pressure during this time is used to determine the endothelial function of the patient. The extended period of applying cuff pressure to the limb affects circulation, which in turn impacts the measurements.

[0009] U.S. Pat. No. 7,390,303 (to Dafni), which is incorporated herein by reference in its entirety, describes a method of assessing arterial dilation and endothelial function, in which the relative changes in the cross sectional area of a limb artery are assessed using a bio-impedance technique to monitor cross-sectional area of a conduit artery. Measurements of bio-impedance are difficult to perform. Since bio-impedance measurements involve applying electrical to the skin of the patient, such measurements are poorly tolerated by patients due to skin irritation. Further, the measured signals vary greatly.

[0010] U.S. Patent Nos. 7,074,193 (to Satoh et al.) and 7,291,113 (to Satoh et al.) ,which are incorporated herein by reference in their entirety, describe a method and apparatus for extracting components from a measured pulse wave of blood pressure using a fourth order derivative and an n-th order derivative, respectively.

[0011] A clinical need exists for a system and method that are inexpensive, easy to perform, non-invasive, well tolerated by patients, and provide an indication of the ability arteries to respond to an increase in blood flow.

SUMMARY

[0012] In one aspect, the present invention refers to a method for assessing endothelial function in a mammal, the method comprising: applying a stimulus to generate reactive hyperemia; measuring a reactive hyperemia indicator; adjusting the reactive hyperemia indicator based on an anthropomorphic and/or demographic variable to arrive at an endothelial function indicator; and communicating the endothelial function indicator to a clinician. In another aspect, the present invention refers to a system for assessing endothelial function in a mammal, the system comprising: a means for applying a stimulus to generate reactive hyperemia; a means for measuring a reactive hyperemia indicator; a means for adjusting the reactive hyperemia indicator based on an anthropomorphic or demographic variable to arrive at an endothelial function indicator; and a means for communicating the endothelial function indicator to a clinician. In still another aspect, the present invention refers to a non-transitory machine-readable medium encoded with instructions, that when executed by one or more processors, cause the processor to carry out a process for assessing endothelial function in a mammal, the process comprising: applying a stimulus to generate reactive hyperemia; measuring a reactive hyperemia indicator; adjusting the reactive hyperemia indicator based on an anthropomorphic or demographic variable to arrive at an endothelial function indicator; and communicating the endothelial function indicator to a clinician.

Methods and diagnostic systems provide for assessing changes in arterial volume of a limb segment of a mammal and for assessing endothelial function of a mammal. In one example, a diagnostic system determines amplitudes of component pulse waves of detected volume pulse waves of a limb segment detected during a

baseline period to determine a baseline arterial volume of the limb segment. The diagnostic system determines amplitudes of component pulse waves of detected volume pulse waves of the limb segment detected during a time period after a stimulus has been applied to the mammal to induce a period of change in the arterial volume of the limb segment. The diagnostic system determines relative change in arterial volume of the limb segment during the time period after the stimulus relative to the arterial volume of the limb during the baseline period from the amplitudes of the component pulse waves of the detected volume pulse waves at baseline and after the stimulus.

[0013] In another example, the diagnostic system determines relative change in arterial volume by comparing the amplitudes of the component pulse waves of volume pulse waves at baseline and after the stimulus.

[0014] In another example, the component pulse wave is an early systolic component. In another example, the diagnostic system determines relative change in arterial volume by comparing maximum amplitudes of the early systolic components of the volume pulse waves during the baseline period and maximum amplitudes of the early systolic components of the volume pulse waves after the stimulus.

[0015] In another example, the diagnostic system monitors the limb segment to detect the detected volume pulse waves of the limb segment during the baseline period, and monitors the limb segment to detect the detected volume pulse waves of the limb segment during an after-stimulus period.

[0016] In another example, a diagnostic system applies a stimulus to generate reactive hyperemia, measures a reactive hyperemia indicator, adjusts the reactive hyperemia