

Correlations between dP/dt measured from Left Ventricular and Radial Arterial Catheters

BACKGROUND

- Cardiac contractility (dP/dt) is the heart's ability to eject a stroke volume in the context of a given preload and afterload
- Left Ventricular dP/dt is the gold standard¹ for an objective measurement of contractility
- Radial arterial dP/dt can now be provided as a continuous measurement

STUDY OBJECTIVES

- evaluate the correlations between LV and radial arterial dP/dt
- clarify the clinical utility of arterial dP/dt

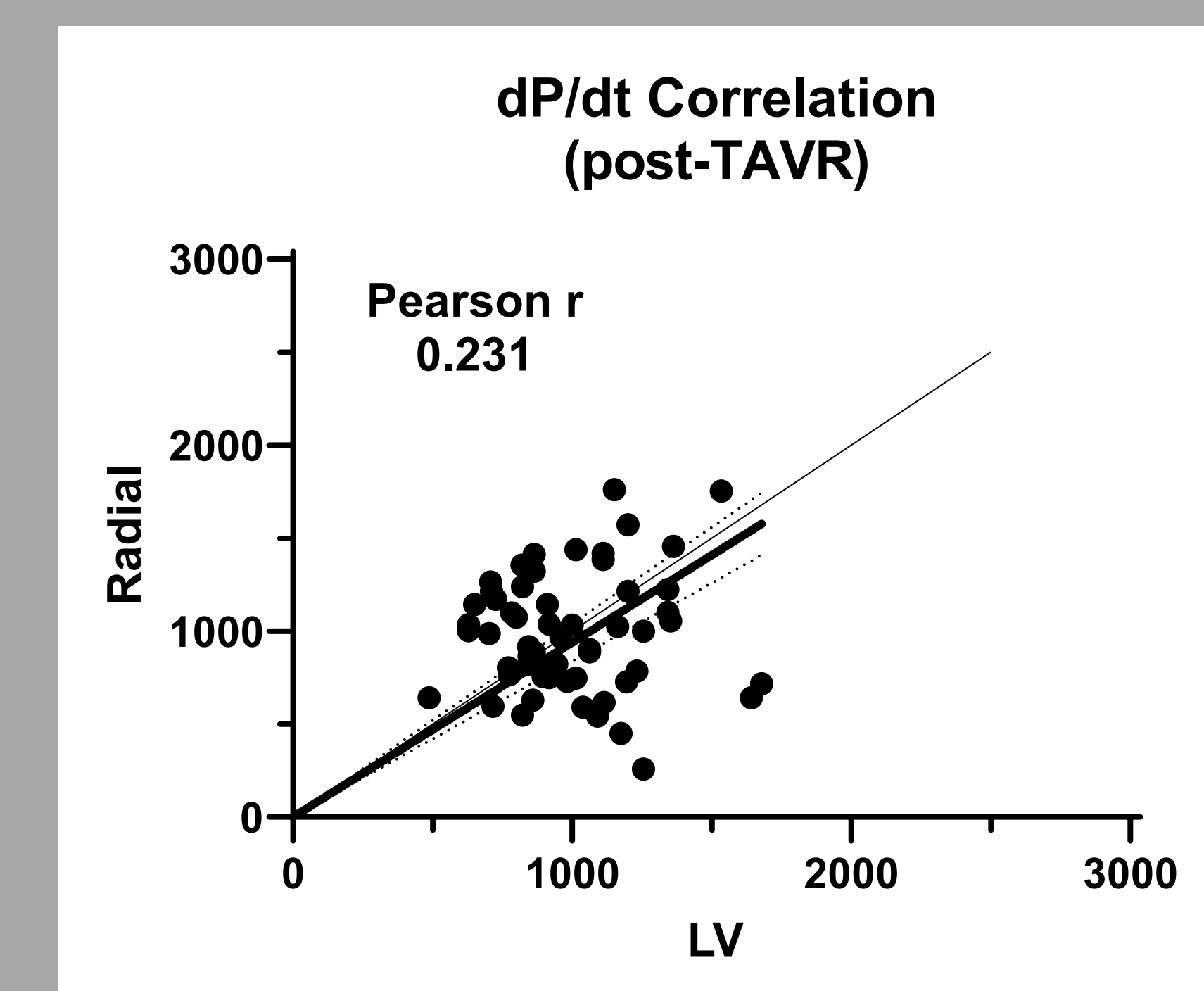
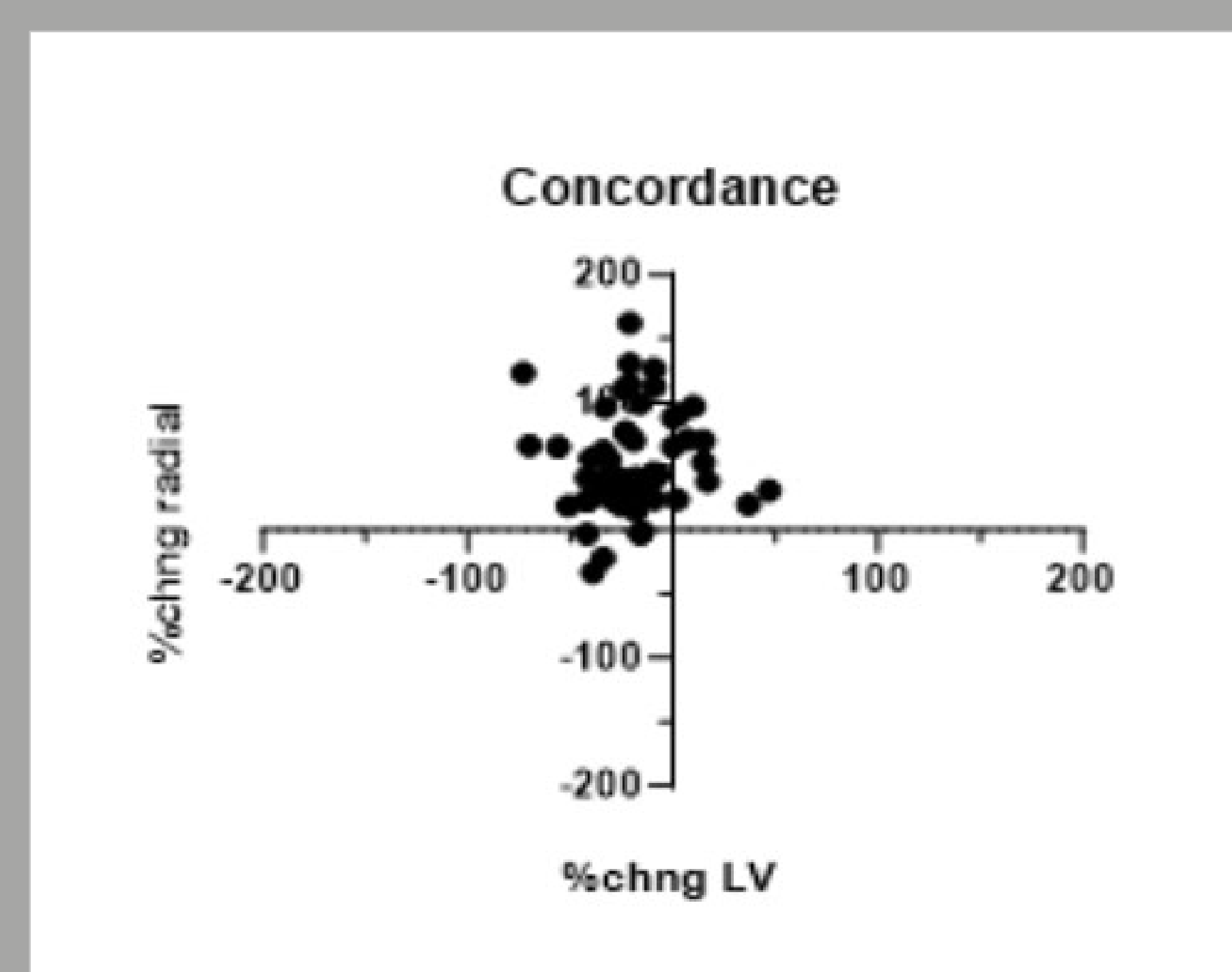
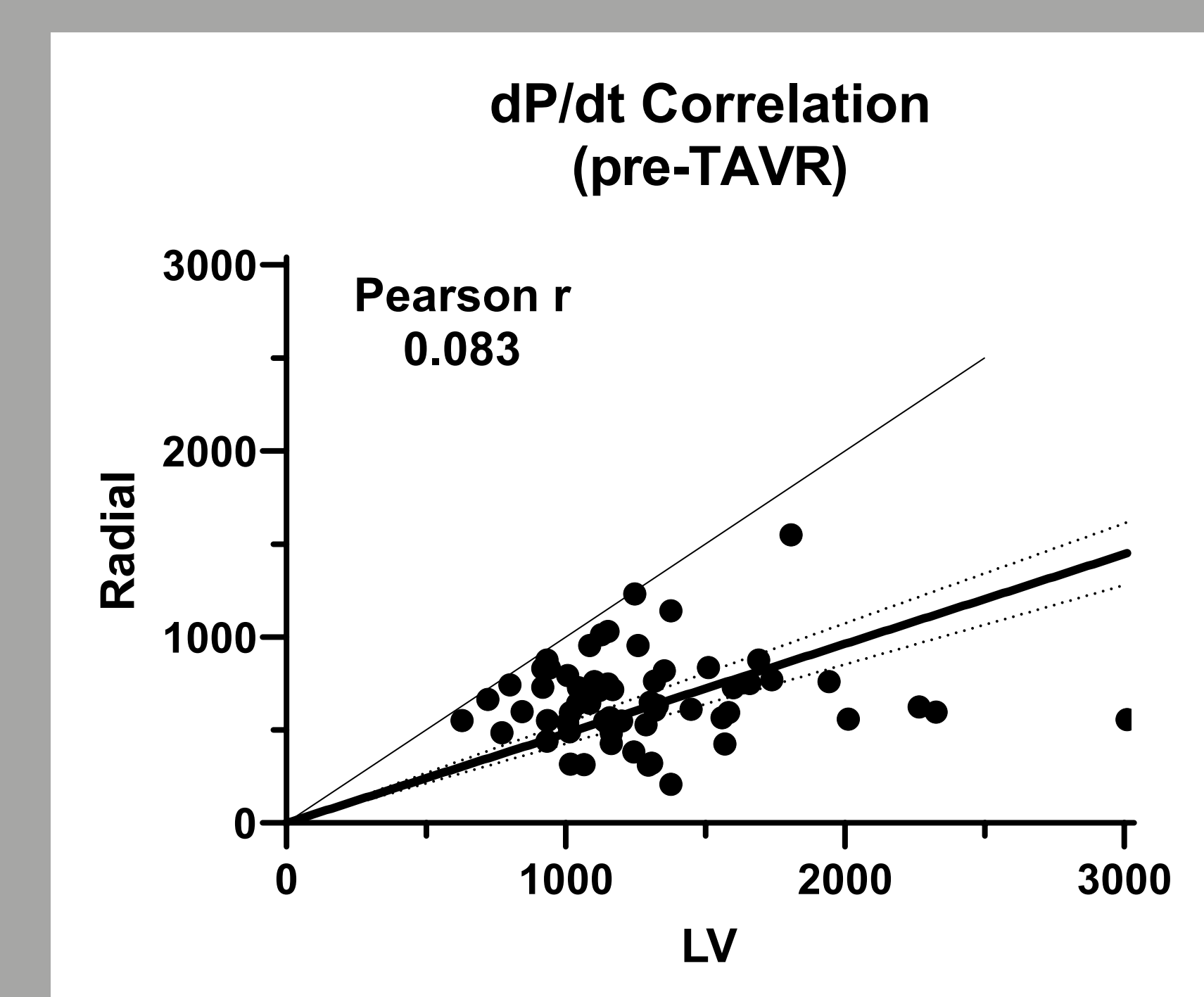
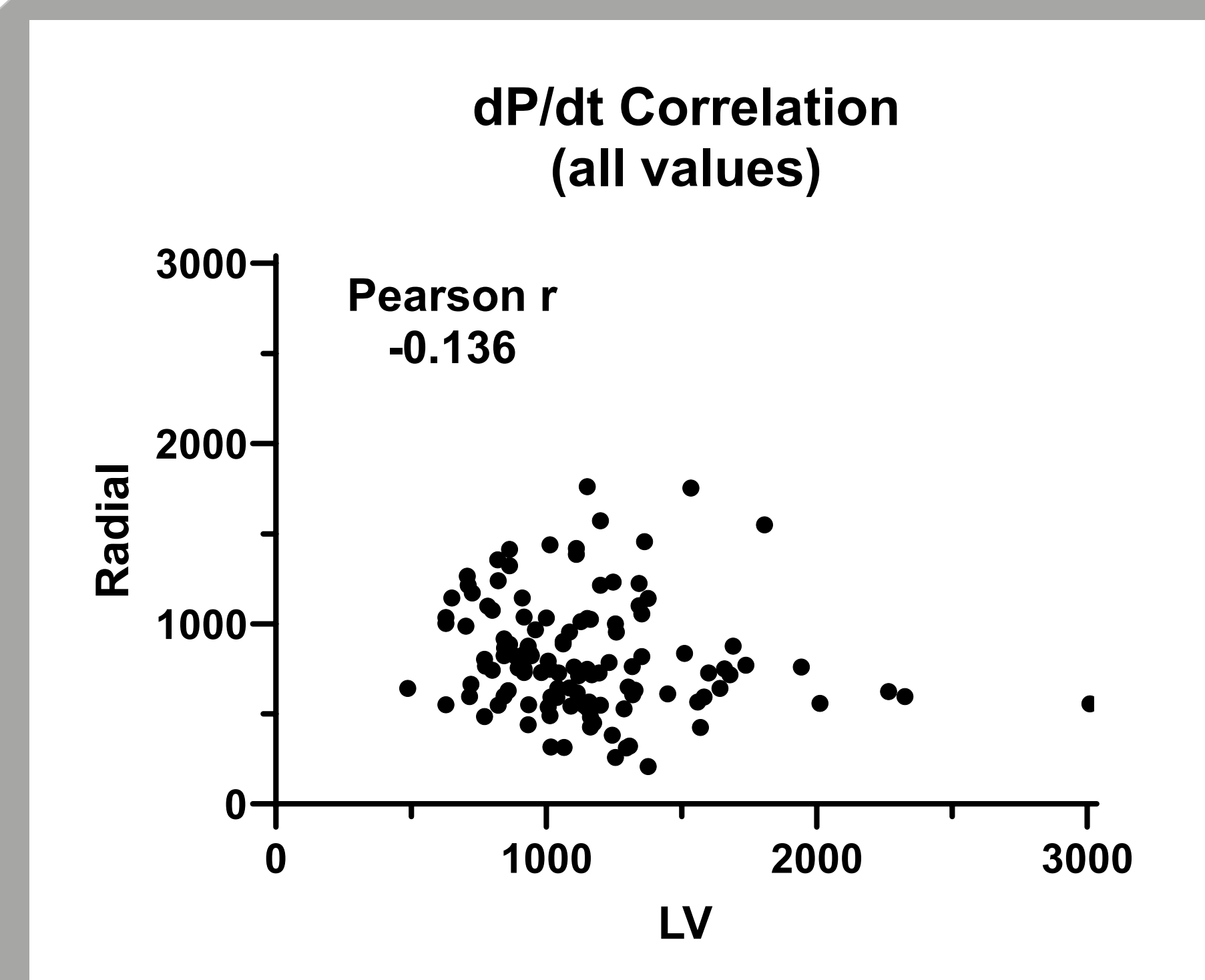
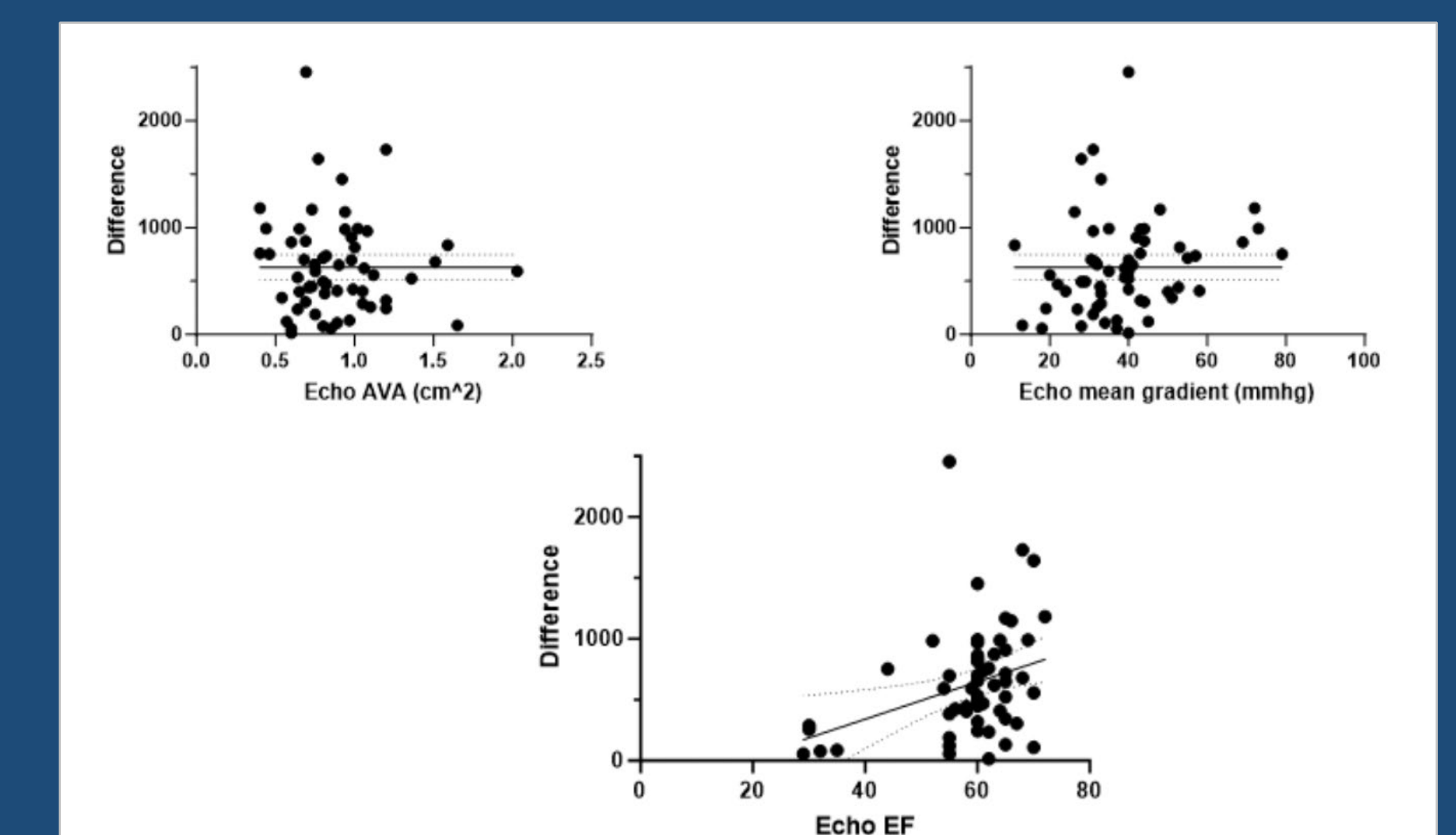
METHODS

- IRB approval for retrospective data collection from patients undergoing TAVR with radial arterial dP/dt data (Edwards Acumen IQ transducer)
- LV dP/dt value from cath report
- Radial arterial dP/dt values (3 minute average before the same timestamp) from EMR
- Aortic valve area, mean gradient & ejection fraction from pre-op TEE
- Pre and post valve LV dP/dt measurements routinely measured
- Pearson's r test for correlations
- Concordance measured for paired patient data

The clinical utility of radial arterial dP/dt is limited in patients with severe aortic stenosis

RESULTS

- 58 patients 07/01/21 to 08/28/23
- Post-TAVR values nearly identical with the line of identity
- Poor correlation of difference between LV and radial values with EF, mean gradient or AVA



CONCLUSION

- Poor overall correlation between LV and arterial dP/dt measurements in TAVR patients
- Stenotic aortic valve is primary source of afterload before valve replacement
- Stenotic valves also alter the vascular filling state, which may compromise arterial dP/dt measurements
- Correlations improve after valve replacement

NEXT STEPS

- Collect additional data, repeat analysis
- If ongoing data suggest no significant change despite increasing power of study, stop
- Explore opportunities for non-TAVR LV dP/dt data

REFERENCES

1. Morimont P, Lambermont B, Desai T, et al. Arterial dP/dtmax accurately reflects left ventricular contractility during shock when adequate vascular filling is achieved. BMC Cardiovasc Disord. 2012 Mar 1;12:13. doi: 10.1186/1471-2261-12-13

