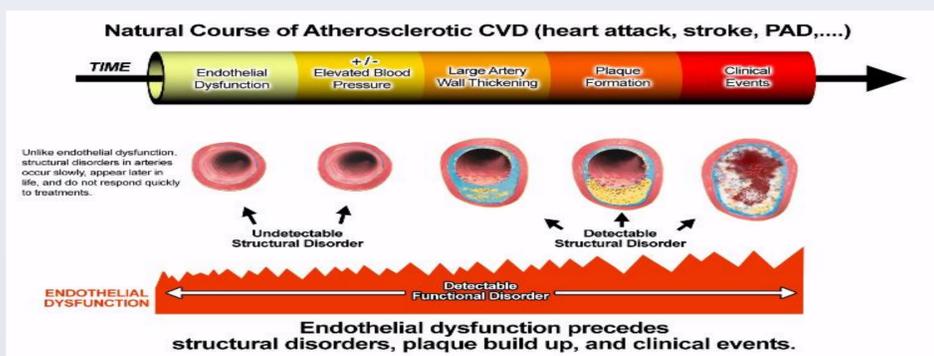


## INTRODUCTION

- Endothelial damage is one of the early signs of cardiovascular disorders.
- Endothelial dysfunction has been shown to be an independent predictor of future cardiovascular events.
- Assessment of endothelial function can identify individuals at risk of developing cardiovascular disease.
- Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting up to 10 % women of reproductive age.
- Women with PCOS have shown evidence of cardiovascular disease in the absence of clinically obvious disease, by assessing endothelial function.
- Flow mediated dilatation (FMD) and Reactive hyperaemia peripheral arterial tonometry (RH-PAT) are non-invasive techniques for assessing endothelial function.
- Recent studies suggests that the underlying physiological mechanisms for these tests may differ as the two techniques look at different set of vessels.

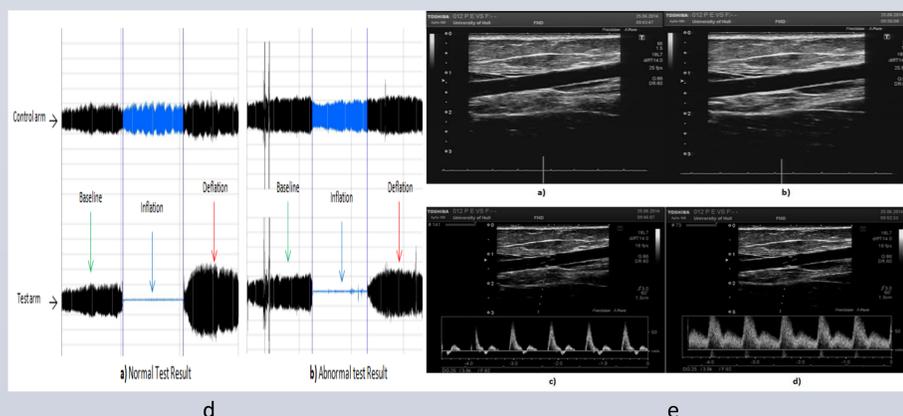


## METHODS

**Patient Population:** 30 age and BMI matched women (15 diagnosed with PCOS but with no other health issues and 15 control). Age , body mass index (BMI) , blood pressure and heart rate were recorded.

**Endothelial Function testing:** Using EndoPAT 2000 (Itamar Medical Ltd. Caesarea, Israel) and using the Flow Mediated Dilatation (FMD) technique using brachial artery scanning. All the participants underwent 5 minutes of suprasystolic cuff-induced ischemia followed by post ischemic measurements.

**Statistics:** Analysis done using sigma plot and included Student's t-test, Spearman's coefficient as indicated. Significance was set a priori at  $P \leq 0.05$ . All data are expressed as means  $\pm$ SD.



a) Portable Endo-PAT 2000 device b) Typical set-up for Endo-PAT test C) Typical set-up for Brachial artery FMD. d) Representative images for Endo-PAT test results. e)

## RESULTS

The participants were relatively young and apparently healthy as demonstrated by mean blood pressure and body mass index values (Table 1).

Mean values of peripheral vascular reactivity measures are shown in Table 2.

There were no differences in endothelial function measurements between PCOS and Control groups for either FMD ( $6.9 \pm 3.1$  vs  $5.7 \pm 3.1$  % (p-value = 0.14) and Reactive hyperaemic Index (RHI) ( $2.0 \pm 0.7$  vs  $2.2 \pm 0.7$  (p-value = 0.51) respectively.

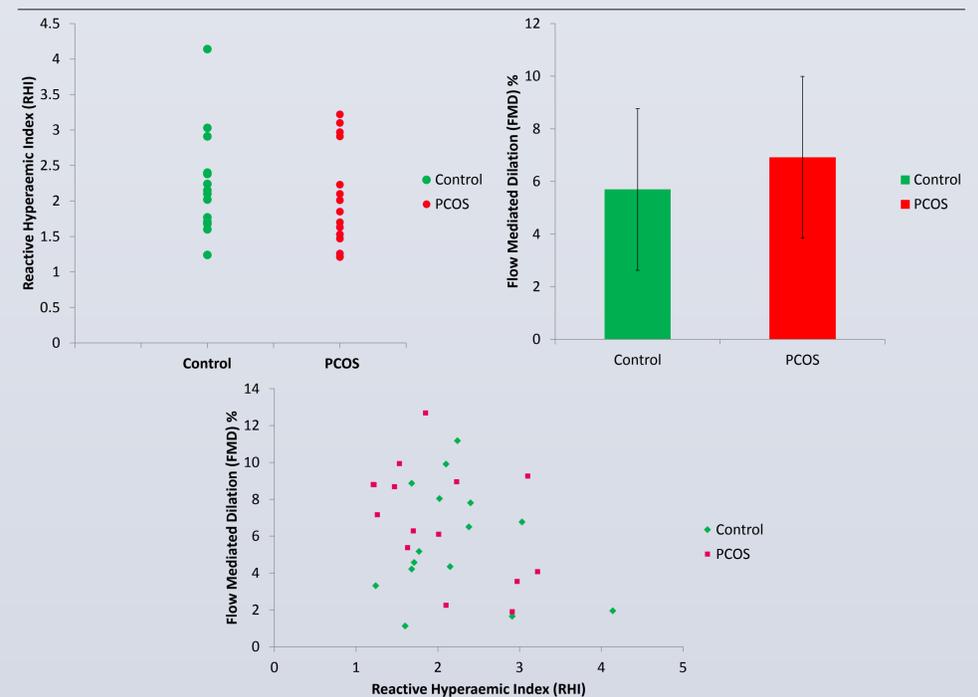
There was also no association between FMD and RHI ( $r = 0.326$  , p-value = 0.079). The mean androstenedione, FAI, HOMA-IR and CRP were significantly higher in PCOS.

**Table 1 Demographics and baseline characteristics for PCOS and control groups**

	PCOS (n=15)	Control (n=15)	P-Value
Age (year)	29.1 $\pm$ 6	32 $\pm$ 7	0.25
BMI (Kg/m <sup>2</sup> )	26.1 $\pm$ 4.1	23.7 $\pm$ 2.8	0.08
Systolic BP(mmHg)	105 $\pm$ 13.2	102.5 $\pm$ 8.7	0.55
Diastolic BP (mmHg)	64.5 $\pm$ 7.7	63.7 $\pm$ 6.6	0.76
Heart Rate (bpm)	66.3 $\pm$ 9.8	63.3 $\pm$ 12.8	0.48
Androstenedione (nmol/L)	9.8 $\pm$ 6.3	5.0 $\pm$ 2.3	0.01
CRP (mg/L)	3.4 $\pm$ 3.4	1.2 $\pm$ 0.9	0.02
Free Androgen Index	3.7 $\pm$ 2.8	1.8 $\pm$ 1.3	0.049
HOMA-IR	0.9 $\pm$ 0.3	0.7 $\pm$ 0.2	0.018

**Table 2 Clinical markers for Endothelial function**

	PCOS (n=15)	Control (n=15)	P-Value
RHI	2.0 $\pm$ 0.7	2.2 $\pm$ 0.7	0.51
FMD %	6.9 $\pm$ 3.1	5.7 $\pm$ 3.1	0.14
AI@75	-2.9 $\pm$ 10.9	4.4 $\pm$ 15.4	0.14



## Conclusions

- There is no difference in endothelial function assessment by the two Techniques FMD and EndoPAT in PCOS.
- Both the techniques have been previously shown to be correlated with coronary endothelial function and thus both can be used alternatively .
- The lack of correlation between the two techniques here may be a result of the different underlying physiological mechanisms (suggested in recent literature on the subject) as the two techniques look at different sets of vessels with the FMD measuring macro while RH-PAT micro vessels reactivity.
- Endo-PAT is advantageous because it is easy to set-up, is automated and non-user dependent and can be used to identify individuals at risk of developing cardiovascular disease and thus provision for an early intervention where possible.