

# Can dogs have a burn out?

## How to measure stress in working dogs

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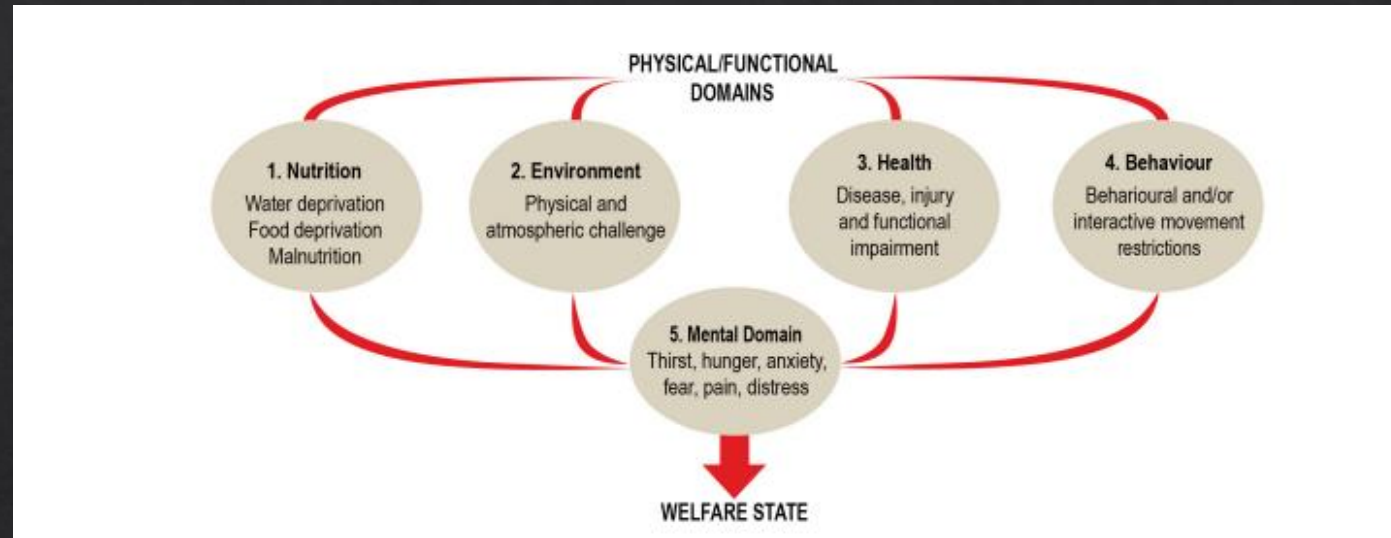
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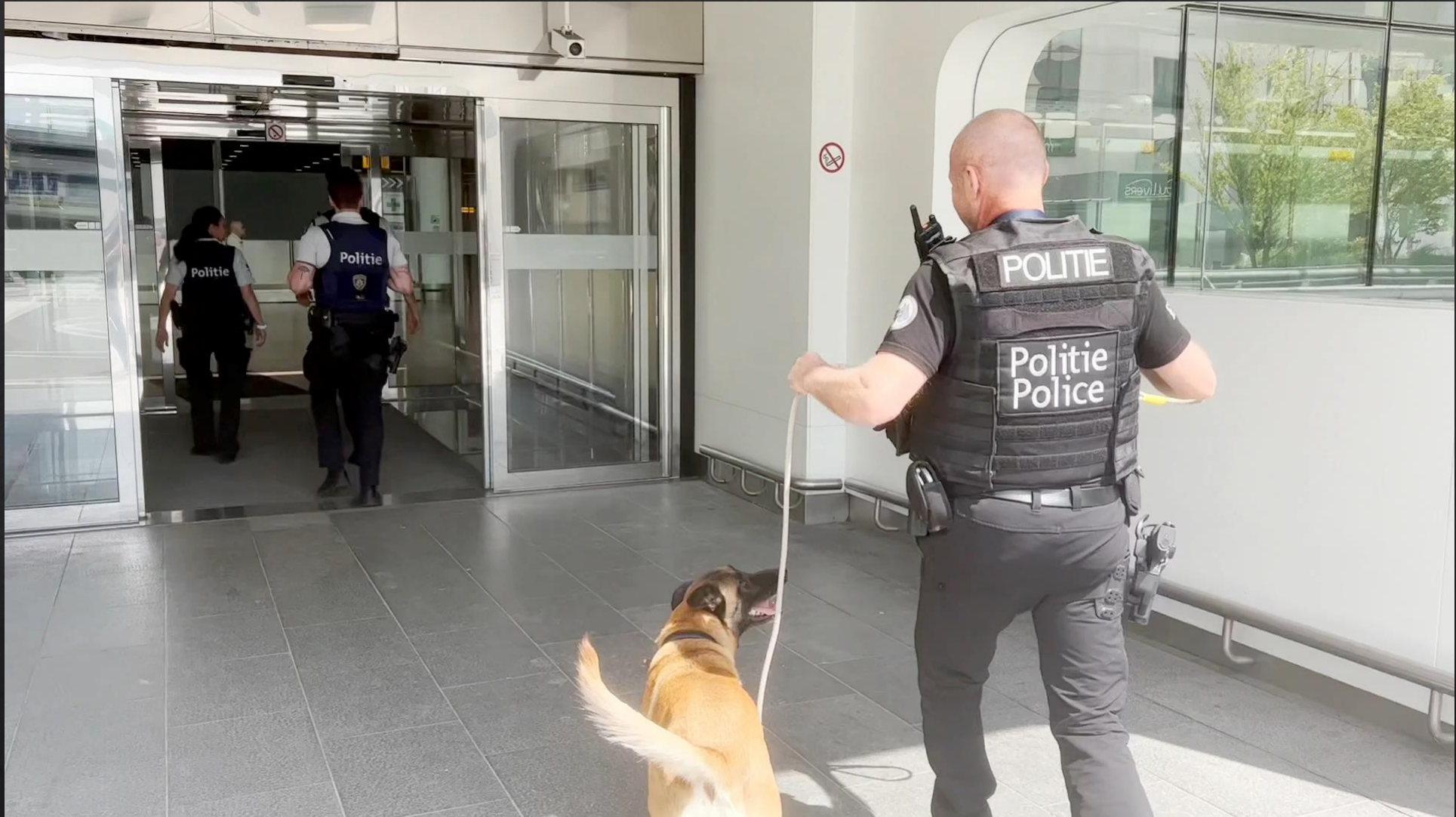


# Animal welfare: 5 domain model



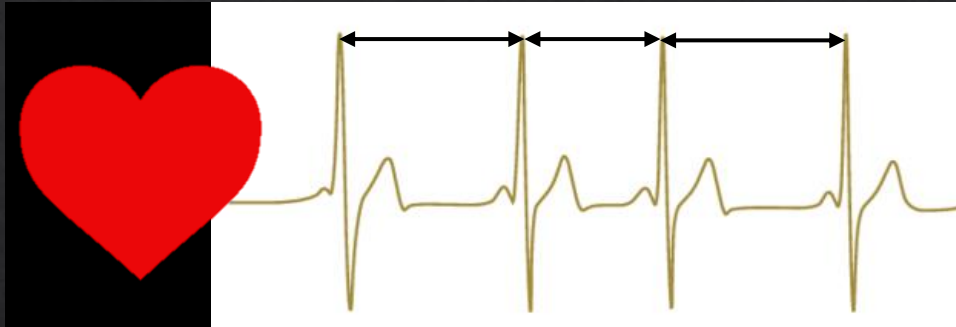
Nature of Human-Animal Interaction	Negative Affective Impact				
	A: None	B: Low	C: Mild to Moderate	D: Marked to Severe	E: Very Severe
<b>Aversive training of companion animals:</b> <ul style="list-style-type: none"> <li>• General features of training</li> <li>• Fight, flight, freeze, appeasement behaviours</li> <li>• Fear of trainer and others</li> <li>• Response to trainer</li> </ul>	Gentle, calm methods No such responses  No fear evident Engaged, compliant, at ease	Punishment sometimes used Mild such responses  Mild fear sometimes evident Sometimes non-compliant, mostly at ease and compliant	Regular hitting and shouting Responses apparent when trainer is present  Moderate fear overall; marked fear when trainer is present Distracted, nervous, anxious, often non-compliant, sometimes aggressive		Brutal methods Extreme responses, often withdrawn Extreme fear of trainer & others Terrified, panicked; aggressive, shutdown, non-responsive
<b>Pushing performance animals to their physiological/physical limits:</b> e.g., using persistent unassisted urging, whips, spurs and/or drugs	Animals compliant; briefly exercised below maximum levels using unassisted urging; little if any fatigue; rapid return to resting state	Animals compliant; briefly exercised at maximum using persistent unassisted urging; some fatigue; return to resting state somewhat delayed	Animals non-compliant due to persistent use of contradictory aversive stimuli; escalation of injurious force; slow decline of pain and fear to resting levels; markedly fatigued; delayed recovery to resting state		Brutal methods lead to extreme withdrawal; panic, terror; pain from injury; bone fractures when fatigued animals misstep; very slow recovery or euthanasia

Video van subway vanuit hondenoogpunt





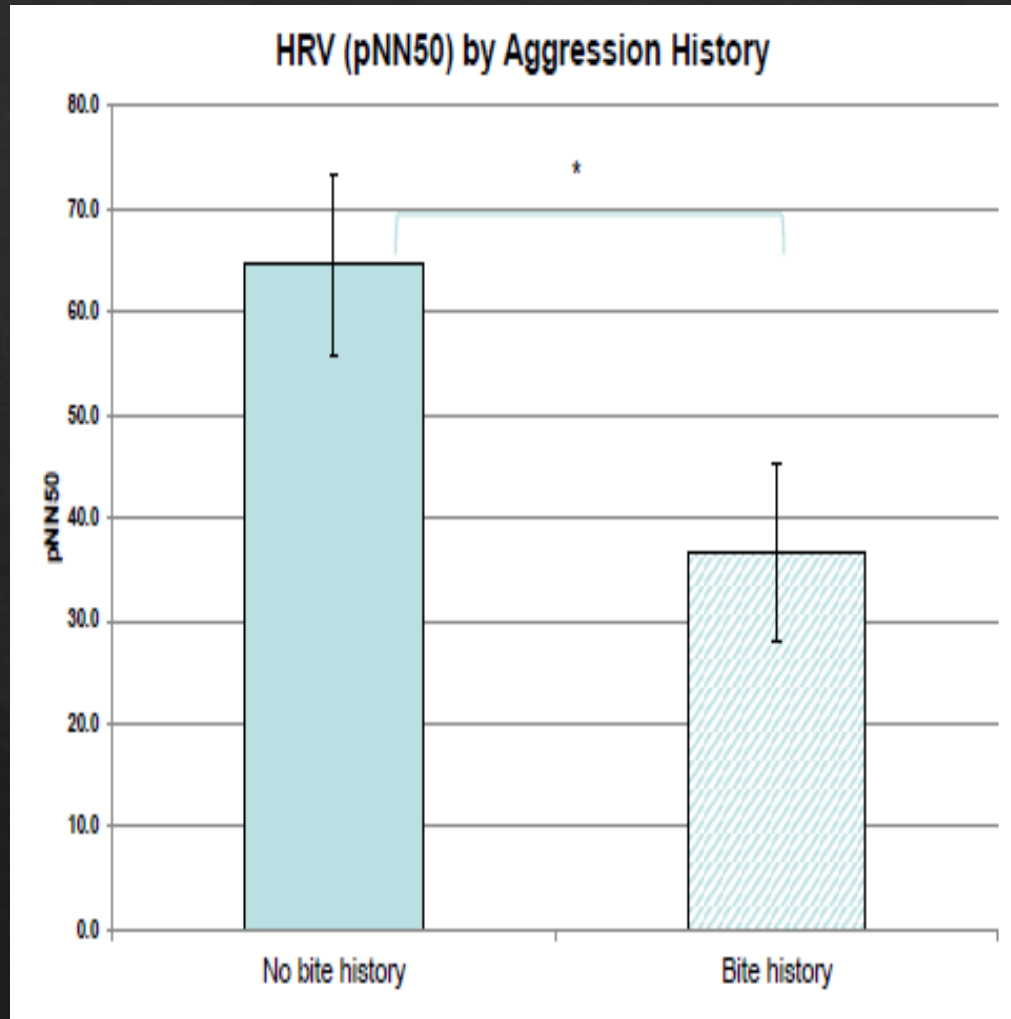
# Heart-rate variability



- HRV is an index of **stress** in both humans and nonhuman animals (von Borrel, 2007)
- 1. **Trait:** The higher baseline HRV, the better one can cope with stress
- 2. **State:** HRV decreases during stressful episodes



# HRV: Baseline



Craig et al. 2015

Sarah Beurms, Heart-rate variability as an index of impulse control in dogs – CLEP-retreat, sept 2016



# Heart-rate variability



Polar® RS800CX HR monitor





# Heart-rate variability



**NN**: Normal to Normal Interval  
= **IBI**: Interbeat Interval  
= **RR**: Segment between two consecutive R waves

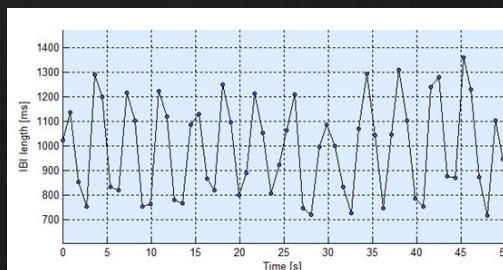
Analyses: thanks to Stefan Sutherland, faculty of computer science, Hochschule Albstadt-Sigmaringen, Germany

## Time domain

**SDNN**: standard deviation of IBI Intervals

**RMSSD**: root mean square of the standard deviation

**pNN50**: the proportion of consecutive IBI's that differ more than 50ms ↙

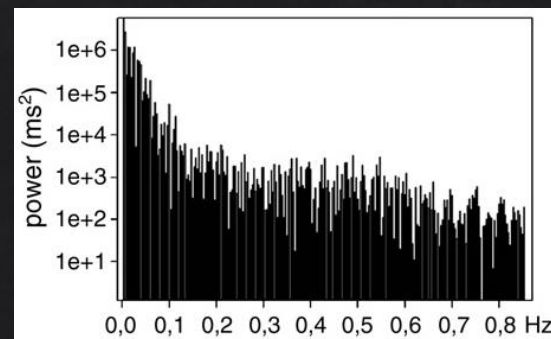


## Frequency domain

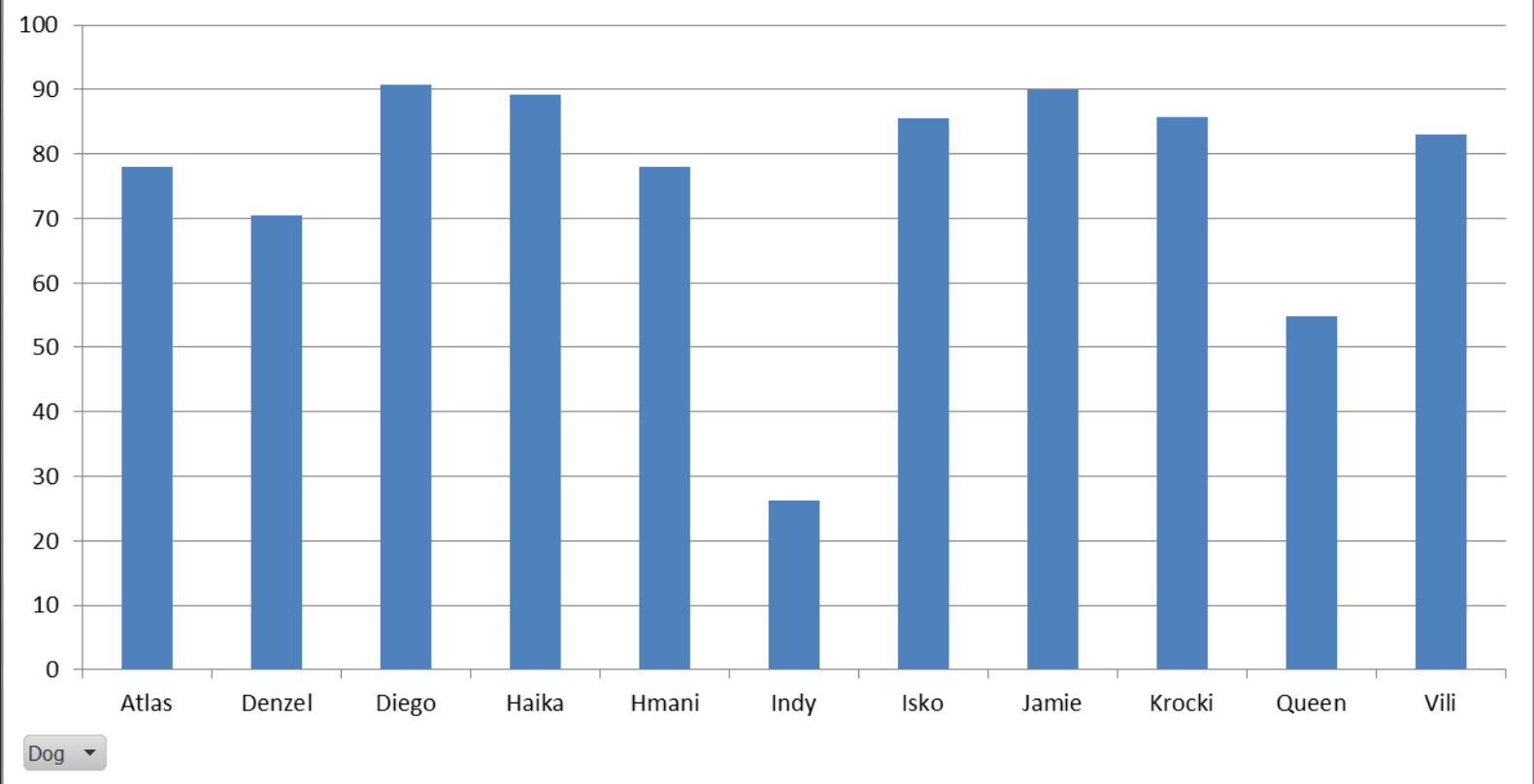
**LF**: low-frequency waves (0,04-0,15Hz in humans)

**HF**: high-frequency waves (0,15-0,4Hz in humans)

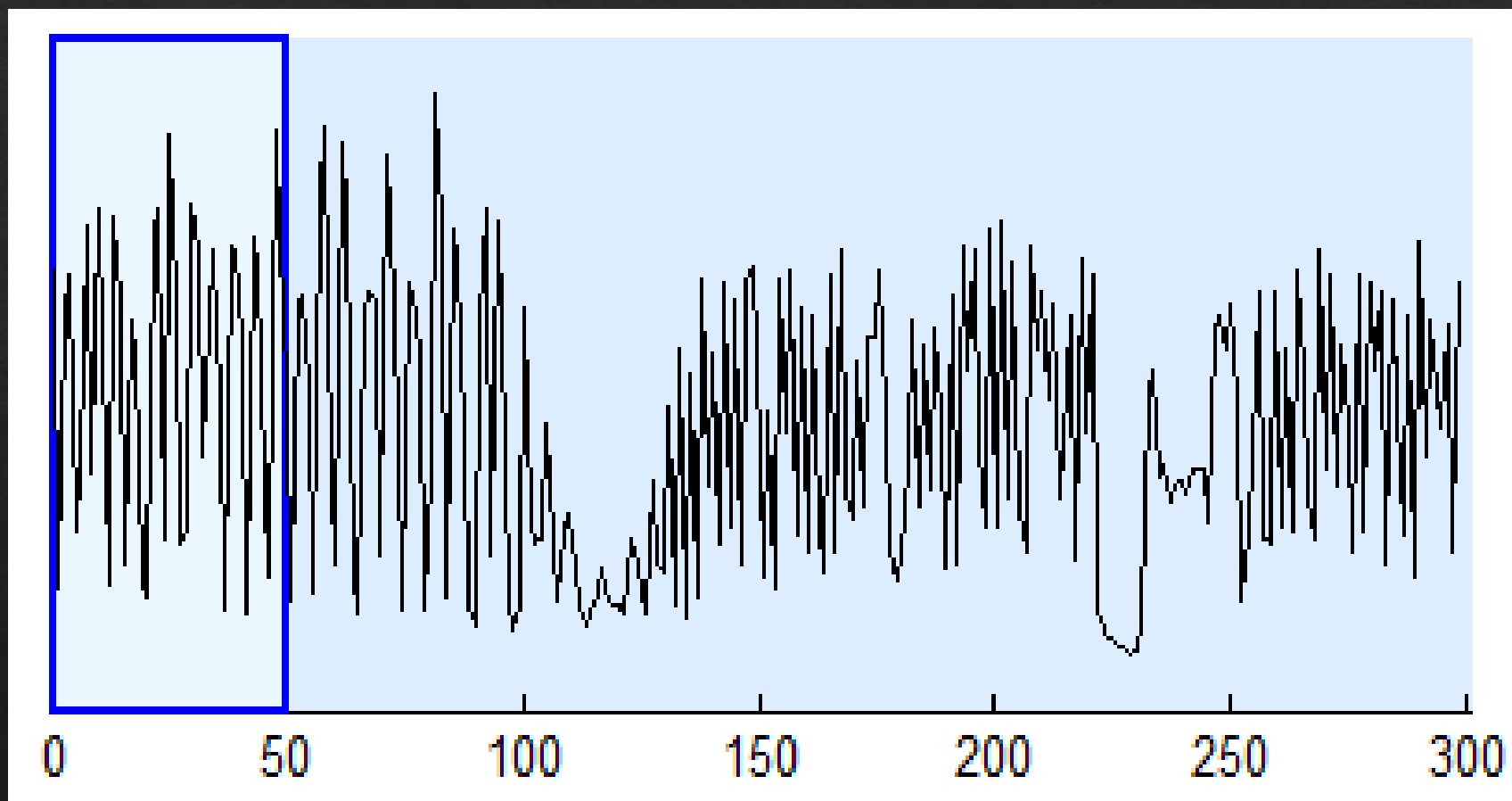
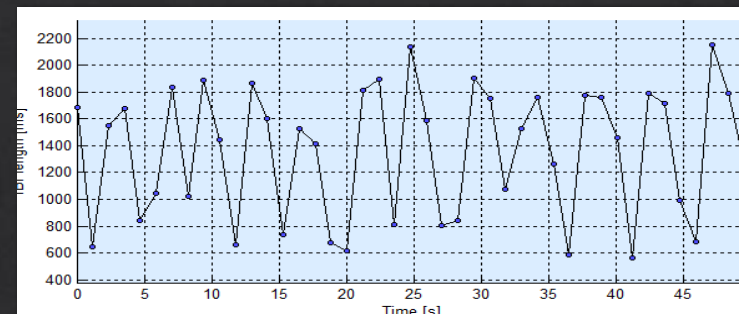
**LF/HF**: ratio



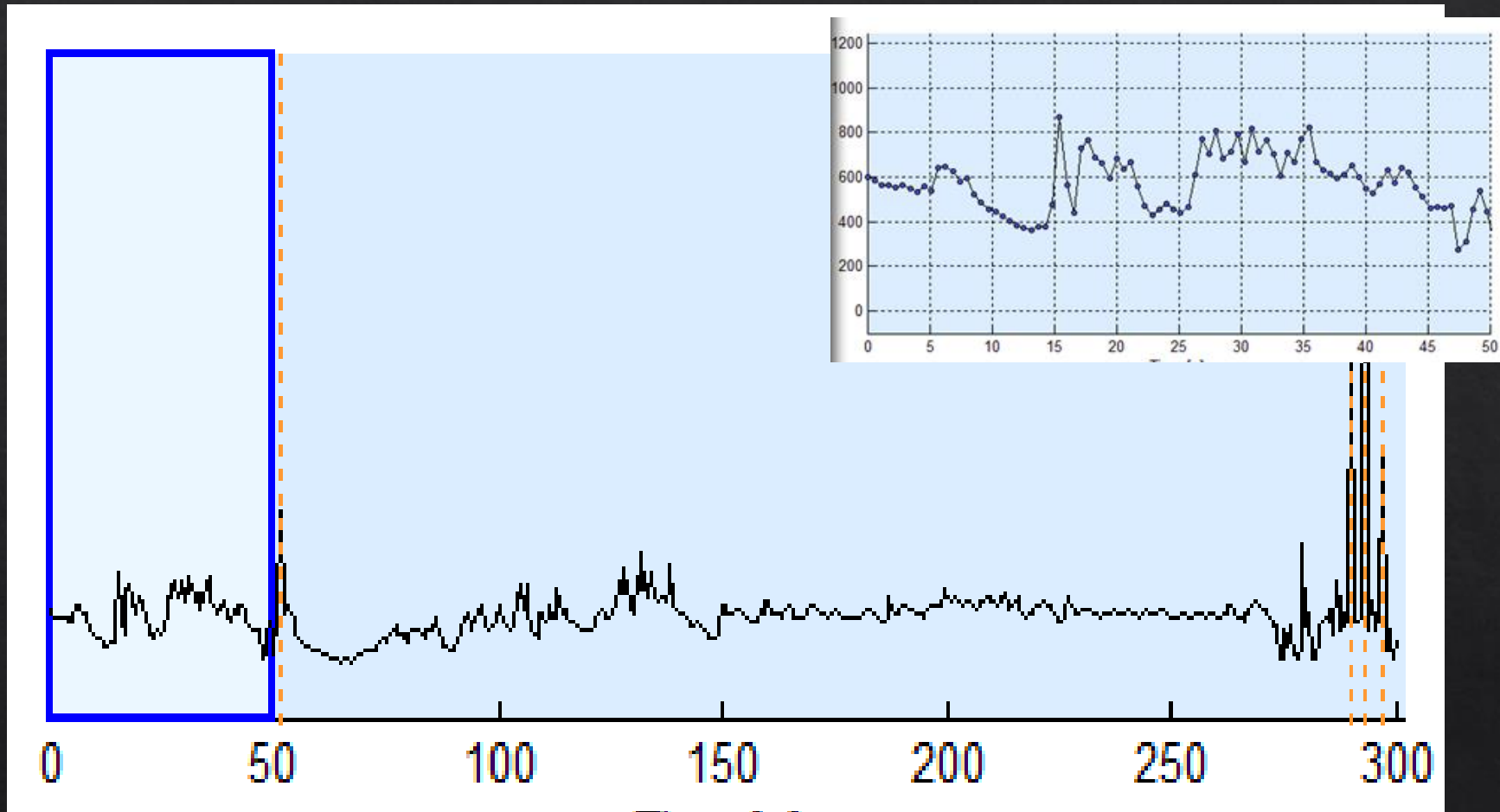
# HRV Baseline



# Haika Baseline



# Indy Baseline



# Experiment : HRV in the subway



20 min.  
Baseline



Metro

v.s.



20 min.  
Recovery



20 min.  
Baseline



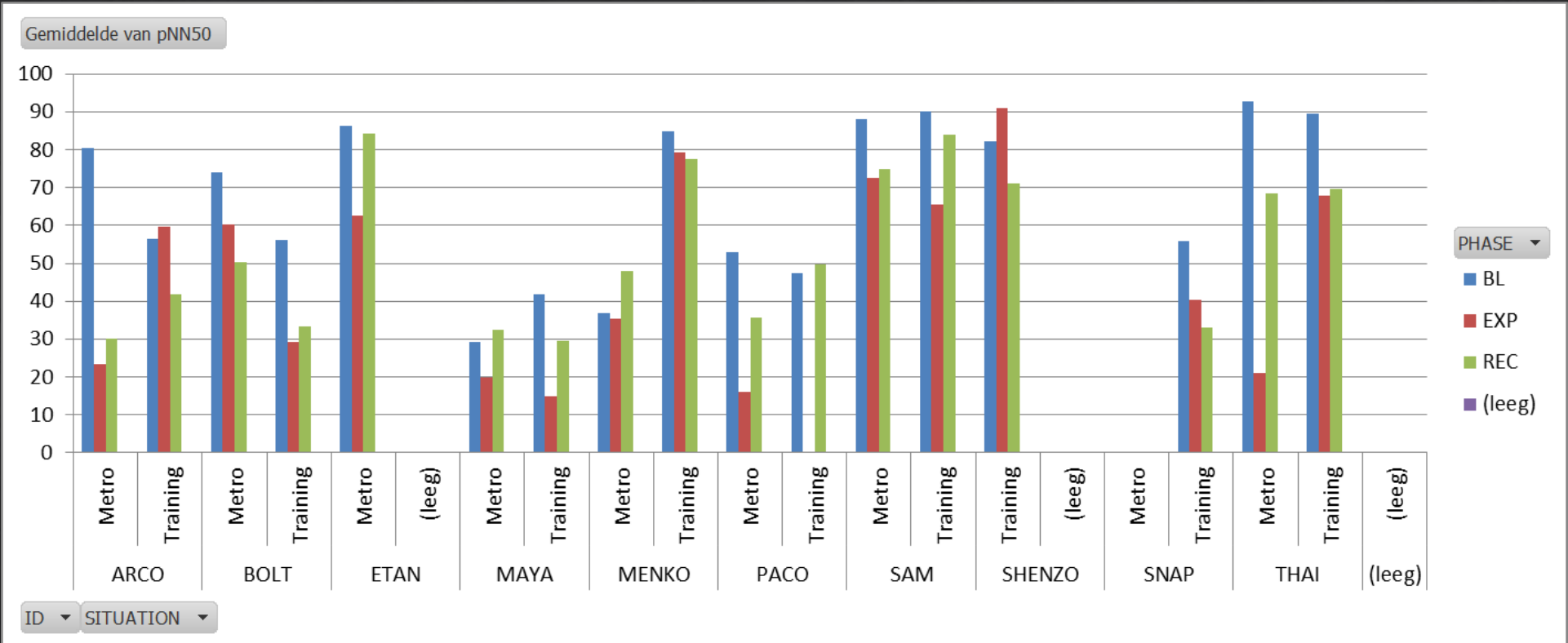
Training location



20 min.  
Recovery

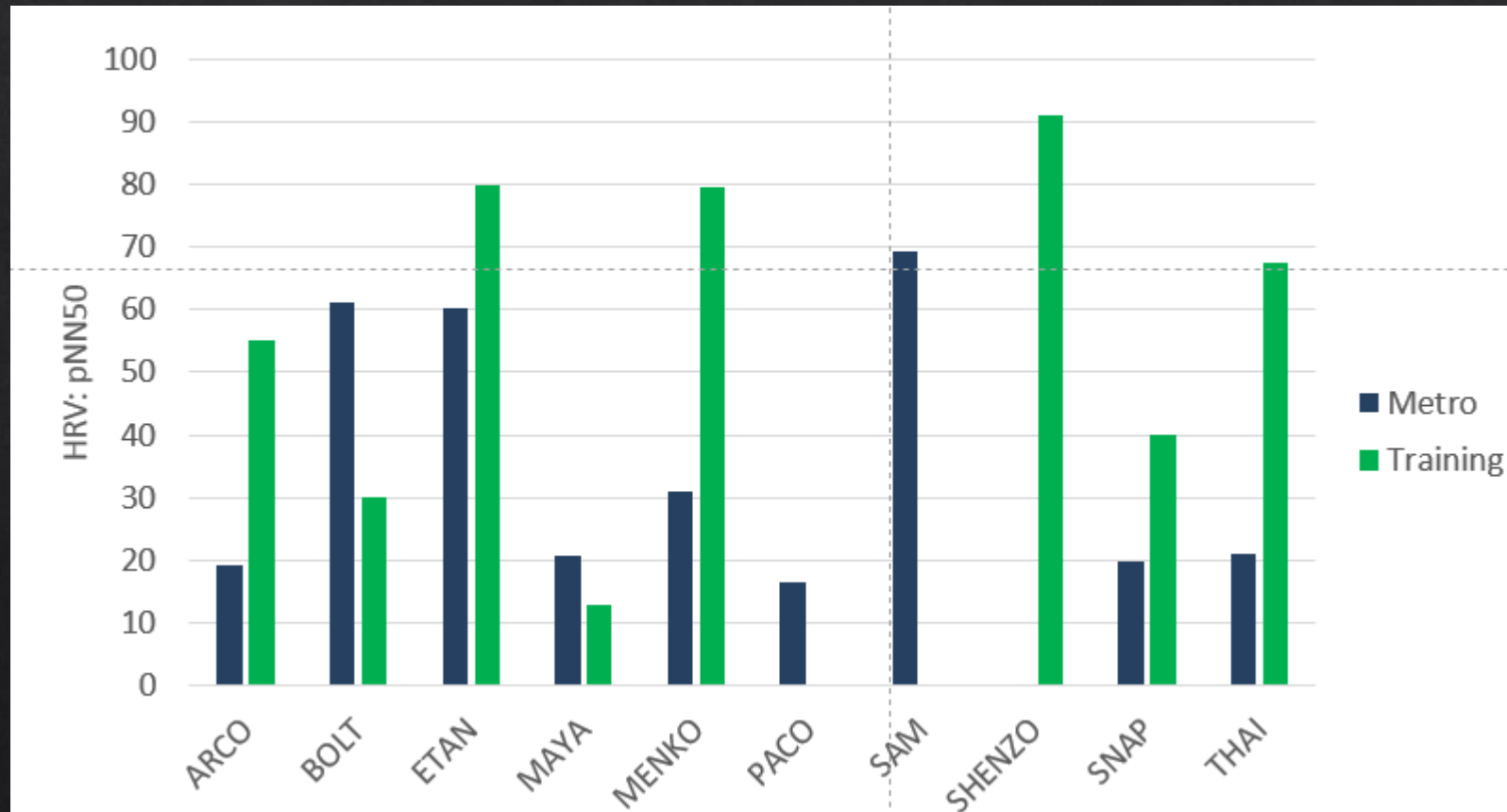


# pNN50

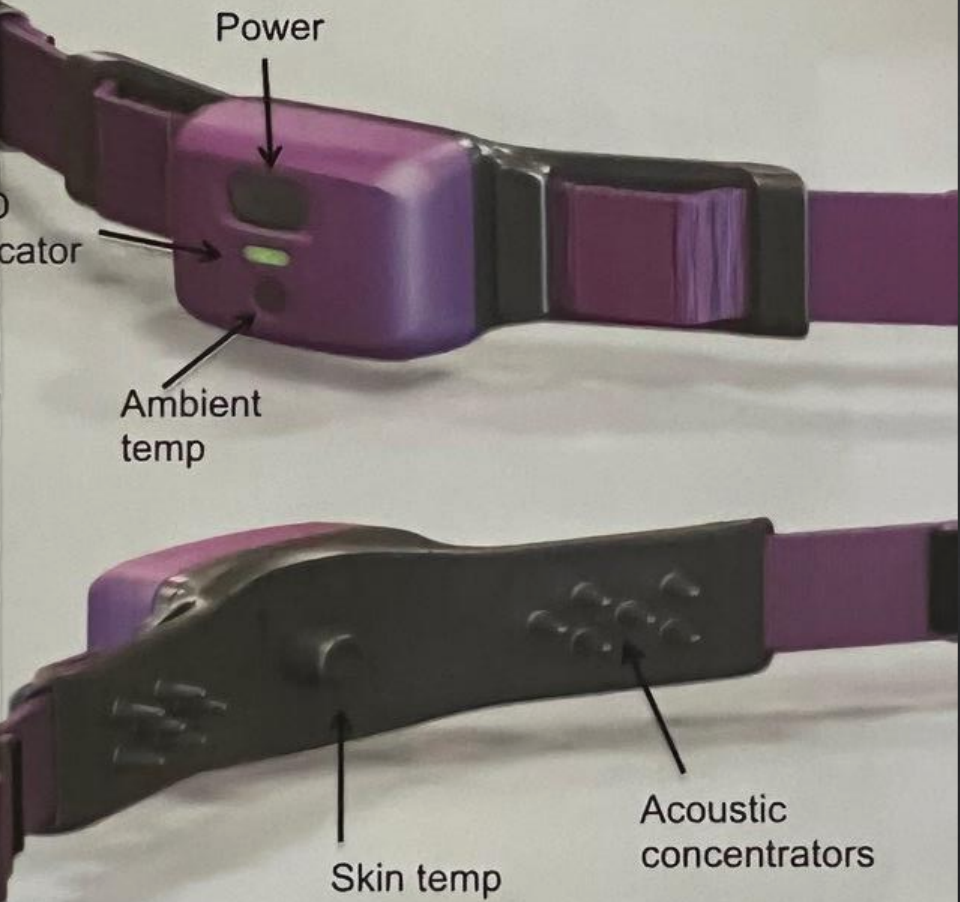


# HRV as a measure of stress

## HRV: Subway (metro) vs. Training



# PetPace Collar



# HRV using Petpace collar

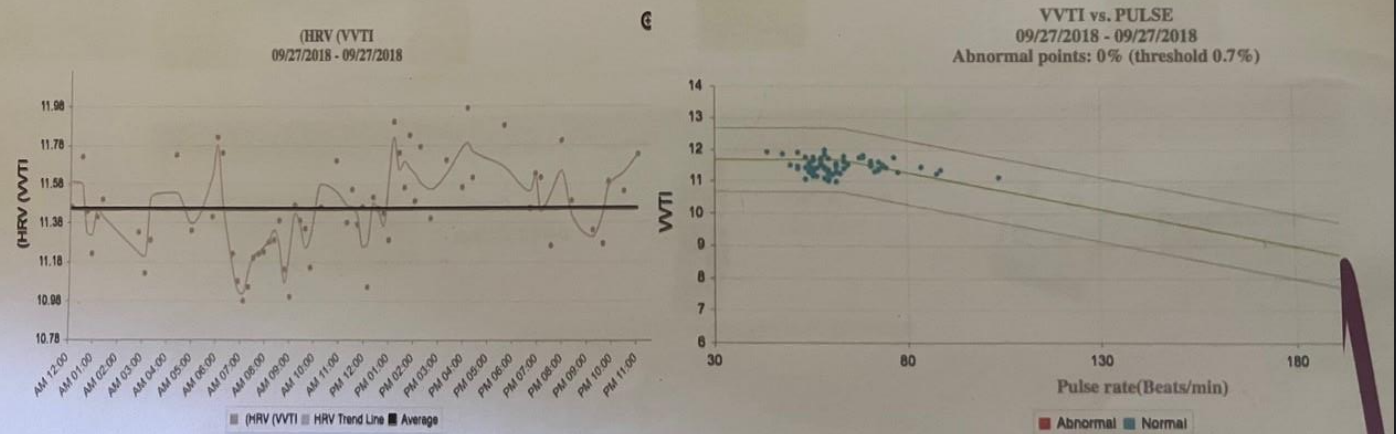


## Product - HRV



Two charts –

- VVTI timeline – changes in VVTI throughout the day
- VVTI vs. Pulse – calculates how many VVTI points were lower than expected in a given pulse rate.



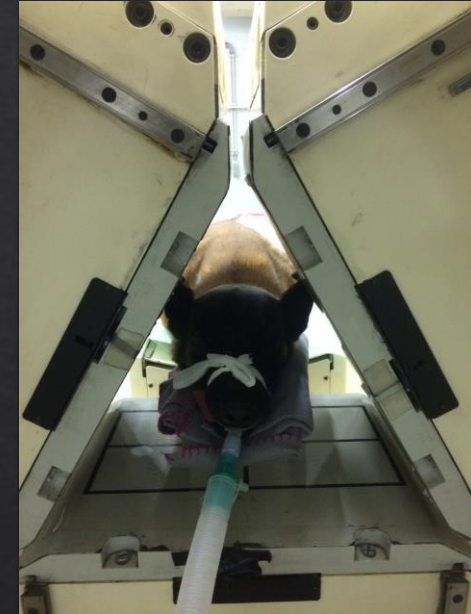
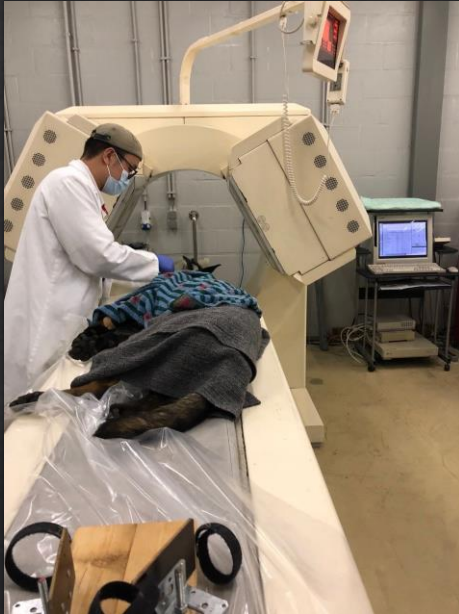


# Brain scans of dogs with stress symptoms



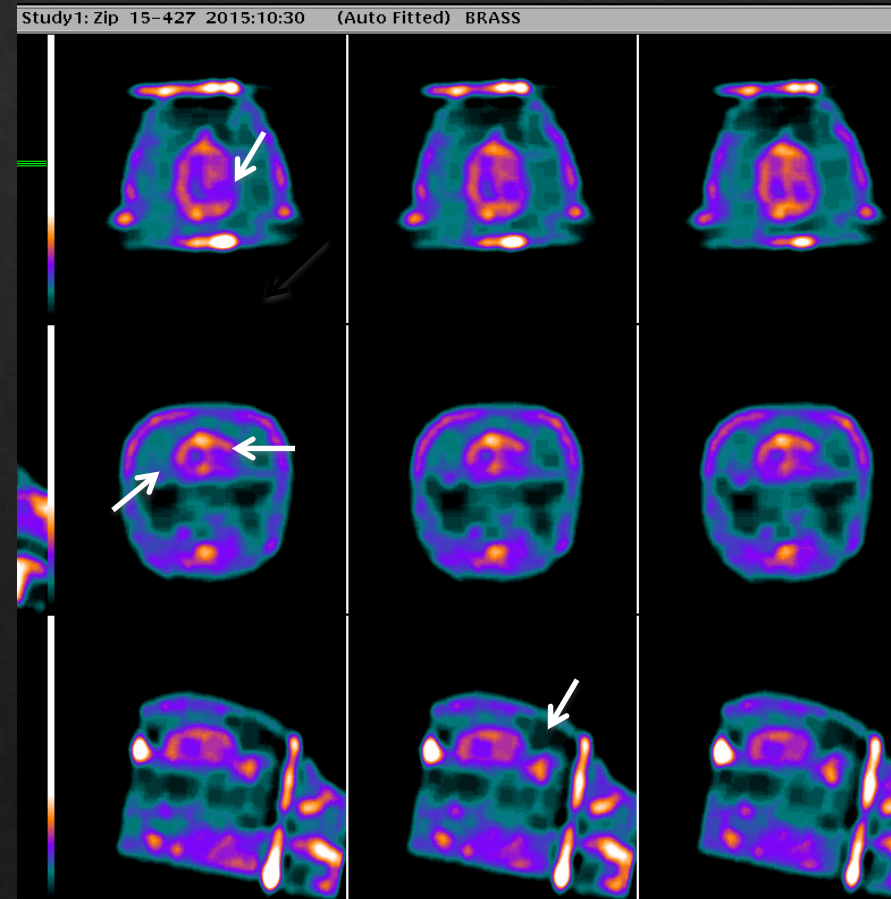
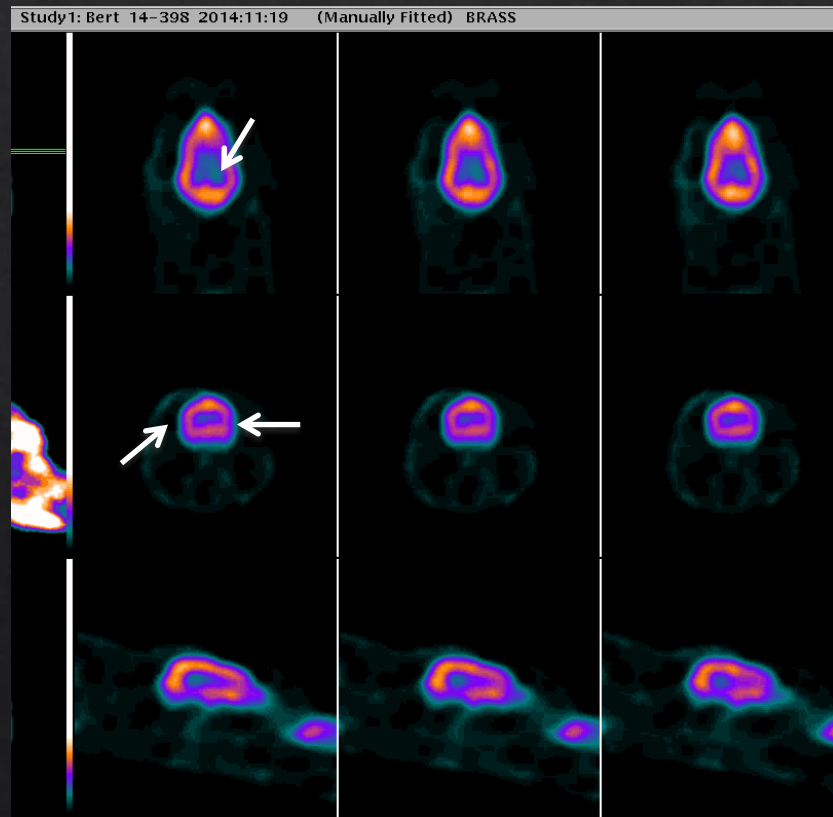
# SPECT brain scans of dogs with stress symptoms

@Prof. Dr.K.Peremans, Department of Medical Imaging, Faculty of Veterinary Medicine, Gent, BE



Based on the use of radioactive tracers – allows an estimation of the number of receptors/transporters present in different brain regions

↓  
SPECT image of brain ZIP



- ◇ Zip
- ◇ Shaba
- ◇ Udo
- ◇ Ranco
- ◇ Wiske
- ◇ Billy
- ◇ Shana
- ◇ .....
- ◇ PTSD?
- ◇ Agoraphobia?
- ◇ Anxiety?
- ◇ Autisme in dogs?

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and Kashmir, India

## Abrar Ul Haq

### Abstract

Animals exhibit analogous behavioural conditions that are equivalent to certain human psychiatric disorders. Canine psychiatry is a growing field at the moment that is focussed on working with our fuzzy companions. The most commonly reported psychiatric disorders in dogs are generalized anxiety disorder, Obsessive compulsive disorder, Separation anxiety disorder and Post traumatic stress disorder (PTSD). The canine behavioural disorders have healthy legitimacy at all explored levels for human psychiatric disorders like generalized anxiety disorder, obsessive-compulsive disorder, impulse control disorders and panic disorders. In addition, natural canine models can assist our understanding of human psychiatric disorders. There are number of drugs used to offset psychiatric disorders in pets like tricyclic antidepressants, selective serotonin reuptake inhibitor, benzodiazepines and atypical antidepressant. Besides medication, behavioural teaching and counselling is done with a final aim to offset the medication.

**Keywords:** canine, behaviour, psychopathology, medicine

### Introduction

Psychiatry is the branch of medicine devoted to the diagnosis, treatment and prevention of mental, emotional and behavioural disorders [1, 2]. There are cornucopias of abnormalities which are affective, behavioural, cognitive and perceptual. Psychiatry treats mental disorders which are conventionally divided into three tiers i.e., mental illness, severe learning disabilities and personality disorders [3]. Animal psychopathology is the study of mental or behavioural disorders in animals. Historically there has been an anthropocentric inclination to employ the study of animal psychopathologies as models for human mental illness [4]. If we talk about the behavioural disorders in animals or pets its very common.

< BACK TO FUN FACTS

## Dogs and Post-Traumatic Stress Disorder

By AKC Staff  
Mar 25, 2013 | 1 Minute

Agoraphobia In Dogs  
May 22, 2019

# Conclusion

- Some dogs experience stress in busy environments
- HRV might be a good way to monitor stress
- SPECT analyses show significant brain deficiencies in the dogs that suffer severely from anxiety stress
- Selection of dogs is very important





## Thanks to

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psychopathology