Mountain rescue operations often confront crews with extreme weather conditions. Extremely cold temperatures make standard treatment sometimes difficult or even impossible. It is well-known that most manual tasks, including those involved in mountain rescue operations, are slowed by extremely cold weather. To lessen and improve the decrement in performance of emergency medical treatment caused by cold-induced manual impairment and inadequate medical equipment and supplies, simulation training in a weather chamber, which can produce wind and temperatures up to -22°C, was developed. It provides a promising tool to train the management of complex multidisciplinary settings, thus reducing the occurrence of fatal human and technical errors and increasing the safety for both the patient and the mountain emergency medical service crew.