

**The physiological basis of the CIVD:
Is it a homogeneous and consistent response?**

MICHEL B. DUCHARME

Defence R&D Canada, Quebec City, QC, Canada, G3J 1X5

Cold-induced vasodilatation (CIVD) is a complex physiological reaction characterized by the vasodilatation of cold-exposed blood vessels. It is believed that the CIVD response is associated with a decreased risk of tissue cold injury, improved manual dexterity and tactile sensitivity and a decrease of pain associated with cold exposure. Some believe that the response is a thermoregulatory reflex contributing to body heat loss. Over eighty years of research has identified more than 25 factors capable of influencing the response. The majority of the relationships between those factors and the CIVD response are ill understood and likely non-linear. The exact mechanism explaining the CIVD response is still unclear; six potential mechanisms are being considered. The response is non-systematic, with a high degree of heterogeneity among body sites, and the reproducibility of the response is not uniform among measurement sites and physiological variables used to describe the response. In addition, there is a high inter and intra-personal variability in the response. It is proposed that our limited understanding of the CIVD reaction and its apparent variability could be associated to the complexity of the physiological function and the absence of standardization for a research protocol to measure, characterize and compare the CIVD response.