

## ABSTRACT

Title: **Comparison of Intra-Arterial Pressures in Fluid-filled Catheter-Transducer Systems with Different Catheter-tip Configurations; Standard v. Modified**

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## OBJECTIVES

To design a physical simulation that tests catheter-transducer systems and characterize the dynamic response of such systems. To modify the catheter-tip and compare its performance against a gold standard.

## METHODS

A carefully designed catheter-transducer testing system was constructed covering the full range of physiological limits. Dynamic response of each configuration was tested and the most appropriate identified. Code was written to automate peak detection and calculation of the dynamic response parameters. Catheter-tip modifications were tested against the gold standard of a solid-state microtransducer, in different settings of the simulation. Data was acquired in PowerLab and analysis algorithms implemented in MATLAB R2018a.

## RESULT

The experimental setup designed proved consistent and covered the full range of physiological limits. The algorithms to evaluate dynamic response showed repeatable performance for any flush test conducted. The modification of the tip showed no improvement over the standard tip for any parameter.

Key words: *intra-arterial blood pressure, dynamic response*