1.6: THE BODE INDEX PROGNOSTIC SCORE IS AN INDEPENDENT DETERMINANT OF ARTERIAL STIFFNESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)


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time elapsed since smoking (<5 years, 5–15 years and >15 years). Subjects had at the beginning and end of the study determined carotid-femoral pulse wave velocity (PWV) and common carotid intima-media thickness. Based on these measurements the annual absolute changes were calculated.

**Results**: Smoking at baseline was not associated with statistically significant differences in PWV and CIMT. However, the annual change of PWV was statistically different between the groups of smokers, non-smokers and the 3 groups of ex-smokers (p = 0.041) after adjustment for relevant confounders. Specifically, smokers had 0.23 m/s/year (95% CI: 0.10 to 0.35), non-smokers 0.17 m/s/year (95% CI: 0.08 to 0.25), quitters (<5 years) had 0.28 m/s/year (95% CI: 0.07 to 0.49), quitters (5–15 years) had 0.35 m/s/year (95% CI: 0.11 to 0.59) and quitters (>15 years) -0.07 m/year (95% CI: -0.26 to 0.13). Similar trend for slower progression was observed for CIMT in past smokers (>5 years) but this was not statistically significant.

**Conclusions**: Quitting smoking slows down progression of vascular aging after many years, implying a period of adjustment for former deleterious effects of smoking.

### 1.4 CHILDHOOD DETERMINANTS OF EARLY ADULT ARTERIAL STIFFNESS IN DIFFERENT ETHNIC GROUPS

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**Methods**: Of 6643 London children, aged 11-13 y, from 51 schools in samples of about 1000 in 6 ethnic groups, with markedly different adult cardiovascular risk, 4785 (73%), were seen again at 14–16 y. In 2013, 666 (97% of invited) took part in a young-adult pilot (21–23 y) follow-up. With psychosocial, anthropometric and BP measures, PWV was recorded via an upper arm cuff on the calibrated Arteriograph device. In a subsample (n = 334) PA was measured over 5 days via the ActivPal.

**Results**: Unadjusted PWVs in Black Caribbean and White UK young men were similar (mean±SD 7.9 ± 0.3 vs 7.6 ± 0.4 m/sec) and lower in other groups at similar systolic (s)BPs (120 mmHg) and BMIs (24.6 kg/m2). In fully adjusted regression models, independent of BP effects, while Black Caribbean (higher BMIs and waists), Black African and Indian young women had lower PWV (by 0.5–0.8, 95%CI 0.1–1.1 m/sec) than White UK women (6.9 ± 0.2 m/sec), values were still increased by age, BP, powerful impacts from waist/height and time spent sedentary but a reducing impact of time walking >100steps/min (both p < 0.01), with a racial effect (0.1 m/sec) in women. Childhood effects of waist/height were also detectable.

**Conclusion**: Even by young adulthood, increased waist/height ratios, lower physical activity, BP and psychosocial variables (eg: perceived racism) are independent determinants of arterial stiffness, likely to increase with age.

### 1.5 RELATION OF ARTERIAL STIFFNESS WITH LEFT VENTRICULAR DIASTOLIC FUNCTION IN GENERAL POPULATION

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**Methods**: The BODE study was started between 2006 and 2012 in the Medical College of Krakow. Normotension and hypertension were diagnosed based on both office and ambulatory blood pressure measurements, or history of antihypertensive treatment. Pulse wave velocity (PWV), peripheral and central pulse pressure (pPP; cPP) were evaluated by means of pulse wave analysis. Left ventricle (LV) diastolic function was determined by measuring transmural (early (E) and late (A) diastolic peak velocities and E/A ratio) and pulmonary (peak systolic (S) and diastolic (D) velocity and S/D ratio) flow velocities and diastolic velocities of septal and lateral mitral annulus (E' wave and E'/E ratio) obtained in tissue doppler. Additionally we measured left atrium diameter (LAd).

**Results**: After adjusting for relatedness, pPP and PWV were negatively associated with E/A, and positively with E'/E and S/D (p < 0.001). In multi-variate analysis the most closely related parameters were: pPP with E'/E (β = 0.04, P = 0.001), cPP with S/D (β = -0.004, P = 0.011), and pPP with E'/E (β = -0.03, P = 0.003). Additionally pPP was associated with LAd (β = 0.058, P = 0.011). In hypertensives pPP and cPP related both to E'/E and S/D (p < 0.01).

**Conclusions**: Our study suggested that increased arterial stiffness as estimated by pulse wave measurement might be considered as a determinant of left ventricular diastolic dysfunction.

### 1.6 THE BODE INDEX PROGNOSTIC SCORE IS AN INDEPENDENT DETERMINANT OF ARTERIAL STIFFNESS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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**Methods**: Spirometry and haemodynamic measures (aortic pulse wave velocity (aPWV), augmentation index (AIx)) were performed in 729 COPD subjects aged 15 years. Differences in AIx were detected between groups compared with normotensive controls. In norms the BODE index is most strongly associated with aPWV, AIx and carotid intima-media thickness (CIMT). In the COPD population the BODE index was associated with aPWV and AIx.

**Results**: After adjusting for relatedness, pPP and PWV were negatively associated with E/A, and positively with E'/E and S/D (p < 0.001). In multi-variate analysis the most closely related parameters were: pPP with E'/E (β = 0.04, P = 0.001), cPP with S/D (β = -0.004, P = 0.011), and pPP with E'/E (β = -0.03, P = 0.003). Additionally pPP was associated with LAd (β = 0.058, P = 0.011). In hypertensives pPP and cPP related both to E'/E and S/D (p < 0.01).

**Conclusions**: Our study suggested that increased arterial stiffness as estimated by pulse wave measurement might be considered as a determinant of left ventricular diastolic dysfunction.

### 2.1 A METHOD FOR THE MEASUREMENT OF PRESSURE SENSITIVITY OF CAROTID-FEMORAL PULSE WAVE VELOCITY IN HUMANS

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**Background**: Carotid-femoral pulse wave velocity (cfPWV), a marker of cardiovascular disease, is modified by both blood pressure and changes in