**Supplement:**

Intra- and inter observer variability measures were performed on a subset of 10 participants (involving 20 PA segments total).

Methods and statistics: Intra- and interobserver measurements for PA CSA and flow were performed on a subset of 10 subjects (20 segments), and analysis was performed blinded in terms of state (rest vs. stress). The Bland-Altman method was used to assess interobserver, and intraobserver agreement for pulmonary area and blood flow measurements, with p values derived from Pitman’s test of differences. Intraclass correlation coefficients were also determined for inter and intraobserver results for PA area and flow using a two-way mixed effects model where people effects are random and measure effects are fixed.

Inter- and Intra-Observer Variability Results:

Bland-Altman analyses for intraobserver and interobserver variability for PA CSA and PA blood flow are shown in **Supplement Figure 1**. The interobserver results for area and flow showed no significant differences (p=0.93 and p=0.91, respectively). Similarly, the intraobserver variability for measurement of PA blood flow did not show significant differences (p=0.99 and p=0.96, respectively). The intraclass coefficient for interobserver and intraobserver variability was excellent for PA area (0.994, 0.997 respectively) and PA flow (0.986, 0.993).

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**Supplement Fig 1:** Bland-Altman analysis was performed to evaluate interobserver and intraobserver variability for pulmonary artery (PA) area (**A** and **B**), and PA flow (**C** and **D**) for a total of 20 PA segments in 10 subjects (10 at rest and 10 during stress). The solid line represents the mean of the differences; the dotted lines represent the upper and the lower limits of agreement (±1.96 standard deviation).