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Jacketed monitoring for life sciences

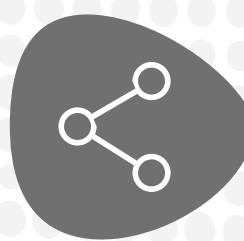
# Adaptation of the DECRO® Telemetry System for Integrated Safety Pharmacology Endpoints in Dogs



## Authors:

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## Context

Dogs, one of the two main non-rodent species used in safety assessments for new chemical entities (NCEs), commonly integrate safety pharmacology endpoints such as ECG and respiratory recordings via jacket telemetry in toxicology studies. The DECRO® system, a miniaturized telemetry system previously validated in rats, offers several advantages, including the integration of respiratory, activity, and ECG recordings into a single setup, thereby reducing equipment handling time.



## Objective

This study aimed to develop and validate an adjustable, one-size-fits-all jacket with integrated respiratory belts designed for dogs.

Four Beagle dogs, each implanted with an invasive DSI telemetry system and housed in pairs, were outfitted with DECRO® jackets during two separate three-hour sessions.



## Methods

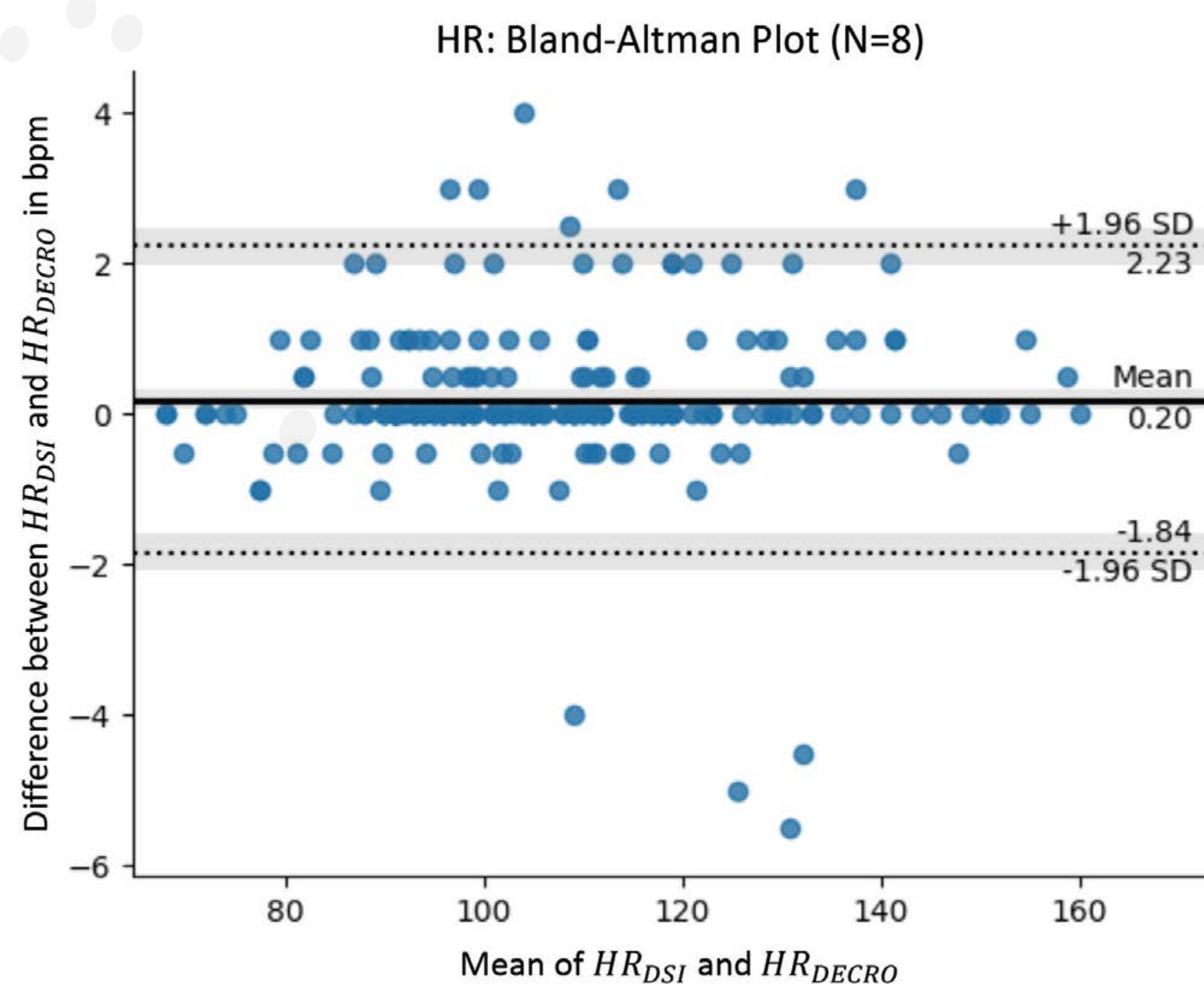
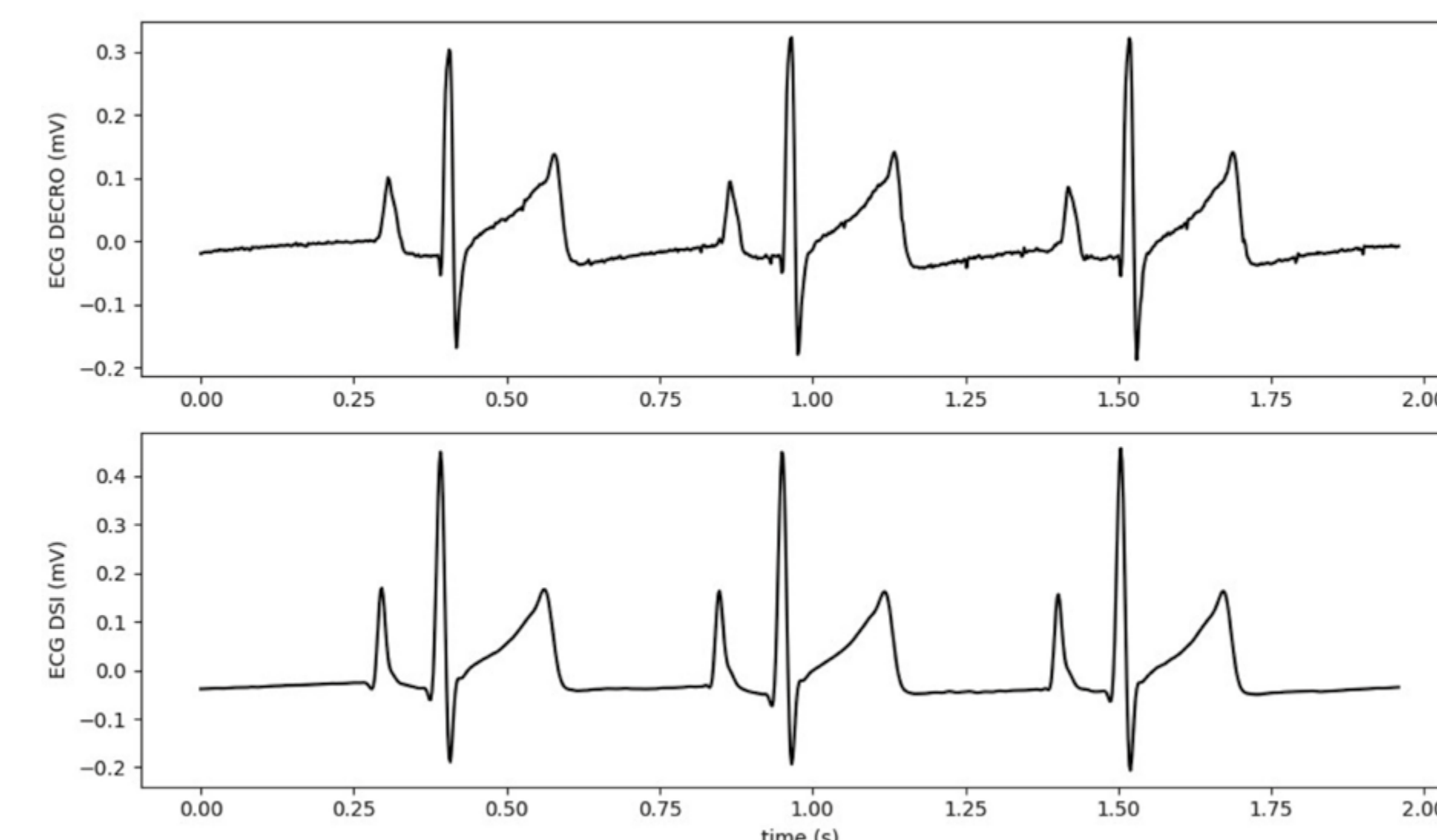
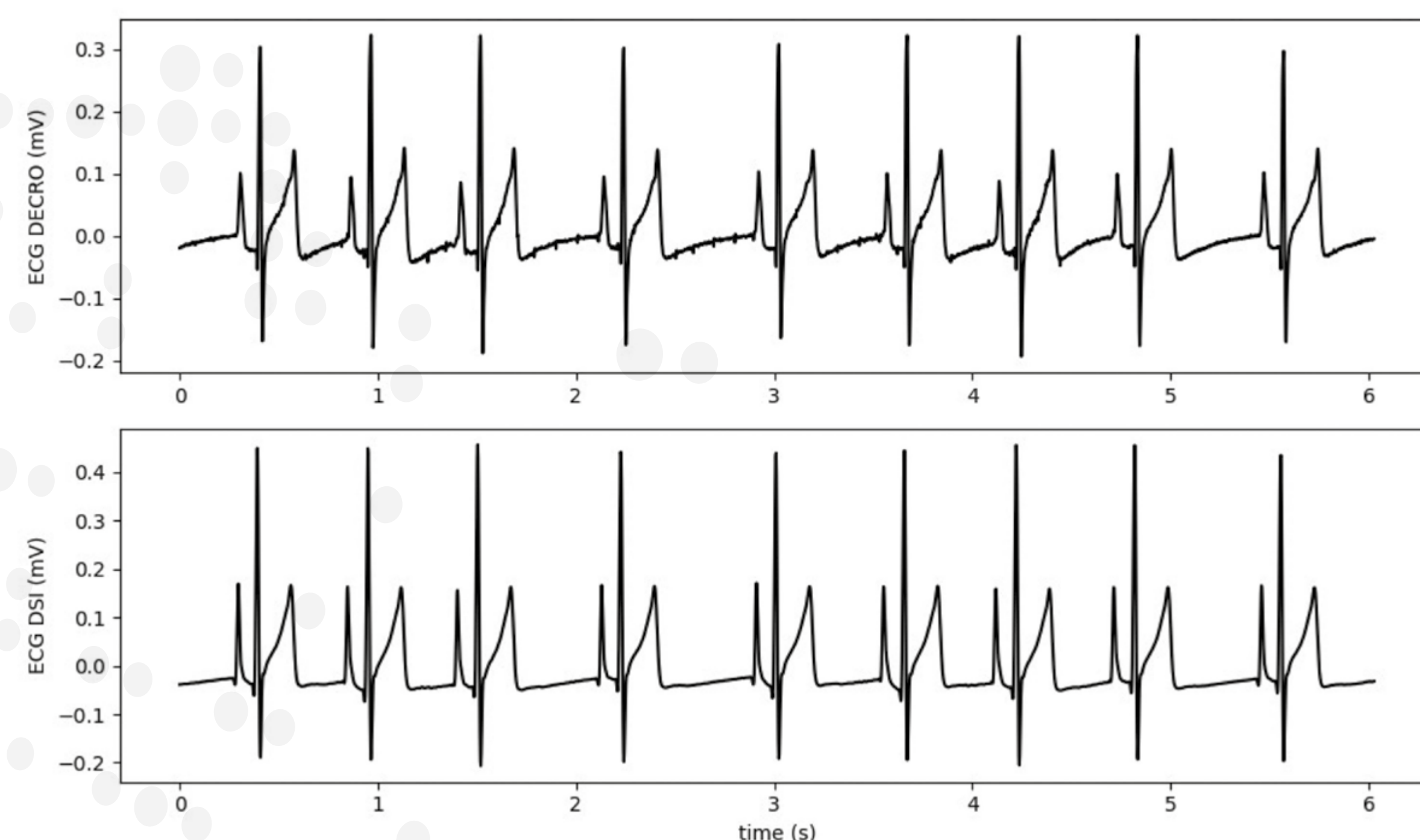
All animal experiments were ethically reviewed and approved by the Ethics Committee (CEEAA-111) in accordance with the European Directive 2010/63/EU on animal welfare. The experiments were conducted at ERBC, France, using 4 male dogs sourced from Marshall BioResources, France. These dogs weighed between 10–15 kg and were 10–33 months old. The animals, housed in pairs, were implanted with DSI L11-F2 transmitters to monitor ECG and blood pressure.

During two separate three-hour sessions, the dogs were equipped with DECRO® jackets, which were being used for the first time in this species.



## Results

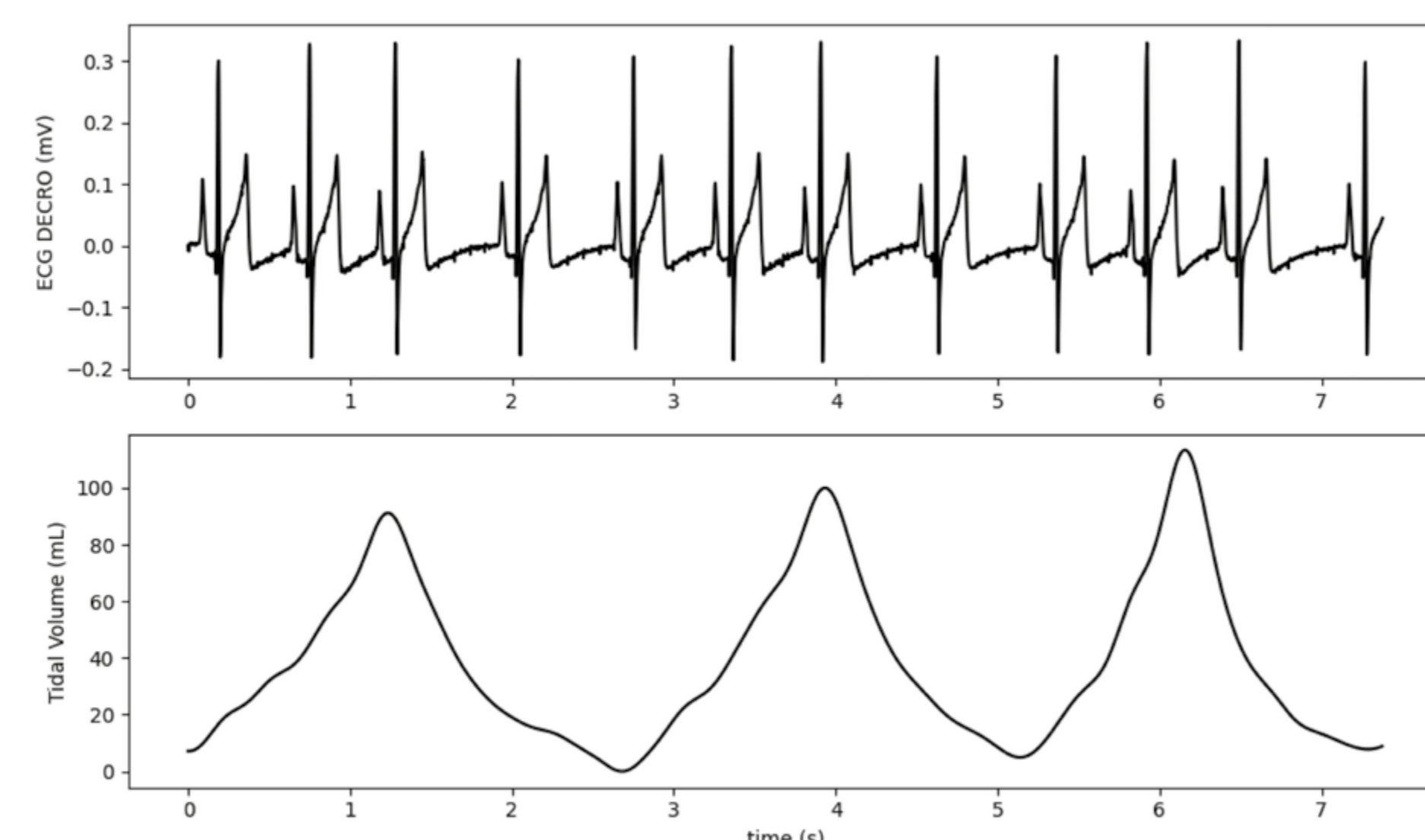
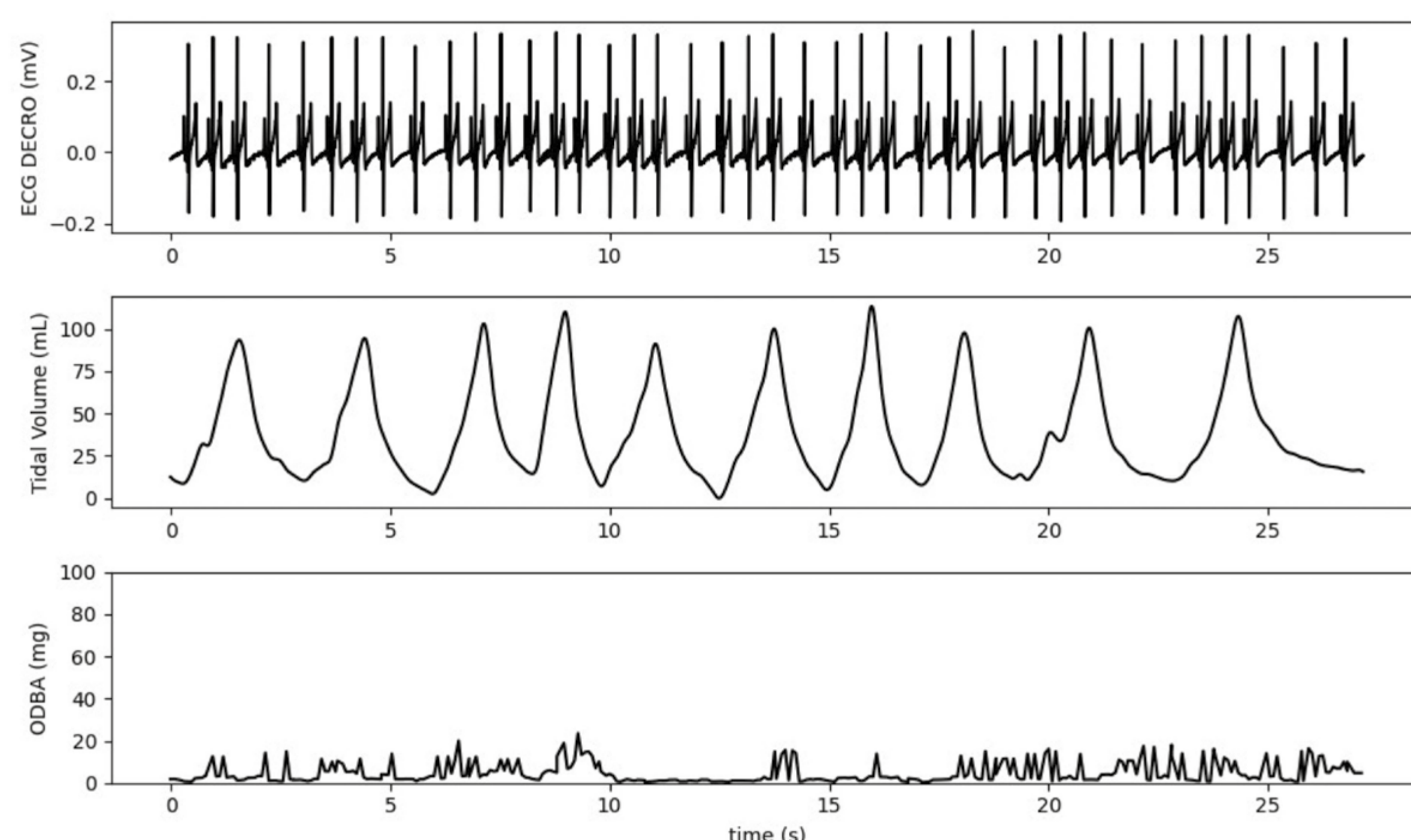
The dogs demonstrated good tolerance to the jackets with no observed clinical signs or changes in behavior. The DECRO® jackets successfully recorded ECG and respiratory signals, consistently achieving high-quality cardiac signal scores (>95%) and respiratory signal scores (>80%) throughout the recording periods. ECG signals acquired in Lead II configuration with the jackets were compared to those obtained with DSI. Statistical bias between both methods for heart rate was assessed using Bland-Altman analysis, which plots the difference against their mean values. The analysis revealed a bias of 0.6 beat per minute and an agreement limits of [-3.7, 4.9] beats per min (95% confidence interval).



## Respiratory table

Summary of respiratory parameters and activity levels across two recorded sessions.

Parameter		Session	
		1	2
Respiratory Rate (bpm)	Min	13	20
	Mean	41	36
	Max	111	78
Tidal Volume (mL)	Min	48	77
	Mean	110	122
	Max	196	182
Minute Volume (mL/min)	Min	1343	2561
	Mean	4106	4190
	Max	8609	10947
Respiratory Score		85%	94%
Activity (mg)	Min	1	0
	Mean	23	6
	Max	408	22



## Conclusion

The DECRO® jacket proves to be a reliable setup for integrating safety pharmacology endpoints into toxicology studies. Beyond its technical benefits, this solution holds significant promise for addressing hemodynamic parameters currently under investigation.