



Advancing physical activity knowledge and participation  
among Canadians living with spinal cord injury.

## **Heart Disease Risk: People with SCI have more C-Reactive Protein in their blood, especially tetraplegics**

### ***Purpose***

To study C-Reactive protein (protein in blood) in people with SCI.

### ***Summary***

- People with SCI have more C-Reactive protein in their blood, which points to risk of heart disease.
- Tetraplegics had more C-Reactive protein in their blood, compared to paraplegics.
- Larger waists were related to more C-Reactive protein in the blood.

### ***Possible Applications***

- More C-Reactive protein in the blood of people with SCI is an important risk factor for heart disease.
- Tetraplegics may have a higher chance of heart disease.
- It is important to be active in order to heart disease risk and stay in shape.

### ***Research Abstract***

#### ***C-Reactive protein in adults with chronic spinal cord injury: increased chronic inflammation in tetraplegia vs paraplegia***

**Objectives:** In community-dwelling adults with chronic spinal cord injury (SCI), to (1) quantify C-reactive protein (CRP), a marker of inflammation and cardiovascular disease (CVD) risk; (2) determine factors associated with CRP.

**Methods:** We examined CVD risk factors in 69 participants. Measurements included length, weight, waist circumference, blood pressure, percent fat mass (bioelectrical impedance analysis) and fasting blood parameters (high-sensitivity CRP, lipids, insulin, glucose, insulin resistance by homeostasis model assessment (HOMA)).

**Results:** Mean CRP of the group was  $3.37 \pm 2.86$  mg/L, consistent with the American Heart Association (AHA) definition of high risk of CVD. CRP was 74% higher in persons with tetraplegia ( $4.31 \pm 2.97$ ) than those with paraplegia ( $2.47 \pm 2.47$  mg/L,  $P = 0.002$ ), consistent with high CVD risk. Participants with high CRP ( $3.1-9.9$  mg/L) had greater waist circumference, BMI, percent fat mass and HOMA values than those with lower CRP ( $< 3.0$  mg/L, all  $P < 0.05$ ). LogCRP was independently correlated with waist circumference ( $r = 0.612$ ), logTriglycerides ( $r = 0.342$ ), logInsulin ( $r = 0.309$ ) and logHOMA ( $r = 0.316$ , all  $P < 0.05$ ). Only level of lesion and waist circumference remained significantly associated with logCRP when variables with significant bivariate correlations were included in multiple regression analysis.

**Conclusion:** Mean CRP values in this sample of adults with chronic SCI were consistent with the AHA classification of high CVD risk, especially those of persons with tetraplegia. Level of lesion and waist circumference are independently associated with CRP in this population

**Gibson AE, Buchholz AC, Martin Ginis KA, & The SHAPE-SCI Research Group (2008). C-Reactive protein in adults with chronic spinal cord injury: Increased chronic inflammation in tetraplegia vs. paraplegia. *Spinal Cord*, 46, 616-621.**