

## Arterial Stiffness measured with pOpmètre® in African sickle cell trait carriers.

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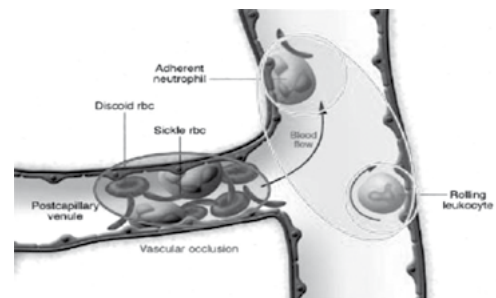
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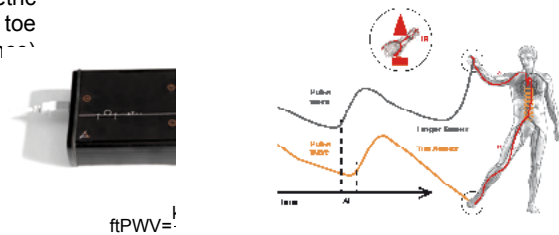
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**Aim:** The benign form of the sickle cell (SC) trait is the heterozygous of the SC disease. The SC trait carriers have hemorheological disturbances and increased oxidative stress leading to structural and functional changes in large arteries. The aim of the study is to compare arterial stiffness of Symptomatic Sedentary Africans with SC trait (SCss) with asymptomatic sedentary patients (SCas) to subject with normal hemoglobin (AA) and to an athletic group (SCat).

One hundred and four subjects (55 women, mean age 33.08 ± 11.52 years, BMI = 23 kg/m<sup>2</sup>) were enrolled in a prospective cross-sectional study. Subjects with SC (n = 78 aged 16 to 61 years) were compared to controls (AA, n = 26, range [22 – 58] years) according to their level of fitness and symptoms of vaso-occlusive crises, and divided to 4 groups: SCas asymptomatic sedentary; SCss symptomatic sedentary; SCat athletics, and controls (AA). The blood pressure (oscillometric device), viscosity (viscometer, cone type plane) and foot to toe Pulse Wave Velocity (ftPWV, pOpmètre®, Axelife sas, France) were assessed once in each group.

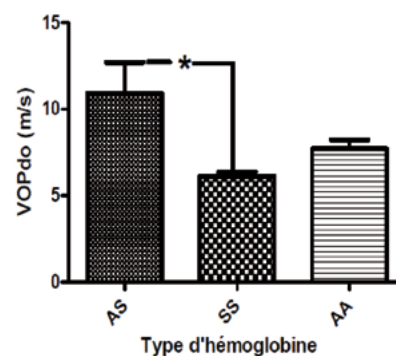


Mécanisme des crises vaso-occlusives



Synoptique ftPWV pOpmètre®

**Results:** Compared to AA (n = 26; ftPWV = 7.7 ± 0.7 m/s), SCas patients had stiffer arteries (n=10; ftPWV = 10.9±1.0 m/s,) than SCss patients (n = 44; ftPWV = 8.5 ± 0.5 m/s) and than SCat (n = 22; ftPWV = 6.7± 0.7 m/s, ANOVA F= 4.58; p<0.01). 50% of SCas were hypertensive. Considering the whole population, a significant correlation was found for ftPWV and age (r<sup>2</sup> = 0.36; p < 10<sup>-4</sup>), and a weak but positive relationship between PWV and Viscosity (r = 0.19; p < 0.05). ft-PWV correlated also with SBP and DBP (r<sup>2</sup> = 0.16; r<sup>2</sup> = 0.14; p < 10<sup>-4</sup>). There was no difference between groups for blood pressure (SBP 128 / DBP 75 mmHg).



### Conclusion:

- A high arterial stiffness level was associated with Sickle Cell trait carriers, especially in sedentary patients.
- Exercise training exerts a beneficial effect on Arterial Stiffness.
- Arterial Stiffness is associated with viscosity.