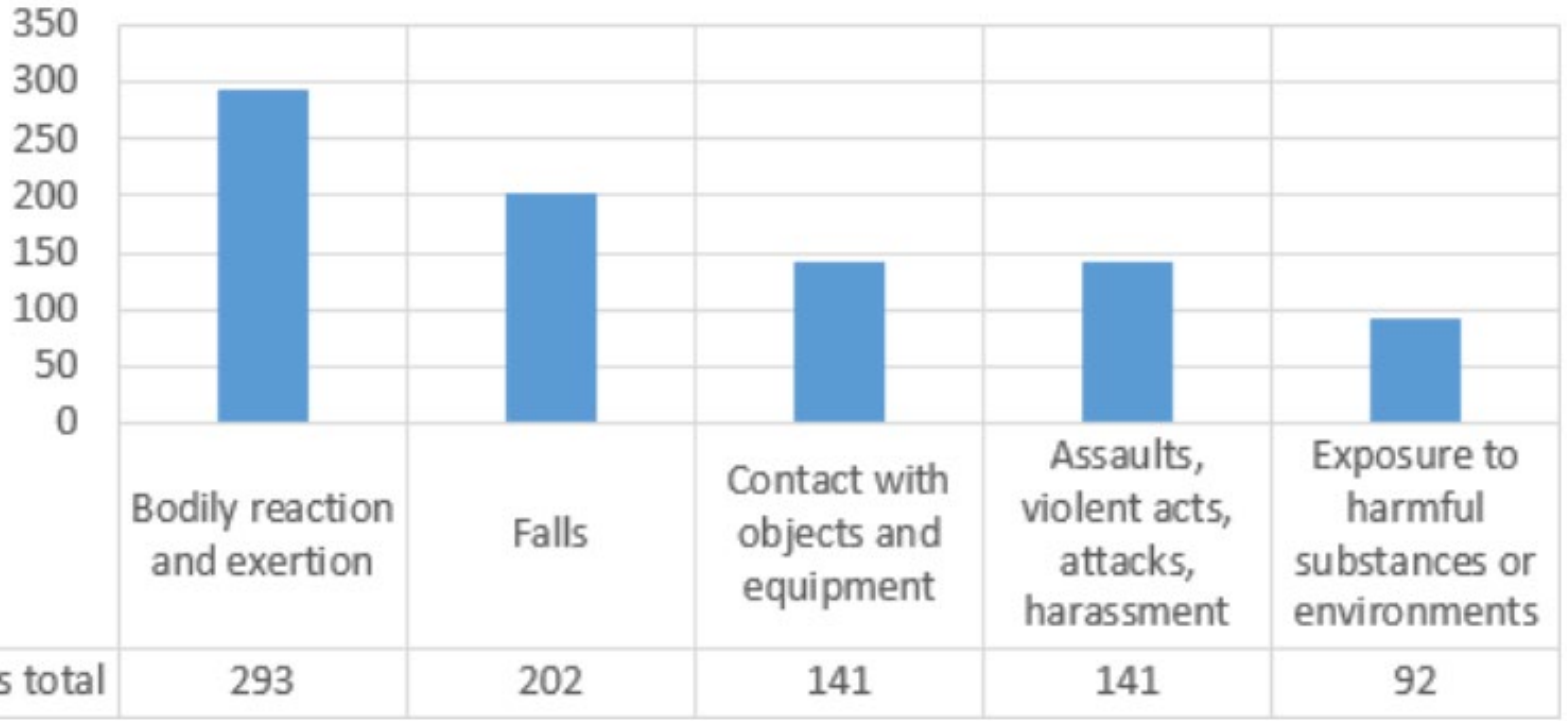
Police and Fire 13.81%

25.6%



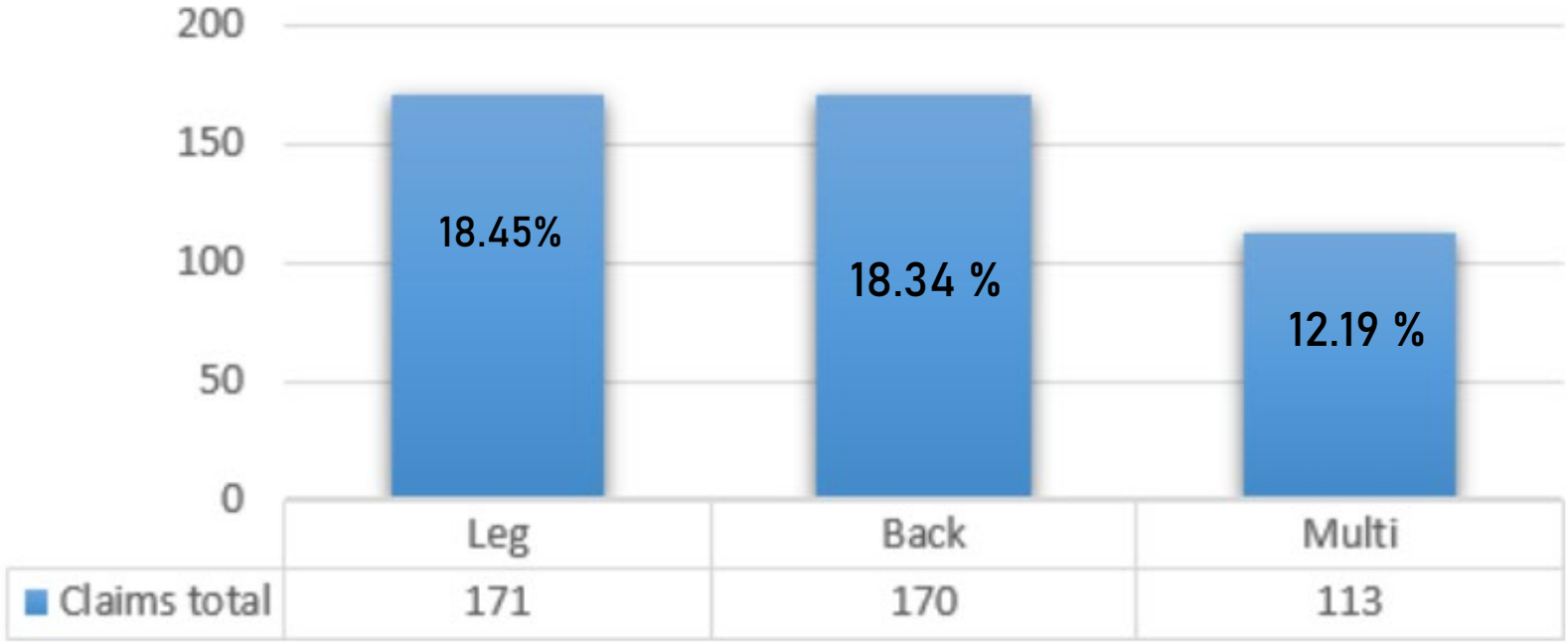
BR&E
31.61 %

Top five causes for Time Loss injury and fatality



	Bodily reaction and exertion	Falls	Contact with objects and equipment	Assaults, violent acts, attacks, harassment	Exposure to harmful substances or environments
Claims total	293	202	141	141	92
	21.7 %	15.21 %	15.21 %	9.92%	

Top three body parts with Time Loss injury and fatality



Causes of injury

Most common causes	Claim per cent	Comment
Bodily reaction and exertion is the most common cause of injury.	34.46%	of these injuries are to back. The most common of these injuries are due to overexertion in lifting such as boxes, crates, cartons.
Bodily reaction and exertion is the most common cause of injury.	26.69%	of these injuries are to leg. The most common of these injuries are due to slip, trip, twisting, stepped on or in, loss of balance – without fall such as bodily motion or position of injured, ill worker.
Bodily reaction and exertion is the most common cause of injury.	15.71%	of these injuries are to shoulder. The most common of these injuries are due to overexertion in lifting such as boxes, crates, cartons.
Contact with objects and equipment is the other major cause of injury.	47.89%	of these injuries are to hand. The most common of these injuries are due to struck by swinging or slipping object such as needles and syringes.
Contact with objects and equipment is the other major cause of injury.	16.13%	of these injuries are to head. The most common of these injuries are due to struck against stationary object such as truck.
Contact with objects and equipment is the other major cause of injury.	8.44%	of these injuries are to leg. The most common of these injuries are due to struck by swinging or slipping object such as pipes, ducts, tubing.
Contact with objects and equipment is the other major cause of injury.	8.44%	of these injuries are to leg. The most common of these injuries are due to struck by swinging or slipping object such as doors.

Journal of Manual & Manipulative Therapy
Taylor & Francis
Taylor & Francis Group

J Man Manip Ther. 2019 Sep 2;28(4):222–230. doi: 10.1080/10669817.2019.1661706

A study exploring the prevalence of Extremity Pain of Spinal Source (EXPOSS)

Richard Rosedale [a,✉], Ravi Rastogi [a], Josh Kidd [b], Greg Lynch [c], Georg Supp [d], Shawn M Robbins [e]

EXPOSS:

Hip 71 %
Knee 25.6 %
Ankle 29.3 %

Discussion

Over 40% of patients with isolated extremity pain, who believed that their pain was not originating from the spine, responded to spinal intervention and thus were classified as having a spinal source of symptoms. These patients did significantly better than those whose extremity pain did not have a spinal source and were managed with local extremity interventions. The results suggest the spine is a common source of extremity pain and adequate screening is warranted to ensure the patients ´ source of symptoms is addressed.

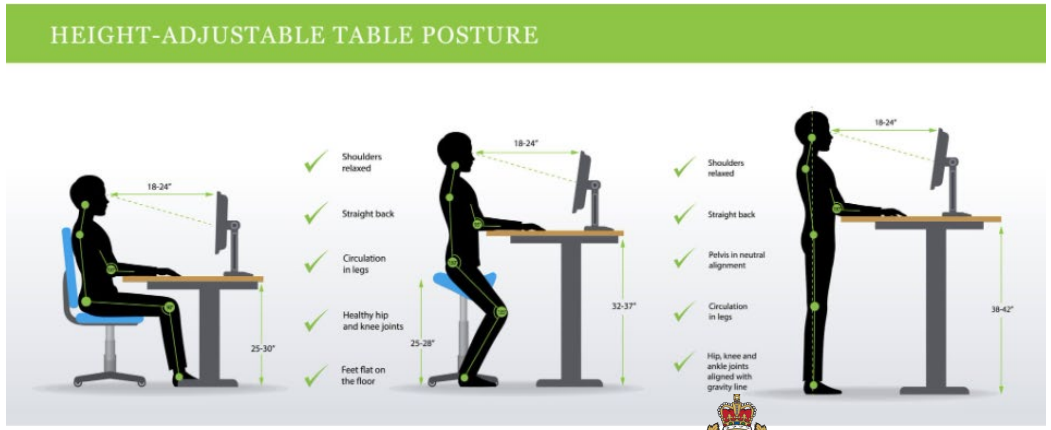
ERGONOMICS

Ergonomics

Ergonomics is the science of designing and arranging things people use so that people interact with their environment most efficiently and safely

Goals

- Reduce the risk of musculoskeletal disorders (MSDs) and injuries
- Improve worker comfort and efficiency
- Enhance overall system performance
- Minimize fatigue and overexertion



REGINA POLICE SERVICE

- Stigma on cause of injuries persist “just part of job”
- Unique ergonomics
  - Load on belt
  - Vehicles
  - Dynamic environments and unpredictable subjects
- Reactive versus proactive
- WCB acceptance rates for Patrol
  - Challenge these decisions based on ergonomics alone
  - “Patrol office” – vehicle, carry their office with them

Risk Factors	Level	Description
Prolonged Sitting	Low	≤ 4 hours/day and <1 year
Bending/Twisting	Moderate	≤ 4 hours/day and 1-10 year or > 4 hours/day and ≤ 5 years
	High	≤ 4 hours/day and >10 years or > 4 hours/day and >5 years
Whole Body Vibration	Low	≤ 4 hours/day and ≤ 1 year
Lifting	Moderate	≤ 4 hours/day and 1-5 year or > 4 hours/day and ≤ 2.5 years
	High	≤ 4 hours/day and >5 years or >4 hours/day and >2.5 years

Where do we start?

- Understand the impact of the equipment
- Understand vehicle ergonomics
- Prevention strategies
  - Education
  - Corrective Exercises
    - Vehicle
    - Mobility
  - Targeted Rehabilitation

Equipment Impact

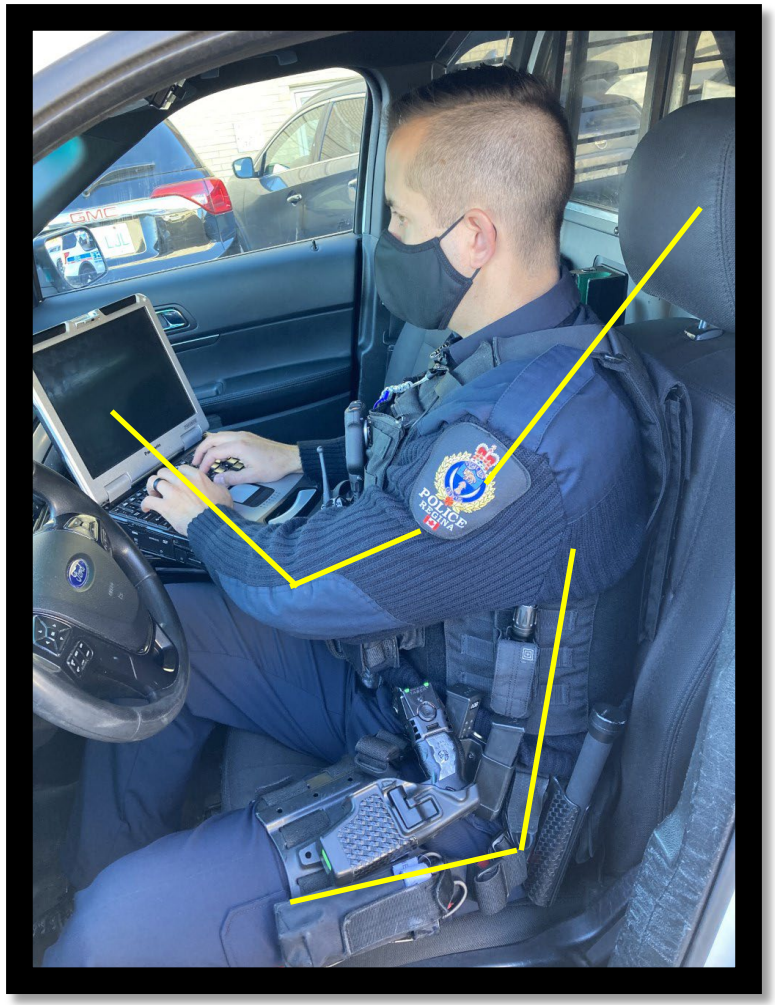
- Standard duty belt
    - Standing: Anterior pelvic tilt increases compression forces on the low back
- Vest load
    - Officer unloading strategies
    - Compresses the upper back and rounds shoulders
    - Increases weight on the lumbar spine lever

Ergonomic Considerations

- Belt options
  - Battle belt
  - Dragonskin
- Education
  - Offloading down the leg
  - Equipment set up
  - Prevention strategies

2 Vehicle ergonomics

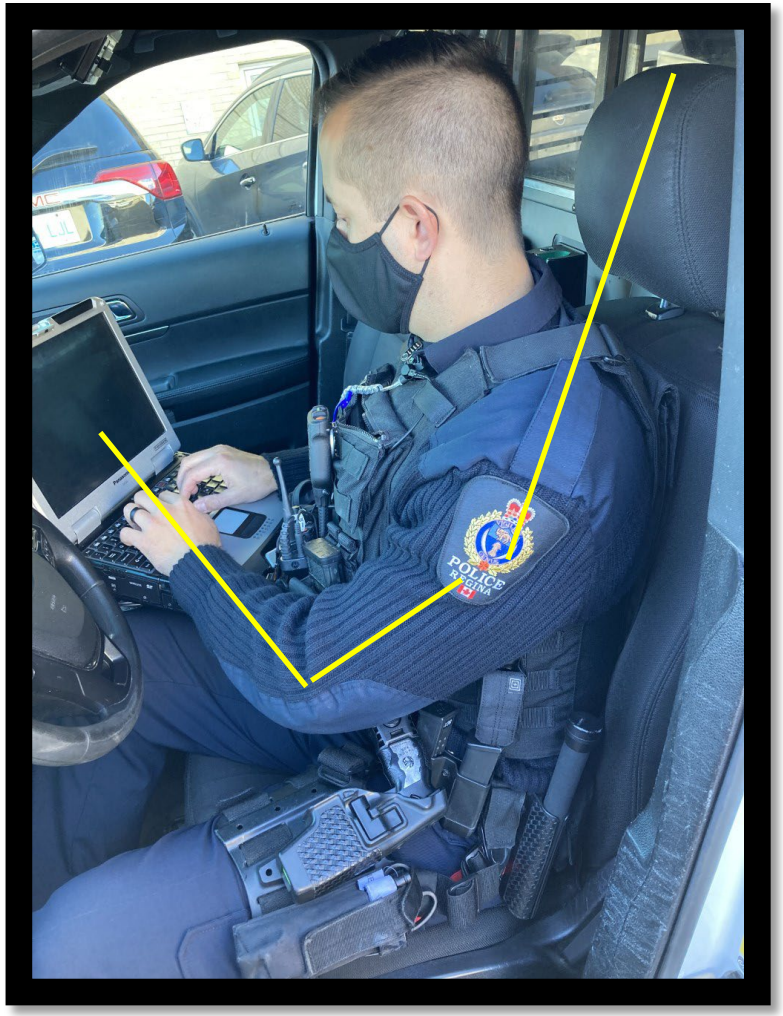
- CAD placement
  - Significant constant right upper body rotation
  - Impact: Repetitive strain on shoulders, right SI joint and low back
- Belt restriction
  - Forces resting lumbar flexion
  - Impact: Increased low back disc strain
  - Vibration, road impact
- Silent partner/equipment placement restrictions
  - Impact: reduced adjustability of front seat/space



Ergonomic considerations:

- Address vehicle set up
  - CAD placement
    - Mount arm
  - “Pilot car”
  - Local partnerships
  - Safety considerations

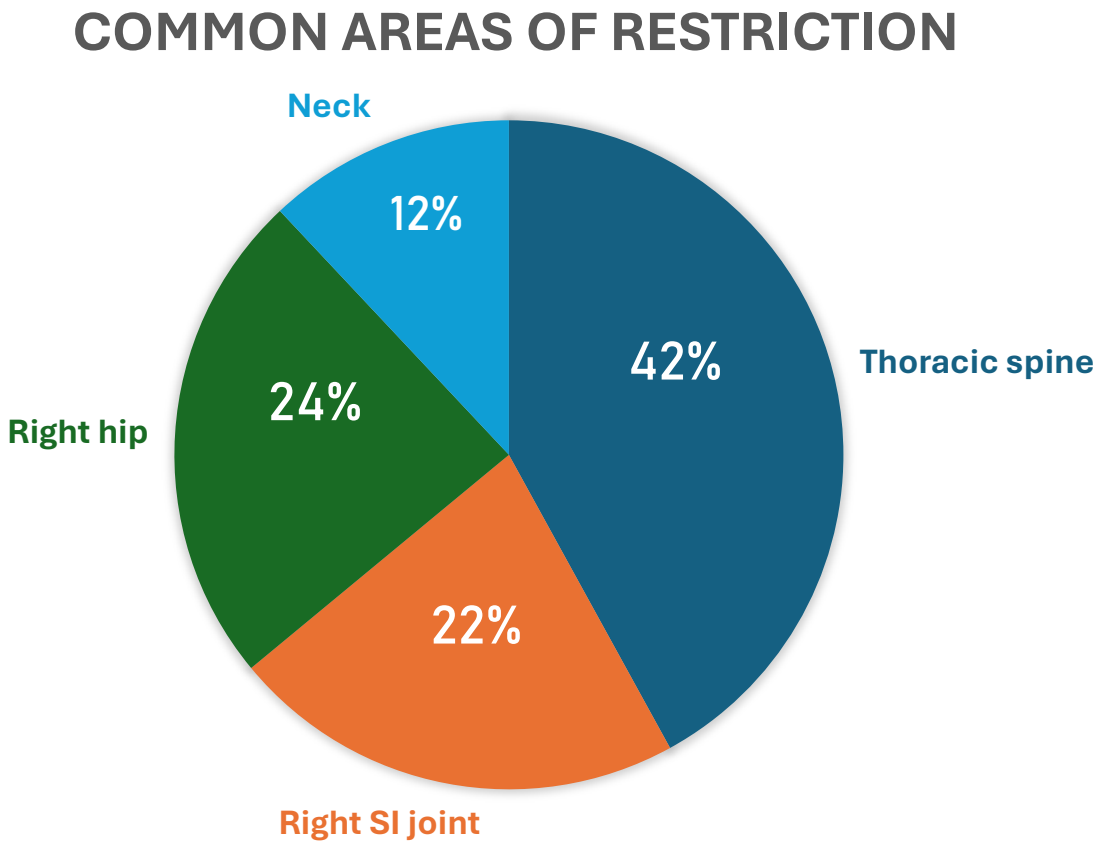
- Education
  - Prevention strategies
  - Microbreaks
  - Report writing



Prevention: Education

- Belt options
- Belt set up (motor memory established early)
- Distribution of equipment
  - Belt
  - Vest
- New recruit in-service
- Block Training presentation
- Collaboration with internal departments
  - Pilot vehicle
- WCB education days/ride a longs

Prevention: Corrective Exercises



Corrective Exercises:

- Quick, easily reproducible
- High volume
- Targets spine, prolonged postures

Shift Correctives

Cervical Retraction - Sitting | **Sets:** 1 | **Reps:** 10-20 | **Hold:** always to end range | **Frequency:** every two hours in shift

Preparation:

- Sit in a chair with good posture

Execution:

- Keep chin level with ground
- Retract head to end of available movement
- Push into the end of movement

Thoracic Rotation | **Sets:** 1 | **Reps:** 10-20 | **Hold:** always to end range | **Frequency:** every two hours in shift

Preparation:

- Sit in chair with good posture as shown
- Sit on sit bones

Execution:

- Rotate to the left as far as movement allows
- Use the steering wheel to push into endrange LEFT rotation

Start Position

Rotate to LEFT side only

Repeated Lumbar Extension | **Sets:** 1 | **Reps:** 10-20 | **Hold:** always to end range | **Frequency:** every two hours in shift

Preparation:

- Stand with good posture, feet shoulder width apart
- Position your hands on the backs of your hips

Execution:

- Lean back, far as you comfortably can
- Slowly return to the start position
- Repeat

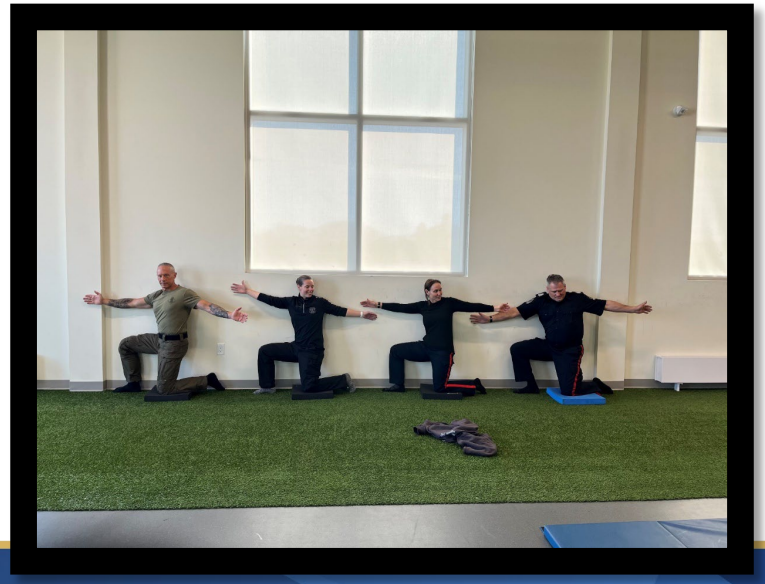
DON'T THRUST HIPS FORWARD OR BEND KNEES

Start Position

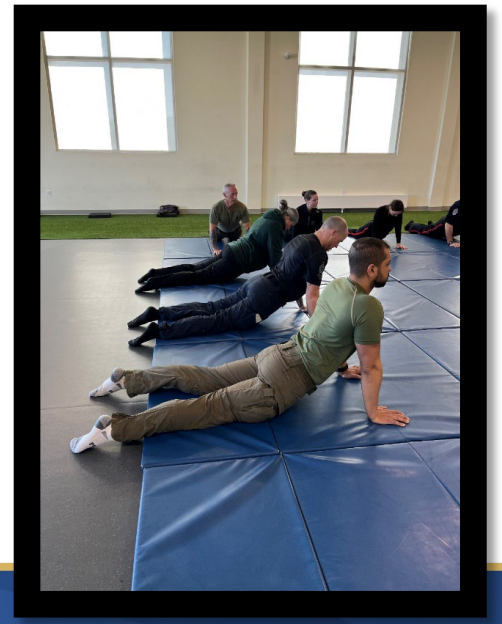
Lean back

Corrective Exercises: Mobility

- Target common areas of restriction
- Detailing: ‘Mini Stretch’
- Mobility classes
- Block Training DT warm up



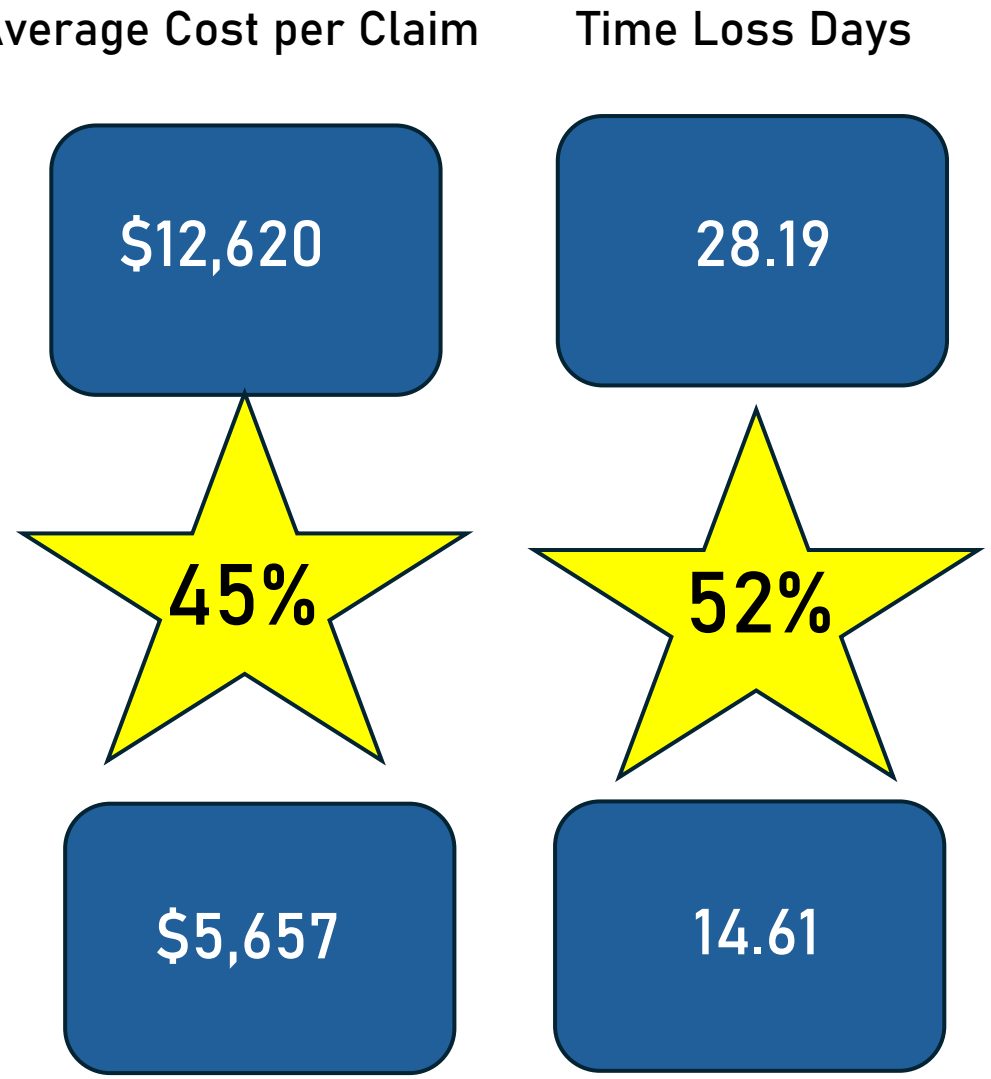
6X
reduction



Prevention: Targeted rehabilitation

- Establish local rehabilitation partnerships
  - Physiotherapists, Chiropractors, etc.
  - Ride-a-longs
  - Common areas of restriction
  - Ergonomics
  - Local university

- In-house services
  - Ease of access
  - Reduction in medical appointment time
  - Pressures of scheduling
  - RTW communication
  - WCB premium and time loss impact



Testimonials

"I wanted to reach out and provide you with some feedback as it relates to the stretching classes offered by Jennifer on Tuesdays and Thursdays. I have noticed an improvement in my overall mobility and day to day aches and pains, however I really noticed a big change recently. I attended an autopsy this week and this entails me standing for numerous hours on a very hard floor. In the past I have had a difficult time making it through the entire autopsy due to lower back and knee pain which caused me to find a seat. On the one I attended this week, I was able to stand for approximately 5hrs before the pain started creeping in.

The only change I have really made to my physical fitness regime is attending the stretching classes, and I believe this improvement is a direct correlation to this class.

In my opinion we need to offer more programming along these lines as I can attest that its having a very positive impact on the attendees."

Testimonials

"As a manager of the largest civilian area at RPS, I wanted to send my support for the current in house physiotherapy service that was implemented in 2023.

Not only am I seeing positivity from the staff who now feel that they are valued and their physical limitations addressed, but I am seeing the benefits of staff not having to leave work for an extended period of time to attend an outside RPS program (travel time, logistics of appointments).

I feel my teams are missing less work for "appointments" and the efficiency of the in house process supports that.

As a patient of the program, I can personally say that this has taken my pain level down considerably while I await surgery. It is difficult to be in constant pain and the access to physio in house has taken my pain levels from an 8 to a 3 most days. This allows me to be a more engaged manager.

Thanks for your offering this service."

Resources

- Government of Canada, “Canadian Centre for Occupational Health and Safety”, (2014), www.ccohs.ca
- Hathcock, J.A., Boyer, C.W., Morris, J.B. (2022) Shoulder Pain of Spinal Source in the Military: A Case Series. *Military Medicine.* 187 (9-10): e1240-e1246.
- Regina Police Service Statistics
- Repetitive Strain Pilot Project. Regina Police Service and WCB. Butz, J. A. & Brehm-Claude, J., 2020.
- Rosedale, R., Rastogi, R., Kidd, J., Lynch, G., Supp, G., Robbins, S.M. (2019) A study exploring the prevalence of Extremity Pain of Spinal Sources (EXPOSS). *Journal of Manipulative Therapy.* Sep 2: 28(4): 222-230.
- Shields, R. E.,chronTeckchandani, T.A., Andrews, K.L., Ahlgrim, B., Caissie, D. M., Hembroff, C.C., Nisbet, J., Asmundson, G.J.G., Kratzig, G.P., & Carleton, R.N. (2024). Prevalence of current chronic pain in Royal Canadian Mounted Police cadets. *Canadian Journal of Pain,* 8(1), Article 2354394.
- WCB Saskatchewan. “Statistics”. (2023), www.wcbsask.com

Thank you

Jennifer Butz, BSc.P.T., CAFCI, Cert. MDT, CGIMS

Integrated Health and Wellness Physiotherapist
Regina Police Service

jbutz@reginapolice.ca