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For this study 109 male and 117 female, lifelong non-smoking, normotensive subjects (40 ± 11 years, BMI 25.6 ± 3.9 kg.m²) were recruited from general population. Subjects with abnormal glycemic responses after an oral glucose tolerance test (OGTT) were excluded. High resolution B-mode ultrasound images (HD7XE, Philips, U.K) of the common carotid artery were used to measure carotid intima-media thickness (CIMT) and calculate carotid compliance/distensibility. Central aortic blood pressure and pulse wave velocity (PWV) were measured using applanation tonometry (Sphygmocor & Vicorder, Skidmore Medical, U.K). Early/late mitral valve filling velocity (MV E/A) was used to assess cardiac diastolic function (Vivid 7 Dimension, GE, USA). Mean fasting and plasma glucose and post OGTT glucose were 5.02 ± 0.46 mmol.L⁻¹ and 4.96 ± 1.09 mmol.L⁻¹. Mean CIMT, carotid compliance & distensibility, PWV and MV E/A were 0.52 ± 0.07 mm, 15.86 ± 13.15 m².kPa.10⁻⁷ & 49.09 ± 34.95 kPa.10⁻³, 7.03 ± 1.23 m.s⁻¹ and 43.46 ± 18.65 respectively.

	PSBP	PDBP	cSBP	cDBP	24h-SBP	24h-DBP	24h-cSBP	24h-cDBP
Baseline	144±12	84±8	130±11	85±8	131±10	78±9	119±11	80±10
Week 8	138±15	83±7	125±11	84±8	127±8	74±9	113±7	77±9
p	0,0285	0,231	0,013	0,366	0,0067	0,0152	0,0025	0,077

P=peripheral, S=systolic, D=diastolic, BP=blood pressure, C=central, 24-h= ambulatory 24-h mean

Spearman's analysis revealed significant correlations between fasting blood glucose and carotid compliance & distensibility (-0.2205 , $p < 0.0238$; -0.2615 , $p < 0.007$), MV E/A ratio (-0.3722 $p < 0.0001$) and PWV (0.1666 , $p < 0.0127$). No significant correlation with CIMT was observed (0.0614 , $p < 0.4983$).

These results indicate that the vascular disease continuum exists in association with metabolic derangement even in the "normal" ranges.

P4.47

THE ROLE OF PHYSICAL TRAINING ON ARTERIAL AND ARTERIOLAR AGING

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Introduction: Aging affects macro and microvessels. The aim of present work was to determine if regular physical training could diminish age related changes in cardiovascular system and vascular reactivity.

Methods: Heart rate (HR), systolic (SBP) and diastolic blood pressure (DBP), stroke volume (SV), cardiac output (CO), total peripheral resistance (TPR) and laser-Doppler flux (LDF) were monitored at rest and during cooling of one hand for six minutes at 15°C. We examined four groups of subjects: young healthy trained (YT, 22.8 ± 0.4 years) (N=11), young sedentary (YS, 23.3 ± 0.3 years) (N=11), elderly healthy trained (ET, 50.6 ± 1.0 years) (N=12) and elderly sedentary subjects (ES, 47.7 ± 0.9 years) (N=11).

Results: There were statistically significant differences in HR, DBP, SV, CO and TRP among groups at rest. However, resting LDF did not vary among groups. During cooling there was significantly smaller LDF decrease in the group of ES (70.38 ± 6.0 % of precooling value) when compared to the YS (41.23 ± 7.6 %) (Dunnett's test, $p < 0.01$). In contrast, there was no significant difference in LDF response to cold in YT (49.60 ± 9.3 %) and ET (53.65 ± 8.2 %).

Conclusions: Physical training partially prevents changes in cardiovascular function and microvascular reactivity in the elderly subjects. HR and SBP did not rise with ages as did DBP and TRP. Training prevented falling in SV but not in CO. HR was significantly lower in ET than YT. Training successfully prevented decrease in cutaneous microvascular response to cold in the elderly.

P4.48

SUPERIOR PERIPHERAL AND CENTRAL BLOOD PRESSURE (BP) CONTROL AFTER SWITCHING HYPERTENSIVE TYPE 2 DIABETIC PATIENTS WITH UNCONTROLLED HYPERTENSION UNDER RAMIPRIL/HCT TO PERINDOPRIL/INDAPAMIDE

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The aim of the present study was to compare the change from baseline BP (office, 24-h ABPM, central BP) in uncontrolled, hypertensive type 2 DM patients under ramipril/HCT after switching therapy to a dose-equivalent

fixed combination of perindopril/indapamide Investigator initiated, non-randomized, one arm study. Type 2 DM, males and females >18, with previously uncontrolled hypertension as defined by a sitting office BP $\geq 130/80$ mmHg (office BP). Triplicate office BP was measured with a validated, fully automatic, oscillometric upper arm device (ESH guidelines; Microlife watch BP office). 24-h-ABPM (Central and peripheral BP) was measured with a validated device at baseline and after 8 weeks therapy (Mobilograph, IEM, Germany) Central BP in the clinic was measured at baseline and after 4 and 8 weeks therapy according to the recommendations of the ESH working group on Large Arteries (Sphygmocor, Atcor)

Results: Up to now 18 patients with a mean age of 61 ± 10 years and a BMI von 30 ± 6 were included. Mean daily dosage of Ramipril/HCT was $5.3/22.2$ mg, the respective dosage after changing to Perindopril/Indamide was $5.97/1.49$.

Switching hypertensive Type 2 diabetic patients with uncontrolled hypertension under Ramipril/HCT to Perindopril/Indapamide resulted mainly in superior systolic blood pressure control. This effect was persistent for central BP as well as for 24-h-ABPM.

P4.49

RELATION BETWEEN ARTERIAL STIFFNESS AND COMPONENTS OF AMBULATORY BLOOD PRESSURE IN CHILDREN WITH HYPERTENSION AND CHRONIC KIDNEY DISEASE

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Arterial stiffening may be both the cause and consequence of an increase in blood pressure but the blood pressure components implicated in the inter-relationship may differ. The blood pressure component caused by stiffening is pulse pressure (PP). By contrast, passive stiffening resulting from distension of the arterial wall would be expected to relate most closely to mean arterial blood pressure (MAP) at the time of measurement and stiffening related to structural change to relate to longer term MAP and/or pulse pressure (PP). The objective of the present study was to examine the relation between arterial stiffness as measured by carotid-femoral pulse wave velocity (PWV) and components of blood pressure (MAP and PP) at the time of the measurement of PWV (PWV BP) and over a 24 hour period in children with hypertension and chronic kidney disease (CKD). Children (n=45, 12 female, 27 with CKD, 11 with hypertension, 7 controls) were aged 6-17 years with mean±SD blood pressure $113 \pm 17/62 \pm 15$ mmHg. PWV was measured by ECG referenced carotid-femoral tonometry (SphygmoCor system, Atcor Medical, Australia). PWV was more closely correlated with MAP than with PP ($R=0.38$, $P < 0.01$ and $R=0.26$, $P=0.08$ for 24h MAP and PP respectively) and more closely correlated with 24h MAP than with day-time, night-time or clinic MAP ($R=0.26$, 0.20 and 0.29 respectively). In children with CKD and hypertension, PWV is most closely associated with 24h MAP and likely to be secondary to increased MAP.

P4.50

EFFICACY OF THE COMBINATION OF β -BLOCKER BISOPROLOL AND IF INHIBITOR IVABRADINE IN PATIENTS WITH STABLE ANGINA AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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The study was aimed to assess the efficacy and safety of treating coronary heart disease (CHD) patients complicated with Chronic Obstructive Pulmonary Disease (COPD) using the combination of tolerable doses of beta-blocker bisoprolol and inhibitor If-channel ivabradine, compared with