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Velocity in Relation to Serum Nitric Oxide

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**Manjunatha R. Aithala**

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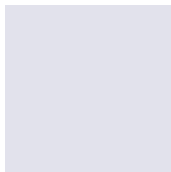
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Pulse Wave Velocity (PWV) is an important marker of arterial stiffness. Age related changes of arterial PWV and endothelial derived Nitric Oxide (NOx) are least explored. Aim and Objectives: The present study assess a relationship between age associated vascular stiffness and endothelial derived nitric oxide in elderly. Materials and Methods: One hundred twenty healthy subjects male (n= 60) and female (n=60) (I (0-29 years), II (30-39 years), III (40-49 years), IV (50-59 years), V (60-69 years) and VI (>70 years). Parameters like blood pressure and endothelial derived NOx were assessed. Vascular stiffness parameter like brachial-aPWV and carotid femoral PWV (c-fPWV) were also evaluated. Statistical analysis was done by using post hoc t test by using SPSS software. Results: Group I to group VI showed significant steady increase in PWV with concomitant significant decrease of serum NOx in both male and female subjects. Further a positive correlation between b-aPWV and c-f PWV with NOx in both male and female subjects were also observed. Results suggested possible influences of ageing on vascular stiffness which may be due to alteration in NOx.

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Wave : Anthropometric and Carotid-Femoral Pulse Wave : Anthropometric and  
 atwee... Physiological Characteristic... Velocity (C-F PWV) Between... Physiological Characteristic...

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SU, Vol. 7, No. 1, January-March 2018

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INAL ARTICLE

## Ageing and Pulse Wave Velocity in Relation to Serum Nitric O

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 B. M. Patil Medical College, Hospital and Research Centre, BLDE (Deemed to  
 Vijayapura-586103 (Karnataka) India

### ct:

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 nt marker of arterial stiffness. Age related  
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 ial derived Nitric Oxide (NOx) are least  
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 ) assess a relationship between age associated  
 'stiffness and endothelial derived nitric oxide in  
 les and females. Materials and Methods: One  
 twenty healthy subjects male (n= 60) and  
 n=60) subjects (20 to 95 years) were randomly  
 among general population of Vijayapur city,  
 ka. Subjects were divided into group I (20-29  
 I (30-39 years), III (40-49 years), IV (50-59  
 V (60-69 years) and VI (>70 years).

### Introduction:

Achievement of ageing is a priv  
 time it is also a challenge which  
 aspects of 21<sup>st</sup> century society [1  
 were 600 million people aged 60  
 and it will be 1.2 billion by 202  
 2050 [2].

Age is one of the most powerfu  
 cardiovascular risk and is associa  
 of deleterious changes in the card  
 [3]. Large arteries stiffening and  
 more prominent changes with a  
 been documented worldwide.

Arterial stiffness is an indepe

ogical parameters like blood pressure and endothelial derived NOx were assessed. Vascular parameters like brachial-ankle PWV (b-aPWV) and carotid femoral PWV (c-fPWV) were also measured. Statistical analysis was done by using one-way ANOVA and post hoc t test by using SPSS software. Results: Group I to group VI showed a significant steady increase of b-a PWV and c-f PWV and a concomitant significant decrease of serum NOx in both male and female subjects. Further a significant positive correlation between b-aPWV and c-f PWV and serum NOx in both male and female subjects were also observed. Conclusion: Results suggested possible effects of ageing on vascular stiffness which may be due to the reduction of endothelial derived NOx.

**Keywords:** Pulse Wave Velocity, Vascular Stiffness, Nitric Oxide, Gender, Ageing.

Cardiovascular (CV) risk that increases with age [4]. Pulse Wave Velocity (PWV) and Arterial Stiffness Index (ASI) are widely recommended for measure of arterial stiffness [5, 6]. High PWV indicates either decreased arterial compliance or an increase in arterial stiffness. Measurement of PWV and wave reflection is now recognized as an important cardiovascular indicator than Blood Pressure (BP) for assessing CV risk [7-8]. Brachial-ankle PWV (b-aPWV) and carotid-femoral PWV (c-fPWV) are considered as index of arterial stiffness. b-aPWV reflects the stiffness of both brachial and peripheral arteries in an arm and c-fPWV may be more applicable to general population. c-fPWV measurement, which uses a separate

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**Pulse Wave Velocity: Background, Method, and Clinical Evidence**

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**Pulse wave velocity is an independent predictor of carotid artery atherosclerosis in the elderly**

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**Stiffness in Elderly Subjects with Increased Pulse Pressure: A Randomized Controlled Study**Aithala Manjunatha ·  Kusal K. Das

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**Pulse Wave Velocity in Healthy People from an Urban and Rural Argentinean Population**

Leticia Galli · Matías Tringler · Edmundo Ignacio Cabrera Fischer

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**Pulse wave velocity for the prediction of the presence and severity of coronary artery disease**

Sung Rhee · Yong-Seok Kim · Chan-Joo Kim

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**Arterial stiffness and myocardial injury with arterial stiffness in patients with type 2 diabetes mellitus**DIABETES

Zhao · Yan Chen · Hung-Fat Tse

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**Carotid-Femoral Ankle Pulse Wave Velocity to Predict Cardiovascular Disease in Hypertensive Patients: A Cohort Study**



Ohishi · Miyuki Onishi · Hiromi Rakugi

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**Carotid-Femoral Ankle Pulse Wave Velocity for Cardiovascular Events**

Hyun Choi · Seo-Won Choi · Soon-Pyo Hong

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**Carotid-Femoral Ankle Pulse Wave Velocity and Augmentation Index in Subjects with Hypercholesterolemia**DIABETESMB Krishna Prasad ·  Ian R Hall ·  John Cockcroft

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**Machine Learning Models Based on Facial Features**

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## Recommendations

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### Project

Relationship between oxygen tension, Oxidative stress and vascular ageing among primary hypertensive patients of Vijayapur urban area

● Kusal K. Das · ● Jyoti Khodnapur · Manjunatha R Aithala

To evaluate oxygen sensing protein like EPO and VEGF in relation to vascular stiffness index in population of Bijapur ( age 20 -91 years)

[View project](#)

### Project

"Effect of L-ascorbic acid and calcium channel blocker on hypoxia exposed possible alteration of cell signalling pathways in respiratory system of male rats with or without heavy metal lead exposure"

● Kusal K. Das · ● Ishwar Bagoji · ● Bheemshetty S. Patil · [...] · ● Rachamalla Chandramouli Reddy

Project Sanctioned by the Department of Science & Technology, Government of Karnataka (2016-2019). To perform modified middle cerebral artery occlusion (MCAO) technique to induce cerebral ischemia a ... [\[more\]](#)

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### Project

"Influence of antioxidant vitamin (L-ascorbic acid) on hypoxia-induced alteration of VEGF gene expression in male diabetic rats with or without exposure to heavy metal nickel"

● Kusal K. Das · ● Swastika N Das · Saeed M Yendigeri · [...] · ● Mallanagouda Shivanagouda Biradar

Sanctioned by LSRB-DRDO, Government of India Heavy metal etal induce alteration of protein synthesis and changing scenario of endothelial functions and role antioxidants provided new idea of resea ... [\[more\]](#)

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### Project

Influence of L-Ascorbic acid On Chronic Hypoxia-induced alteration of cell signaling pathways on cardiovascular system in male Wister rats with or without exposure to heavy metal Nickel.

● Rachamalla Chandramouli Reddy · ● Kusal K. Das · Dr.Basavaraj Devaranavadgi

There are major gaps in our knowledge regarding the short- and long-term effects of hypoxia, especially when it comes to linking cellular responses with the physiological adaptation.

[View project](#)

### Article

[Full-text available](#)

Aortic stiffness is related to left ventricular diastolic function in patients with diabetes mellitu...

September 2012 · The International Journal of Cardiovascular Imaging

● Linda D van Schinkel · ● Dominique Auger · Saskia G C van Elderen · [...] · ● Albert de Roos

Diabetes mellitus type 1 (DM1) is associated with aortic stiffening and left ventricular (LV) diastolic dysfunction, however the relationship between aortic stiffness and LV diastolic dysfunction in DM1 patients is still largely unknown. The purpose of this study was to evaluate whether an increased aortic stiffness, expressed by increased aortic pulse wave velocity (PWV), is associated with ... [\[Show full abstract\]](#)

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## Article

Prolongation of corrected QT interval is a strong predictor of arterial stiffness in maintenance hem...

March 2017

● Zeynep Bal · ● Ugur Bal · ● Süleyman Karaköse · [...] · ● Siren Sezer

Background: Rate of mortality due to cardiovascular diseases is high in Maintenance Hemodialysis (MHD) patients. Additionally, prolonged QT interval is reportedly associated with high-risk ventricular arrhythmia and sudden death. Vascular calcification may be related to QT dispersion interval in MHD patients because the extensive nature of the calcification process may involve the conducting ... [\[Show full abstract\]](#)

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AMBULATORY ARTERIAL STIFFNESS MONITORING IN PATIENTS WITH ASTHMA

July 2019

● Nina Karoli · ● Otebike Zarmanbetova · ● Andrey Rebrov

Cardiovascular disease is one of the major causes of death throughout the world. Early detection of target organ damage is important for more successful prevention of cardiovascular diseases and improvement of patient outcomes. One of these target organs is the vascular wall, and its damage consists in loss of elastic properties and increase in stiffness. Many studies have shown that the ... [\[Show full abstract\]](#)

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Blood pressure 24-hour monitoring in assessment of aortic stiffness in older patients with arterial...

November 2015 · Russian Journal of Cardiology

N. G. Poteshkina · I. P. Beloglazova · P. A. Mogutova

Aim. The assessment of aortic stiffness by the data of 24-hour blood pressure monitoring in patients with arterial hypertension of older age. Material and methods. Totally 68 patients with AH studied of the age from 43 to 82 years old, of those 26 women and 26 healthy volunteers, comparable by the age, of those 14 women. Patients with AH and healthy persons were separated in to 3 subgroups by the ... [\[Show full abstract\]](#)

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