【国際セッション 4】**Time-course of Conduit Arterial Structure and Function Adaptation To Exercise Training in Humans**

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Studies of the impact of exercise training on arterial adaptation in healthy subjects have produced disparate results. It is possible that some studies failed to detect changes because functional and structural adaptations follow a different time-course and may, therefore, not be detected at discrete time-points. To gain insight into the time-course of training-induced changes in artery function and structure, we examined conduit artery flow mediated dilatation (FMD), an index of nitric oxide (NO)-mediated artery function, and conduit dilator capacity (DC), a surrogate marker for arterial remodelling, in the brachial and popliteal arteries of 13 healthy male subjects (21.6 ± 0.6 years) and 7 non-active controls (22.8 ± 0.2 years) studied at 2-week intervals across an 8-week cycle and treadmill exercise training program. Brachial and popliteal artery FMD and DC did not change in control subjects at any time-point. FMD increased from baseline ($5.9 \pm 0.5\%$) at weeks 2 and 4 (9.1 ± 0.6 , $8.5 \pm 0.6\%$, respectively, $P < 0.01$), but returned towards baseline levels again by week 8 ($6.9 \pm 0.7\%$). In contrast, brachial artery DC progressively increased from baseline ($8.1 \pm 0.4\%$) at weeks 2, 4, 6 and 8 (9.2 ± 0.6 , 9.9 ± 0.6 , 10.0 ± 0.5 , $10.5 \pm 0.8\%$, $P < 0.05$). Similarly, popliteal artery FMD increased from baseline ($6.2 \pm 0.7\%$) at weeks 2, 4 and 6 (9.1 ± 0.6 , 9.5 ± 0.6 , $7.8 \pm 0.5\%$, respectively, $P < 0.05$), but decreased again by week 8 ($6.5 \pm 0.6\%$), whereas popliteal DC progressively increased from baseline ($8.9 \pm 0.4\%$) at week 4 and 8 (10.5 ± 0.7 , $12.2 \pm 0.6\%$, respectively, $P < 0.05$). These data suggest that functional changes in conduit arteries occur rapidly and precede arterial remodelling *in vivo*. These data suggest that complimentary adaptations occur in arterial function and structure and future studies should adopt multiple time-point assessments to comprehensively assess arterial adaptations to interventions such as exercise training in humans.

KEY WORDS:

Flow-mediated dilatation, arterial diameter, high-resolution ultrasound, Doppler, arterial remodelling.