

Differences in Arterial Occlusion Pressure Using Two Different Cuff Inflation Protocols

RYAN LACEY, CHASE BLAZZARD, HANNAH HART, NICOLE KASPER, DANIELA LOPEZ, SHAY RICHARDS, & PAT VEHRs, FACSM

Department of Exercise Sciences; Brigham Young University; Provo, UT

Category: Undergraduate

Mentor: Vehrs, Pat (pat_vehrs@byu.edu)

ABSTRACT

The occlusion pressure used during blood flow restriction during exercise is based on the arterial occlusion pressure (AOP). Although previous studies have measured AOP using two different cuff inflation protocols, no studies have compared the AOP measured using both protocols. **PURPOSE:** The purpose of this study was to compare the superficial femoral artery AOP when measured using two different cuff inflation protocols. **METHODS:** Ultrasound (GE LOGIQ) was used to detect blood flow through the superficial femoral artery of both legs in 20 males and 20 females. An inflatable cuff was placed on the upper thigh. The superficial femoral artery was occluded using two different cuff inflation protocols in a random order in both legs. The continuous (CONT) protocol involved inflating the cuff to 50 mmHg then continuously inflating the cuff at a rate of 10 mmHg/10 s until blood flow could no longer be detected using the ultrasound. The incremental (INCR) protocol involved inflating the cuff to 50 mmHg for 30 s, and then deflating the cuff for 10 s. The cuff was then inflated incrementally with each subsequent inflation increasing by 30 mmHg for 30 s followed by deflating the cuff for 10 s. Once blood flow was occluded, cuff pressure was decreased in increments of 10 mmHg until there was evidence of blood flow. The cuff was then gradually inflated until blood flow was no longer detected. **RESULTS:** In males, the AOP measured in the dominant (209.4 ± 29.4 ; 208.2 ± 27.1) and non-dominant (206.8 ± 32.5 ; 206.2 ± 32.7) legs using the CONT and INCR cuff inflation protocols, respectively, were not significantly different ($p > 0.05$). Likewise, in females the AOP measured in the dominant (212.3 ± 58.3 ; 213.7 ± 53.9) and non-dominant (203.5 ± 50.9 ; 207.0 ± 50.2) legs using the CONT and INCR protocol, respectively, were not significantly different ($p > 0.05$). When combining male and female data, there were no significant differences in the AOP between the CONT and INCR cuff inflation protocols in either leg or when combining legs. **CONCLUSION:** Using a continuous or incremental protocol for occluding the superficial femoral artery resulted in similar AOP values. Either protocol can be used in future research as well as in settings where AOP is determined prior to the use of blood flow restriction during exercise.