

Category : **Cardiovascular: cardiac arrest\CPR**

**A84 - Comparing the efficiency of ventilation between CPR protocols during a prolonged cardiac arrest.**

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### **Introduction:**

In case of prolonged out-of-hospital cardiac arrest (OHCA), the patient is commonly transported to hospital using mechanical CPR and ventilation with 100% oxygen. Despite this many patients arriving to hospital have severe hypercapnia and hypoxia. One possible reason for this is impaired ventilation due to the counterpressure caused by the continuous chest compressions. We hypothesized that a compression/ventilation ratio of 30:2 would provide better ventilation and gas exchange compared to continuous compressions over ventilation during prolonged CPR.

### **Methods:**

We randomized 30 anaesthetized domestic swine (weight approximately 50 kg) with electrically induced ventricular fibrillation to continuous or intermittent chest compressions and bag-valve-mask ventilation with 100% FiO<sub>2</sub>. We started CPR after a 5 minute no-flow period and continued it up to 40 minutes from the induction of VF. Chest compressions were performed with a mechanical chest compression device (LUCAS<sup>®</sup>, Stryker Medical). We collected arterial blood gas samples every 5 minutes during CPR. We compared PaO<sub>2</sub>, PaCO<sub>2</sub> and Lactate over time using a mixed linear model.

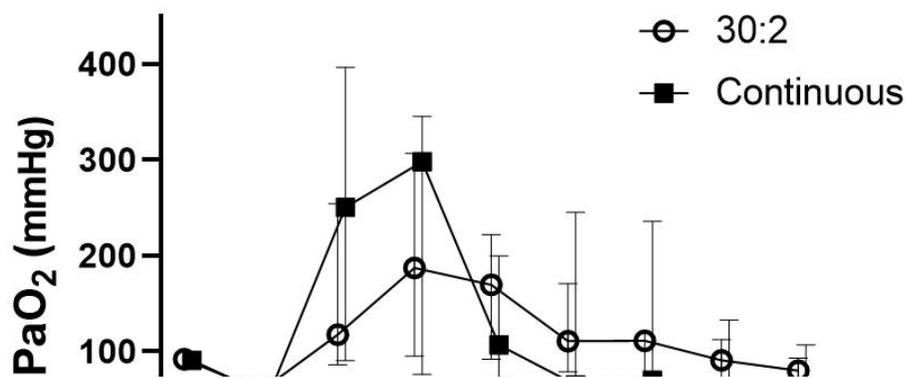
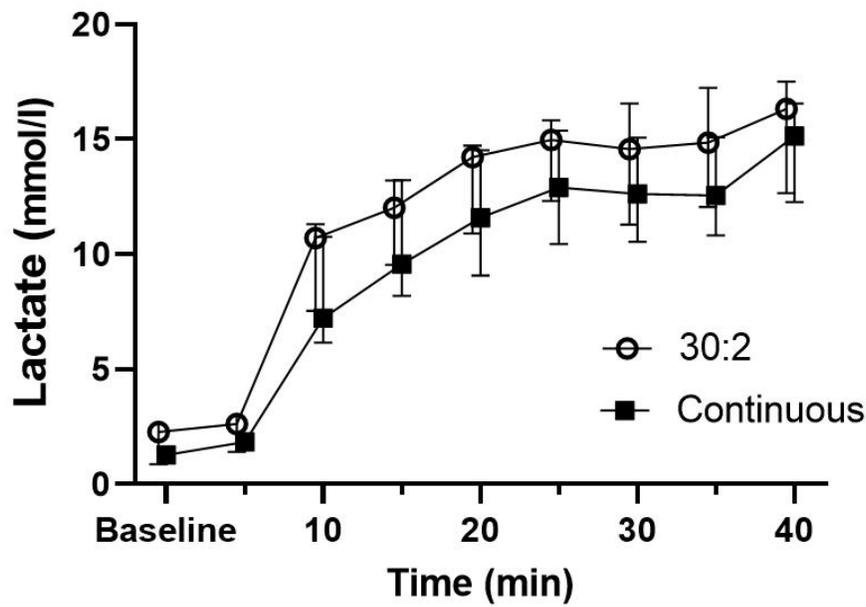
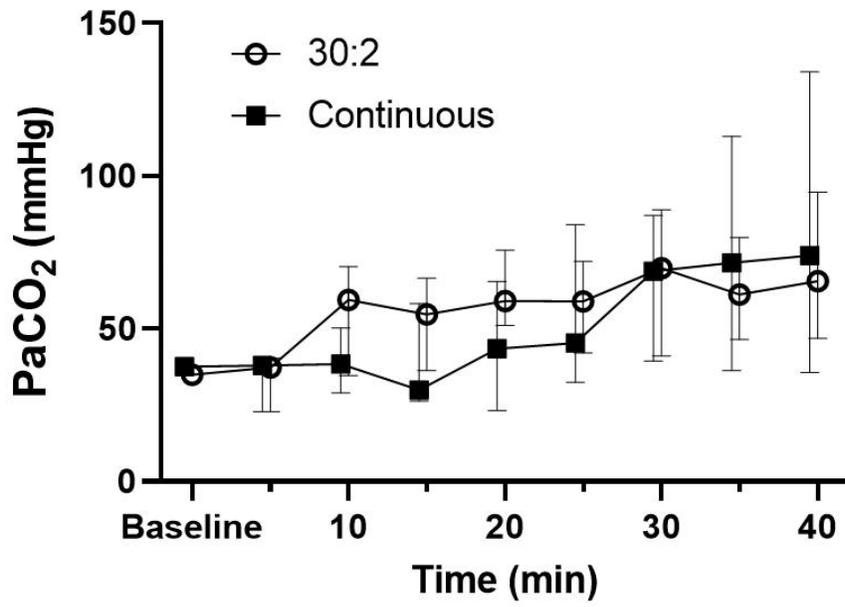
### **Results:**

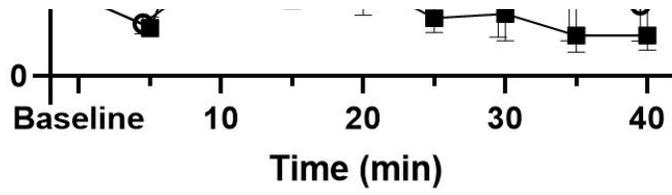
There were no statistically significant differences in PaO<sub>2</sub> (p = 0.40), PaCO<sub>2</sub> (p = 0.79) or lactate (p = 0.37) between continuous and 30:2 compression/ventilation (Figure 1). The significance values for the interaction between compression/ventilation group and time were as follows: p = 0.43 for PaO<sub>2</sub>; p = 0.37 for PaCO<sub>2</sub>; p = 0.55 for Lactate.

### **Conclusion:**

Prolonged CPR with mechanical chest compressions performed either continuously or with a 30:2 compression/ventilation ratio resulted in similar arterial levels of oxygen, carbon dioxide and lactate.

### **Image :**





*PaCO<sub>2</sub>, lactate and PaO<sub>2</sub> median values and IQR:s in the 30:2 compression/ventilation and continuous compression/ventilation groups at baseline measurements and at 5min intervals after the cardiac arrest. The CPR was started at 5min time point.*