



# Impact of Cuff Over Inflation on Blood Pressure Readings in Adults

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## Purpose

- Physical therapists regularly use blood pressure (BP) readings when making clinical decisions.<sup>1</sup>
- Inaccuracies in BP readings may occur when not following standard procedure.<sup>2</sup>
- False or missed diagnoses of hypertension (HTN) may lead to improper medical management.<sup>3</sup>

## Objective

To determine the effects of cuff over inflation on BP readings compared to the standardized 20 mmHg above the loss of Korotkoff sounds when taking manual BP in adults.

## Participants

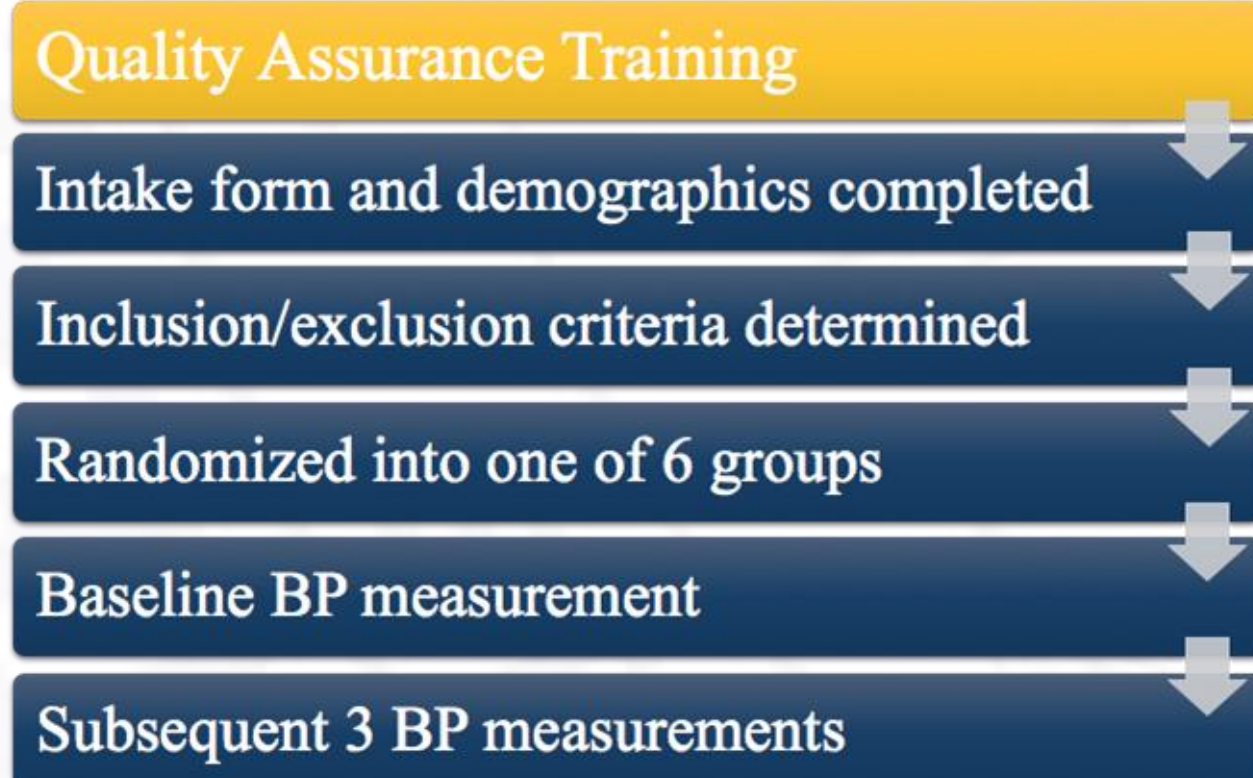
109 adult participants recruited at the MN State Fair on August 28, 2019

Demographics Summary	
Variable	Percentage
Gender: Female	63.3%
Age: 45+	70.7%
Race: Caucasian	90.8%
BMI ≥ 30	61.4%

## Methods

### Data collection

- Utilized American Heart Association (AHA) standardized positioning and procedures
- Baseline BP measurement taken using standard cuff inflation of 20 mmHg above loss of systolic Korotkoff sounds
- BP measured three subsequent times inflating the cuff to 40, 60, 80 mmHg above the loss of Korotkoff sounds in randomized order



### Data Analysis

- Friedman's ANOVA performed to analyze differences in BP measurements
- Point biserial correlation performed to determine effects of demographics on change in BP measurements

## Results

- Significant difference found in systolic readings between standardized measurement and cuff inflation level of ≥60 mmHg above loss of Korotkoff sounds**
- Significant correlation found between body mass index (BMI) and BP change**

## Post-hoc Wilcoxon Signed Ranks Test for Systolic Data

	Sig. (p-value)
40:60	.862
40:80	<b>.003</b>
60:80	<b>.005</b>
Alpha level= 0.0167	



## Conclusion

- Over inflating the blood pressure cuff created statistically significant differences in BP readings as compared to standard procedures
- Higher cuff inflation levels impact accuracy of clinical decisions
- Participants with higher BMI have a greater incidence of inaccurate readings with increasing cuff inflation level

## Clinical Relevance

- Over inflating the blood pressure cuff when manually taking an adult's blood pressure may lead to significantly elevated systolic readings.
- Cuff inflation level for manual blood pressure assessment needs to be standardized.
- The determination of care being delivered can be significantly affected when standard procedures are not followed.

## References

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