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Assessment of immediate test repeatability of arterial stiffness index measured by CardioVision® MS-2000

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Diminished arterial elasticity is an early indicator of vascular disease. The CardioVision® MS-2000 (IMDP, Las Vegas, NV) is a noninvasive device that uses cuff pressure to measure vascular dynamics, including systolic, diastolic, mean and pulse pressure, heart rate, and arterial stiffness index (ASI). Arterial stiffness index is derived from the pulse wave pattern of oscillometric brachial artery pressure. To determine the immediate test repeatability of the CardioVision® MS-2000, 51 healthy hospital employees had five sitting measurements of the arterial stiffness index recorded after a 5 to 10 minute period of rest. Their mean age was 37 years and 33% were males. The mean value and standard deviation (Std Dev) for each group is shown in the table below:

Test	Mean	Std Dev
ASI 1	41.2	17.1
ASI 2	40.7	13.3
ASI 3	37.7	12.0
ASI 4	40.6	17.1
ASI 5	39.7	12.3

We computed an intraclass correlation coefficient of 0.693, which is the measure of consistency or agreement of arterial stiffness index values within cases. Using the average of the first three measurements together and comparing it to the average of all five measurements the correlation coefficient was 0.893. When comparing the average of the last three measurements together to the average of all five measurements, the correlation coefficient was 0.894. When comparing the average of the first three to the average of the last three, we calculated an correlation coefficient of 0.656.These data show moderate repeatability of serial measurements and supports the recommendation of taking the average of five measurements of ASI as the value for a single visit.

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