

ABSTRACT

EFFECT OF ARM AND LEG HAIR ON BODY VOLUME MEASUREMENT USING AIR DISPLACEMENT PLETHYSMOGRAPHY

Air displacement plethysmography (ADP) has been shown to be both a valid and reliable measure of body composition. Potential sources of error, however, are still being evaluated. During testing excess isothermal air makes an object appear to have less volume (more dense), which gives a lower estimation of body fat percentage. This error has been seen for clothing schemes, facial and scalp hair, and moisture and temperature. **Purpose:** The purpose of this study was to determine if arm and leg hair effect corrected body volume measurements with ADP, and whether wearing nylons on the arms and legs would minimize these effects. **Methods:** Twenty male volunteers participated in this investigation. All participants were under 13% body fat and had hair on their arms and legs. Each participant was measured under four hair conditions: (H) hair, (HN) hair with nylons, (SN) shaved with nylons, and (S) shaved. **Results:** One-way, repeated measures ANOVA suggested that there were significant differences in means between to the four groups ($p < 0.05$). Holm-Bonferroni corrected multiple pairwise t-tests showed the corrected body volume was significantly different between conditions H and HN ($p < 0.008$), conditions SN and S ($p < 0.010$), conditions HN and SN ($p < 0.013$), and conditions H and S ($p < 0.016$). **Discussion:** Hair does appear to have significant effect on corrected body volume measurement with ADP. Further investigation into the effect of nylons is needed.

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