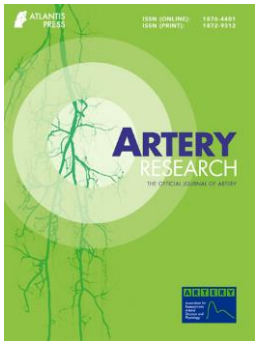

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Eun Sun Yoon, Su Jin Jung, Sung Kun Cheun, Kevin S. Heffernan, Sae Young Jae

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2.
INCREASED ARTERIAL STIFFNESS FOLLOWING ACUTE RESISTANCE EXERCISE IS ASSOCIATED WITH CHANGES IN AUTONOMIC TONE

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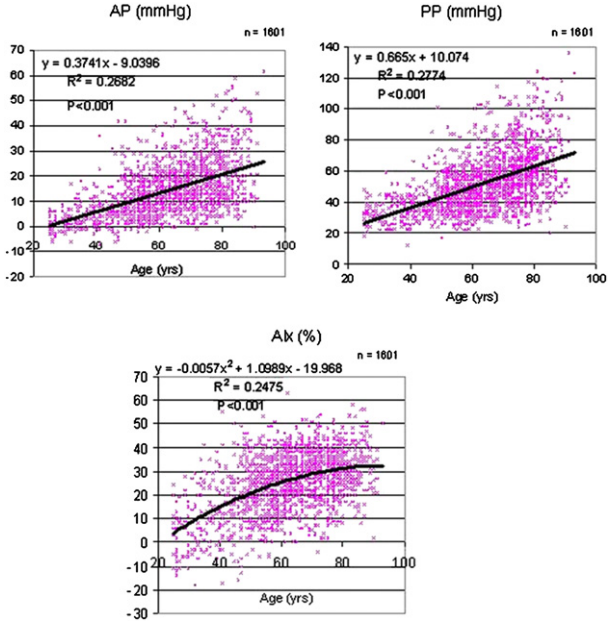
Background: Although acute and chronic resistance exercise is associated with increases in arterial stiffness, the underlying mechanisms are not completely understood. Autonomic nervous system function is associated with arterial stiffness. Therefore, the purpose of this study was to test the hypothesis that acute resistance exercise would increase arterial stiffness and this increased arterial stiffness would be related to changes in autonomic nervous system function.
Methods: Using a randomized cross over design, 14 healthy young subjects (age 20.8 ± 2.2 yrs, BMI 23.4 ± 1.9) completed a resistance exercise session and a sham control session (seated rest in the exercise room) on two separate days. Carotid-femoral pulse wave velocity (PWV) and aortic augmentation index (AIx) were used as indices of arterial stiffness. Heart rate variability was used to assess autonomic function. Vascular and autonomic measures were made at baseline and 20 minutes after resistance exercise (8 exercises, 60% of 1 repetition maximal).
Results: There were significant increases in resting heart rate (59.2 ± 2.6 to 80.4 ± 3.1 bpm), aortic systolic blood pressure (96.6 ± 2.4 to 102.4 ± 2.1 mmHg), PWV (6.07 ± 0.3 to 6.36 ± 0.2%), and AIx@75 bpm (-15.3 ± 3.4 to -0.07 ± 3.3%) (all $p < 0.05$) after resistance exercise compared with sham control. The root-mean square of successive differences (RMSSD), number of RR intervals differing by greater than 50 ms (NN50), and percentage of NN50 (pNN50) as an indices of parasympathetic modulation were significantly decreased after resistance exercise ($p < 0.05$). Also, changes in PWV after resistance exercise were associated with changes in RMSSD ($r = -0.39$, $p = 0.02$) after resistance exercise.
Conclusion: These data indicate that arterial stiffness is increased following acute resistance exercise and changes in arterial stiffness are associated with changes in heart rate variability. This would suggest that increases in arterial stiffness following resistance exercise are associated with changes in autonomic tone.



3.
MECHANISMS FOR AGE-CHANGE IN AORTIC AUGMENTATION PRESSURE

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Augmentation index (AIx) is a widely used measure of wave reflection and aortic stiffness. It rises with age in a curvilinear manner whereas central augmentation pressure (AP) and pulse pressure (PP) from which it is determined (as AIx = AP ÷ PP) rise linearly with age. Apparent flattening of AIx over age 60 has been attributed to decreased peripheral wave reflection in older subjects. We sought a purely mathematical explanation of this phenomenon — that two positively sloped linear equations with different intercepts on the y-axis yield a curvilinear change when one is divided by the other. Data were from 1601 patients previously described attending an outpatients clinic and aged from 25 to 93 years. The rise in AP and PP could be described by straight lines (top figure), whereas their ratio as AIx was curvilinear (bottom figure) and approximated the change with age as described in other studies. Change in AIx with age cannot simply be attributed to decrease in peripheral wave reflection. The phenomenon described here must be considered together with change in shape of the left ventricular ejection pattern with age, since wave reflection may cause a decrease in late systolic flow.

4.
CORONARY CALCIUM SCORE, RATHER THAN CAROTID INTIMA-MEDIA THICKNESS, IS MORE PREDICTIVE OF CORONARY RESTENOSIS AFTER DES IMPLANTATION

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The Catholic University of Korea

Background: Calcium scoring on MDCT and carotid intima-media thickness (IMT) have been widely used as indices of atherosclerosis. However, the clinical correlation between carotid IMT and the severity of coronary artery disease (CAD) is relatively poorly established. The aim of this study was to determine the relation between coronary restenosis after DES implantation and carotid IMT.
Methods: Among a total of 3041 patients who underwent carotid ultrasonography, 956 patients (male:female = 583:373, mean age = 61 ± 11 years) with DES implantation who had undergone follow-up coronary angiography were divided into two groups. Group 1 (n = 861, male = 61%, mean age 60 ± 11 years) was the no ISR group. Group 2 (n = 95, male = 67.4%, mean age = 65 ± 9 years) was the ISR group. ISR was defined as a more than 50% reduction in luminal stent diameter on follow-up coronary angiography. Carotid IMT was measured using a 15 MHz high frequency transducer on the far walls of both carotid arteries. Intimal thickness, defined as high echogenic thickening in the intimal area on carotid ultrasound, was also measured. The calcium score on MDCT was also compared between the two groups.
Results: On comparison between the two groups (group 1 vs group 2), 1. The right mean IMT and media thickness were larger in Group 1 ($p = 0.023$, $p = 0.048$). 2. There was no significant difference in the right and left maximal IMT or left medial thickness (Table). 3. Calcium scores were significantly higher on MDCT in the ISR group (427 ± 86 vs 1599 ± 482, $p < 0.05$). On multivariate analysis after adjustment for age, the calcium score on MDCT was the strongest predictor of coronary artery restenosis (odds ratio 1.3, $p = 0.027$, 95% CI:1.02-1.89).
Conclusion: The coronary calcium score is a better predictive marker for stent restenosis after DES implantation when compared to the carotid IMT. Noninvasive measurement of the calcium score and carotid IMT might be useful for evaluation of coronary restenosis.

5.
BRACHIAL-ANKLE AND REGIONAL PULSE WAVE VELOCITY AS A PROGNOSTIC IMPACT IN HYPERTENSION

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Background: Many reports have shown that brachial-ankle pulse wave velocity (baPWV) as well as carotid-femoral PWV would be one of the prognostic factors for hypertension. We can evaluate heart-carotid PWV