

Decompression Sickness (DCS) is a pathophysiology that includes symptoms like skin itching, neurological symptoms, and death. Upon decompression, bubbles can form in the diver's tissues and travel into the blood, where they are called Venous Gas Emboli (VGE), which have been correlated with DCS outcome. VGE are graded on the Eftedal-Brubakk (EB) scale (0-5) based on the amount of bubbles detected in the heart. It has been theorized that the amount of VGE detected in the heart may be related to cardiac output (CO) [1]. Here, ultrasound scans from a larger study analyzing intra vs. inter diver variability in post-dive EB grades were obtained for analysis. Divers underwent echocardiography every 20 minutes post-dive until bubbles were no longer detected, producing 820 timepoints for review. Measurements of left ventricular outflow tract diameter (LVOT,  $n = 16$  subjects) and time-velocity integrals (TVI,  $n = 72$  timepoints) were taken to calculate CO. LVOT diameter measurements were compared with literature values based on sex/age [2] or sex alone [3]. Measurements were visualized to check for a trend between CO and decompression bubbles. General agreement was seen when calculating CO using the different methods: measured and literature LVOT diameter values. A comparison of LVOT values with high (3+) or low bubble (<2) grades did not present an apparent trend, which could indicate the relationship between CO and bubble presence. In the future, this pipeline will be applied to calculate CO for all divers in the study to evaluate the relationship between blood flow and decompression bubbles.

## References

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- [3] Kou, S *et al.*. (2014). Echocardiographic reference ranges for normal cardiac chamber size: results from the NORRE study. *Eur Heart J Cardiovasc Imaging*. 15(6): 680–690. [10.1093/ehjci/jet284](https://doi.org/10.1093/ehjci/jet284)