

Reproducibility Of The Arterial Stiffness Index As Determined By The Cardiovision Device

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Background: Arterial stiffness is an important determinant of cardiovascular risk. Simple, non-invasive methods to measure arterial stiffness may improve cardiovascular risk stratification. The aim of the current study was to evaluate the reproducibility of the arterial stiffness index (ASI) as measured by the commercially available CardioVision device.

Methods: 26 healthy subjects, mean age 28 years (age range of 22-49 years, 11 female) were studied, after five minutes of supine rest, on two occasions, at least one day apart. Computerised oscillometry was used to obtain an index of brachial artery distensibility at minimal arterial wall tension i.e., when cuff pressure is equal to mean arterial pressure. The device calculates the ASI as the pressure width of the oscillometric curve at 80 % of the mean blood pressure. Means of visit one and visit two measurements were compared using Bland-Altman plots and paired two-tailed t-tests. Reproducibility was expressed as mean difference \pm SD between paired measurements.

Results: The mean ASI recorded was 38.7 ± 15.3 (range 11.0 to 106). Bland Altman plots showed no systematic bias of the mean. There was no significant difference between the first and second measurements (mean difference of 1.75 ± 11.8 ; $p = 0.46$). Between observer measurements were not analysed as measurements recorded by the device are not operator dependent.

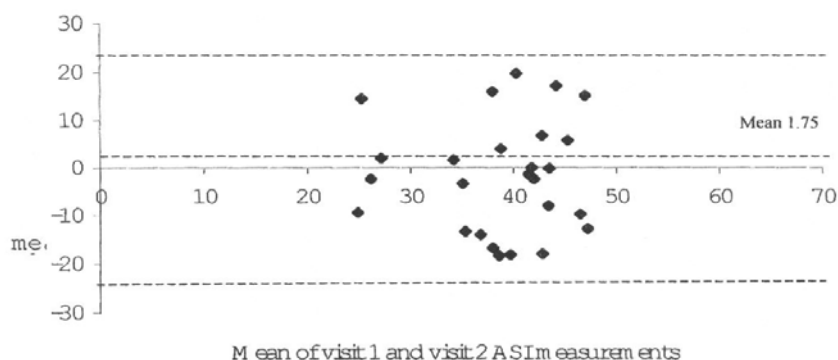


Figure 1. Bland-Altman plot comparing visit 1 and visit 2 measurements of ASI

Conclusion: We have demonstrated good reproducibility of the ASI, using this simple technique, in a group of healthy volunteers. Further studies are needed to assess reproducibility in individuals with cardiovascular disease. The relationship between cardiovascular risk and ASI also requires investigation as this could potentially be used to improve risk stratification in clinical practice.