



**Title:** The Effects of Variable Temperatures on Manual Muscle Capabilities

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**Abstract:**

The hands are arguably the most important part of the body. As the most commonly used body part, they are crucial for completing most tasks that we come across. Until recently, not a lot of research had been done to study the effects of extreme temperatures (namely cold ones) on our hands' dexterity and their ability to carry out tasks. During the fall semester, in Systems Physiology (CAS BI315), my team and I conducted a study to test the limits of hand muscles under cold temperature treatments. The aim of this review is to analyze and compare the findings of other individual studies that tested these effects of cold temperatures on the ability of hands (and hand muscles) and, in some cases, how gender plays into this question, as well as to be able to compare the results with those of my team's study (Karim, Jang, and Zhang). The results generally show a decrease in manual capability after undergoing cold temperature treatment and also show male subjects having a higher average grip strength (or lower fatigue rate) than female subjects. The results lead to the conclusion that undergoing cold temperature changes will cause the hand and its muscles to lose some functionality in the form of muscle strength and usually a higher fatigue rate.