



Effect of Physical Exam Location on Heart Rate and Outward Manifestation of Signs of Fear, Anxiety, and Stress in Cats

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Abstract

The purpose was to evaluate the relationship between physical exam location and heart rate as an indicator of stress levels of cats. Patients received two physical exams, during which their heart rates were recorded. There was a significant increase in treatment room heart rates when compared to the baseline as well as when compared to exam room heart rates. Ultimately, location plays a role in the heart rate of patients and veterinarians should be aware that the accuracy of heart rates can be compromised based on where physical exams are conducted.

Introduction

- Stress has a significant impact on parameters such as heart rate. It affects every system in the body and prolonged stress can lead to permanent damage.
- Several studies have been conducted to examine the effects of stress and how to best minimize the stress endured during a physical exam.
- The purpose of this study is to determine the effect of location on heart rate as an indication of stress.
- **Hypothesis:** Cats will have an elevated heart rate during their physical exam in the treatment area away from the owner and show more signs of fear, anxiety, and stress (FAS).

Table 1. Percentage of Patients with FAS Signs

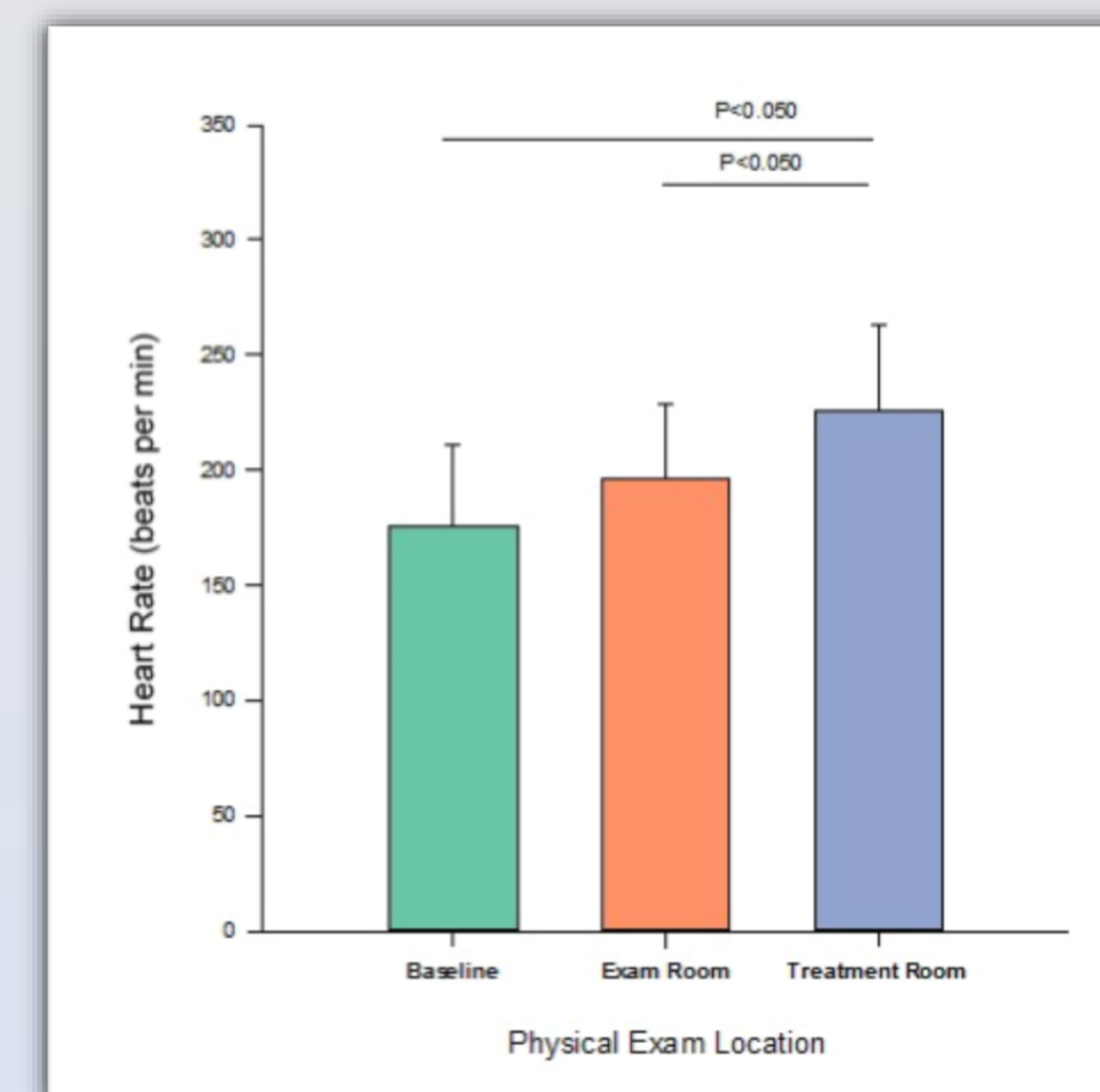
	Ears deviated (out to side, back)	Tail curled around body, thumping	Back arched, crouched body	Vocalization (growling, hissing)	Dilated pupils
Baseline Heart Rate Measurement	19%	76%	81%	5%	95%*
Exam Room Heart Rate Measurement	33%	90%	86%	10%	100%*
Treatment Room Heart Rate Measurement	48%	81%	81%	24%	100%*

Table 1. Percentage of participants that exhibited each sign during each treatment

Methods and Materials

- Participants of our study were identified from the population of patients scheduled for routine wellness visits or dental evaluations.
- The student researchers obtained a baseline heart rate.
- The order of physical exam locations was randomized:
 - 1 = Exam room exam first
 - 2 = Treatment area exam first
- A veterinarian then conducted the physical exam.
- Signs of FAS were recorded during each exam.
- The final physical exam was then conducted in the opposite location of the first exam.

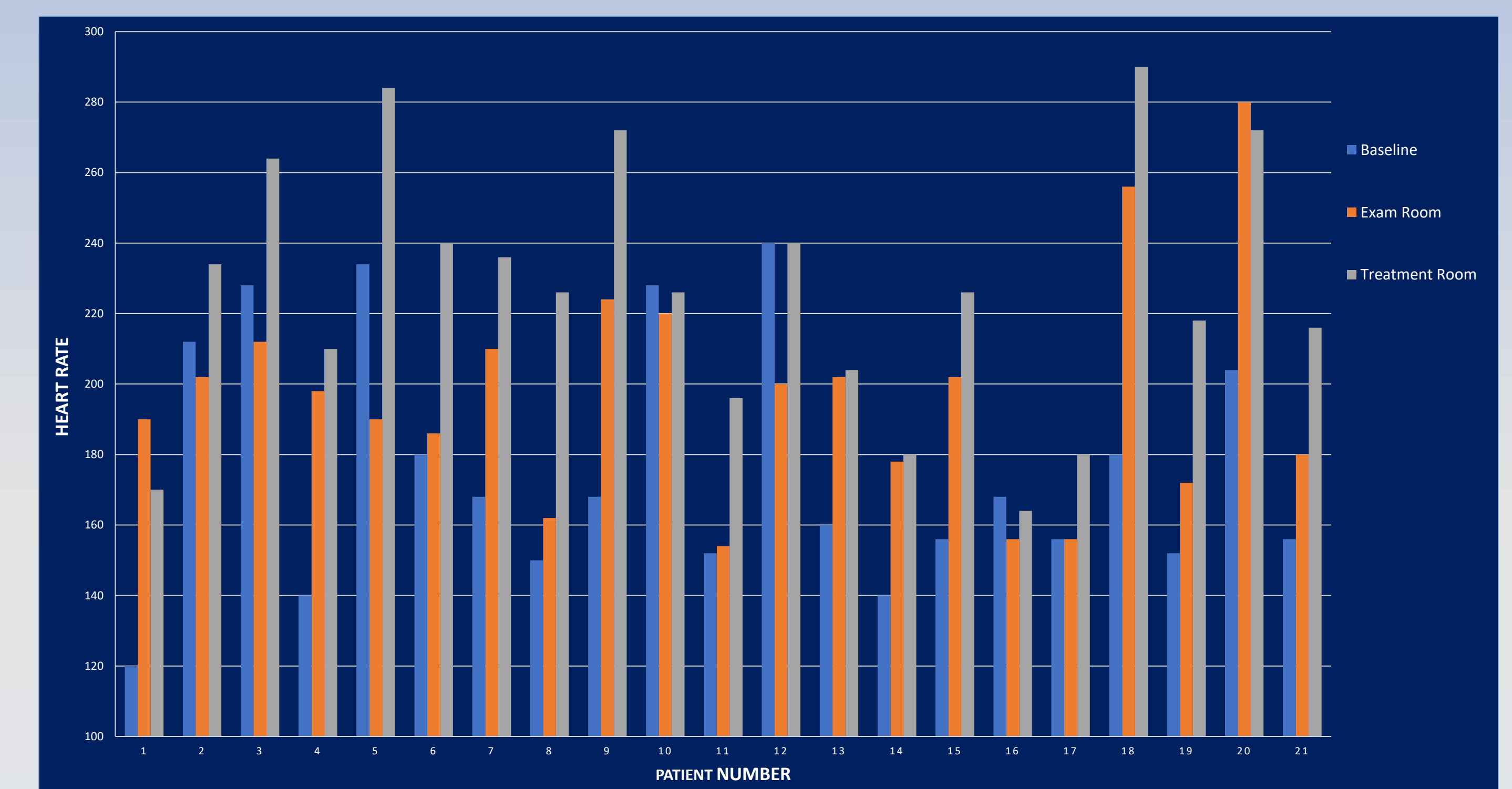
Fig 1. Average Heart Rate for Each Treatment



Results

- Of **21 cats**, the average HR during the baseline reading was **175.8 bpm**, average HR during the exam room reading was **196.7 bpm**, and the average HR during the treatment room reading was **226.1 bpm**.
- There was a significance between the treatment area heart rate and the exam room heart rate, as well as between the treatment area heart rate and the baseline heart rate ($p < 0.05$).
- There was not a significant difference between the exam room heart rates and baseline heart rates.
- When comparing signs of fear, anxiety, and stress to location, there was a significant difference ($p = 0.0031$) with the largest degree of change in ear deviation and vocalization.
- When analyzed for trend, the comparison between baseline and exam room was not significant while the difference between baseline and treatment room was significant ($p = 0.0005$).

Fig 2. Individual Heart Rates for Each Treatment



Discussion

- The higher average heart rate indicates that cats experience more stress when physical exams are conducted in the treatment area.
- Patients are likely to exhibit more signs, specifically ear deviation and vocalization, when examined in the treatment area.
- By conducting physical examinations and procedures in the exam room, within reason, the visit to the veterinarian is likely to be less stressful, not only for the patient, but also for the owner.
- When behavioral assessment is conducted prior to handling, cats that vocalize and display deviated ears are likely to have an elevated heart rate.
- Behavioral assessment prior to examination can assist in putting findings, such as heart rate, into perspective and allow veterinarians to look at the whole picture, therefore avoid potential misdiagnoses.



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