

## Measuring arterial stiffness with pOpmètre® in a cardiac rehabilitation program

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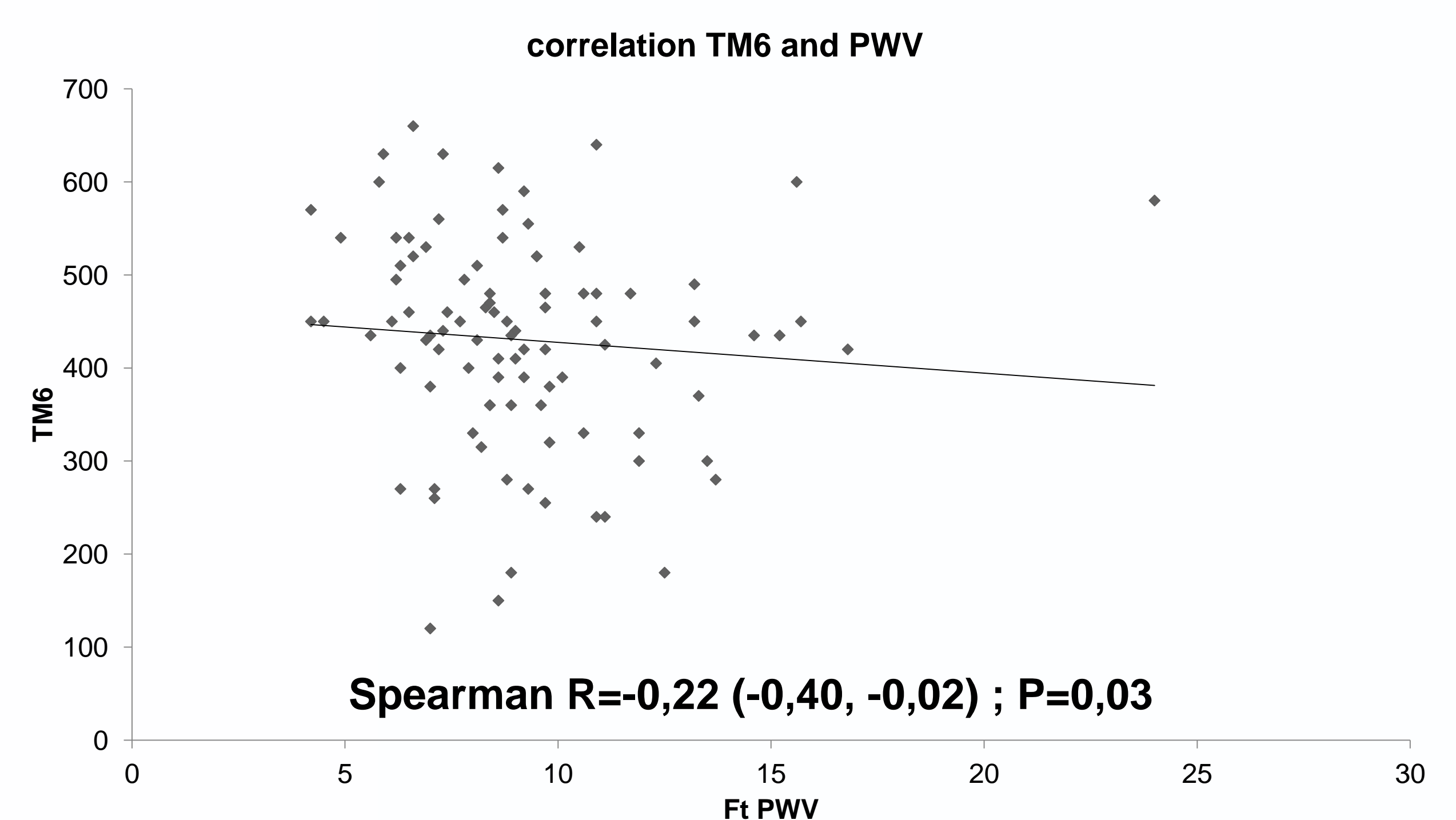
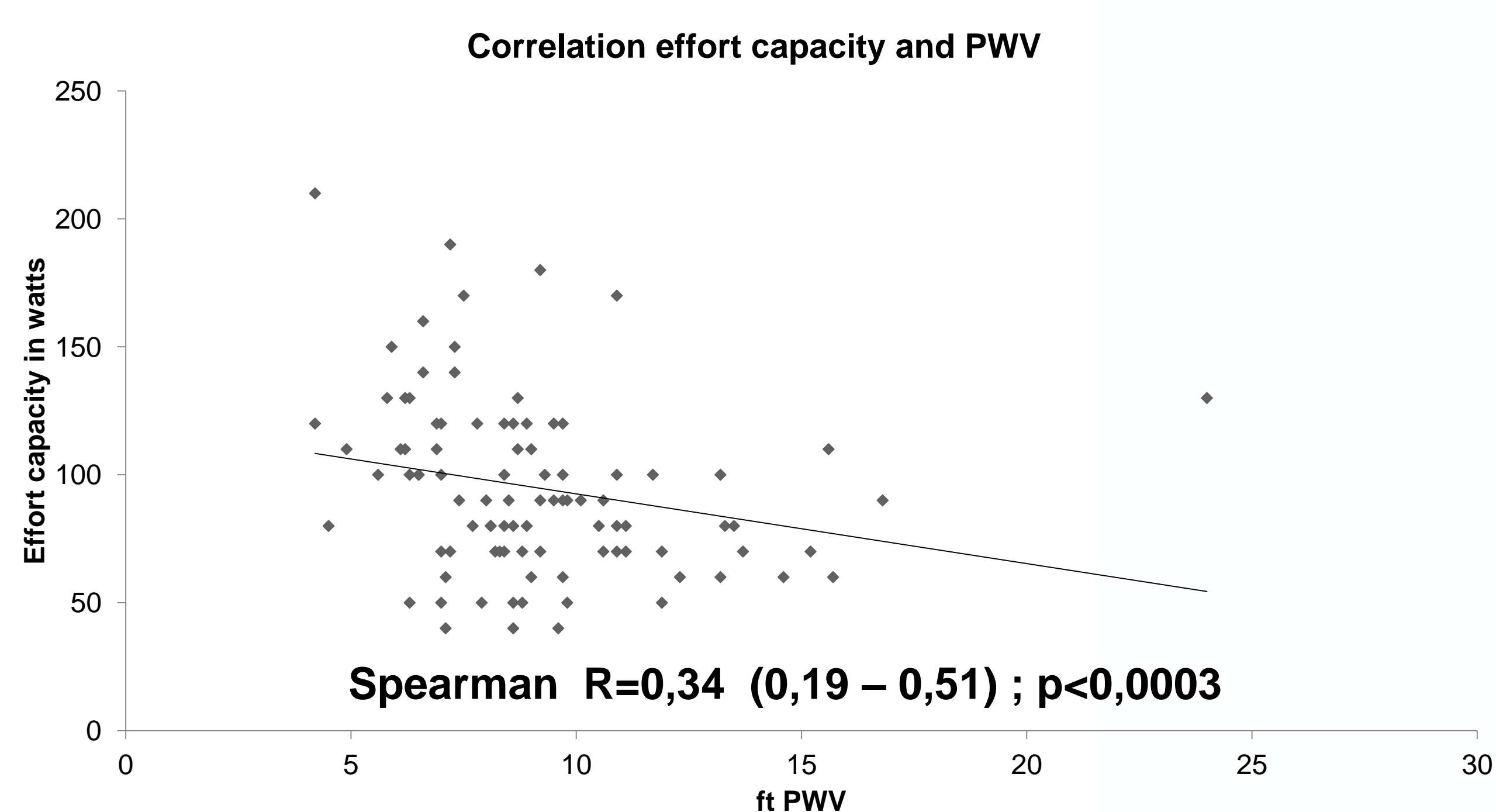
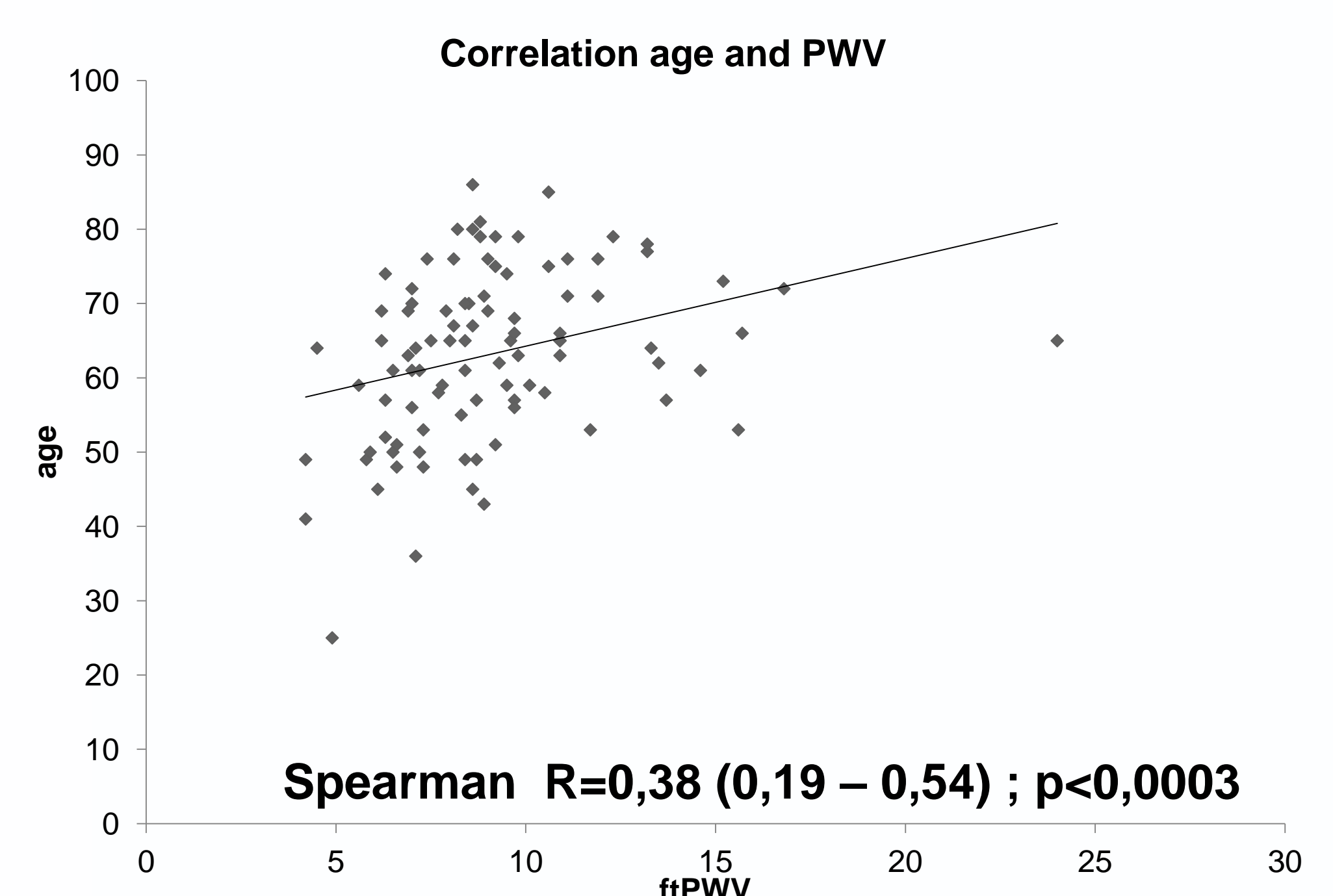
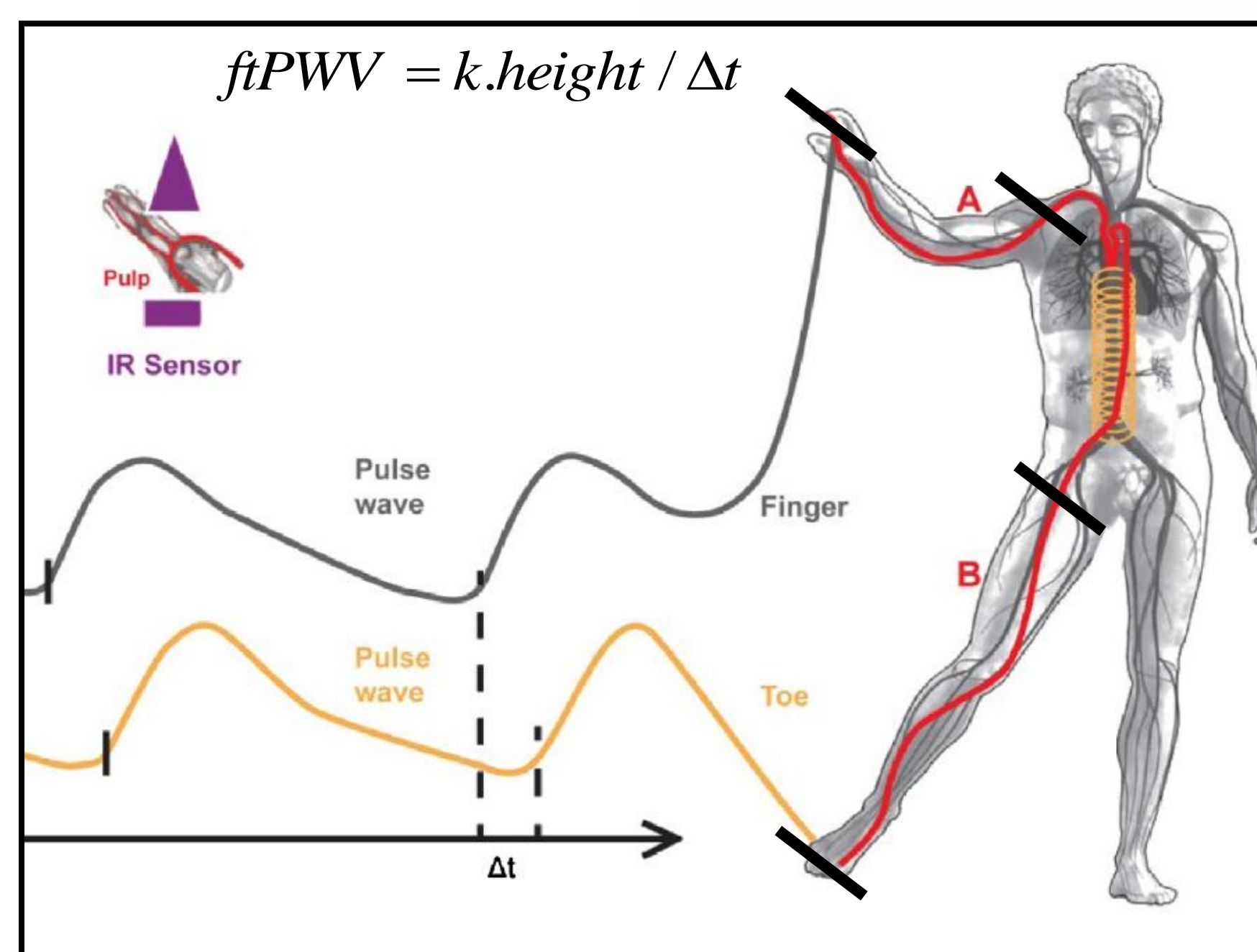
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**Objectives:** Pulse Wave Velocity (PWV) is a good surrogate of the arterial aging. This is an independent biomarker of cardiovascular events (ESH-ESC Guidelines 2013). PWV seems to be reduced with regular exercise. The effect of cardiac rehabilitation (CR) is less known on this biomarker. The aim of this study was to evaluate the impact of a CR program on arterial stiffness measured by pulse wave velocity (PWV).

**Methods:** The pOpmètre® has 2 photodiodes sensors, positioned on the finger and on the toe, next to the pulp artery. A particular attention was drawn on positioning of the toe sensor so that the pulp was in contact with the photodiode. Data from 100 consecutive patients recruited in a French CR centre were analyzed after exclusion for High variability  $cv > 30\%$  & aberrant values  $PWV > 30$  m/s. The finger-toe PWV was measured with a new validated device (pOpmètre®-AxelifeSAS-France) at the beginning and the end of CR (mean duration =  $18.3 \pm 4$  days). they were measured at the same time and under the same recommended conditions.

	Before	After	P
ftPWV (m/s)	$9.16 \pm 3.0$	$8.39 \pm 2.5$	$< 0.008$
Maximal Work Load	$94.9 \pm 35$	$116.0 \pm 37$	$< 0.0001$
6 min Walking test	$430 \pm 113$	$505 \pm 106$	$< 0.0001$



**Results:** Patients (Mean age  $64 \pm 11$  years, 84% males), were coronary artery disease (51%), valvular (38%), heart failure (3%) and other (8%). The classical cardio vascular risk factors were the following: 1- Diabetes (n=26), 3- high blood pressure (n=58), 4- high blood cholesterol (n=48), There were also obesity (n=15) coronary heredity (n=19) sedentary lifestyle (n=20). They took part in  $15 \pm 5$  physical training sessions (mean duration 120 min/day) ; The maximal workload (MWL) increased from  $94.9 \pm 35$  to  $116 \pm 37$  Watts and the 6min walking test (6MWT) from  $430 \pm 113$  to  $505 \pm 106$  m ( $p < 0.0001$ ). A PWV decreased from  $9.16 \pm 3.0$  to  $8.39 \pm 2.5$  m/s ( $p < 0.008$ ). We found a positive correlation with age ( $r = 0.38$ ;  $p < 0.0003$ ) and inverse correlation with maximal workload ( $r = -0.34$ ;  $p < 0.001$ ) and 6MWT ( $r = -0.22$ ;  $p < 0.003$ ).

**Conclusion:** Maximal physical capacity and 6MWT were correlated with PWV measured with pOpmètre®, and a current CR program seems to improve the arterial stiffness in a cardiac population.