

**Jillian Bensko**

**The Effects of Dehydration on Vascular Function**

Skidmore College Department of Health and Exercise Sciences

Faculty Advisors: Dr. Denise Smith and Dr. Patricia Fehling

Abstract:

It is well documented that dehydration increases cardiovascular strain during exercise through increases in heart rate and decreases in stroke volume (Gonzales *et al.* 1997; Stohr *et al.* 2011).

However, the effects of dehydration on vascular function during rest are less extensively researched. This study evaluated the hypothesis that mild dehydration would increase vascular strain during rest as indicated by decreases in blood pressure, increases in arterial stiffness, and decreases in vascular function. Ten healthy, trained males from Skidmore College; age:  $21 \pm 2$  years; height:  $180.6 \pm 6.6$  cm; body mass:  $79.89 \pm 6.51$  kg participated in this experiment.

Participants were assigned in a balanced order to euhydration and dehydration (2-4%) conditions. Changes in vascular function between conditions were measured by venous occlusion plethysmography, pulse wave analysis, and brachial artery ultrasound. Heart rate was greater for the dehydration condition than euhydration. The dehydration condition demonstrated a lower SEVR as well as lower forearm blood flow in comparison to the euhydration condition.

Furthermore, the dehydration condition exhibited a higher average flow area under the curve during reactive hyperemia. These results suggest that mild dehydration may increase vascular strain at rest. More research is needed to determine the exact causes of vascular strain.