Inter-arm Systolic Blood Pressure (IASBP) Differences in Young Adults
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Background and Objectives

BACKGROUND:
Prior reports have documented IASBP: SBP/DSP were greater for males vs. females (124.6±12.9/74.9±8.7 vs. 109.2±10.1/68.2±9.5, p<0.001)

FIG 3

Grossman Tissue Dielectric Constant is directly related to H2

Inter-arm Systolic BP Differences used sequential

Comparisons of IASBPD between right and left arms has suggested a trend for a greater BP in the right compared to the left arm. However, because a small percentage of persons evaluated were left handed, the possible role of handedness as a possible factor in IASBD remains unclear.

OBJECTIVES: To test the hypothesis that IASBPD do not differ between right handed (RH) and left handed (LH) dominant persons and to test for dependence of IASBPD on gender, total body water and fat, arm fat, arm muscle mass and arm local tissue water (LWT) in young adults.

Subjects:
A group of 75 subjects (36 male/39 female) with average age (mean ± SD) of 27.2 ± 3.3 years were evaluated after signing an informed consent. The left hand was dominant in 30% (40 subjects) and the right hand was dominant in 45% (50 subjects). Study entry required subjects to have no history of hypertension or cardiovascular disease and to be at least 18 years of age.

Procedure:
Subjects were seated with palms up while reference marks were made on their forearms (F) at 8 cm distal to the antecubital fossa and on their biceps (B) at 8 cm proximal. These sites would be where TDC would be measured (TDC-F and TDC-B) to depths of 1.5 and 2.5 mm as described by FIG 1. TDC was measured in triplicate at each site and the average determined. F and B girths were then measured at each marking site with a calibrated spring-loaded tape measure with tension gauge. After a subject had been seated for 10 minutes, bilateral paired-simultaneous (SBP) and diastolic (DBP) blood pressures were measured in triplicate as shown in FIG 2. Finally, body composition parameters were measured with bioimpedance by having a subject stand on a scale and grip the two side handles as illustrated in FIG 3. Parameters included were % total body water (%TBW), % body fat (%BF), muscle mass (MM) and arm MM and %FAT.

REFERENCES:

The present results indicate that handedness, gender and body composition are not very important determinants of inter-arm systolic blood pressure differences in the young adult population herein studied. This finding suggests that neither handedness nor body composition need be considered for clinical BP assessments except for cuff size in relation to arm girth. However, the simultaneously determined bilateral pressures showed that, depending on gender and arm, IASBD exceeded 10 mmHg in from 13.3 to 18.9% of all 225 BP measurements with a BP difference greater than or equal to 10 mmHg measured at least once in 29 of the subjects (38.7%). This finding suggests that the use of a single arm may be prudent to consider bilateral BP assessments even in young apparently healthy subjects. The additional finding of a strong positive relationship between forearm TDC values and Total Body Water (TBW), as illustrated for a 1.5 mm depth in FIG 7, suggests that TDC may be useful to track changes in whole body hydration. This later aspect is attractive because of the ease with which TDC measurements may be done. However further prospective study is needed to validate this possible new application.