

Activity Monitoring and Quality of Life Assessment of Cats with Degenerative Joint Disease

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Summary

This case-control study compared the activity profiles and quality of life (QoL) of cats with and without owner-reported mobility changes related to degenerative joint disease (DJD). Physical dysfunction and QoL were assessed via owner-completed questionnaires (Feline Musculoskeletal Pain Index (FMPI), VetMetrica), orthopaedic examination, and accelerometry. Case cats had **lower FMPI** and **VetMetrica scores**, as well as **higher Pain scores** compared to Control cats. **Activity monitors** (accelerometers) differentiated Cases from Control cats with a **90.9%** accuracy.

Introduction

- Degenerative joint disease is one of the most common causes of chronic pain in cats, with prevalence estimates as high as 99% in cats of all ages¹.
- Diagnosis of DJD is not straightforward as cats tend to hide signs of pain from owners and veterinary surgeons, however accelerometers can differentiate cats with well-established DJD from healthy cats².

Aims of the study

- Determine whether joint health as evaluated by orthopaedic examination reflected early DJD-related changes in owner-reported mobility,
- Establish whether accelerometers were able to detect early DJD-related changes in owner-reported mobility, and
- Investigate the effect of early DJD on the QoL of affected cats.

Materials and Methods

- Blinded, nested case-control study.
- Exclusion criteria: <6 years old, with unrestricted outdoors access or diagnosed with a condition or on medication that could affect mobility.
- Case/Control status according to owner-reported Mobility Score.
- Mobility and QoL assessed using the FMPI and VetMetrica questionnaires.
- Home visit protocol included an orthopaedic examination, an assessment of body condition score (BCS) and cat temperament, and the placement of an accelerometer on the cat's collar for 2 weeks.



Analyses

- Non-parametric tests used for questionnaire data and data obtained during the visit. Significance set at $p \leq 0.036$ using Bonferroni correction.
- Accelerometer data were randomly divided into training (60%) and testing (40%) datasets, then logistic regression predicted each cat's status.

References:

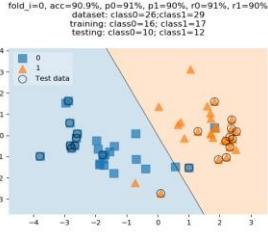
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Results

- 30 Case** and **27 Control** cats were included in the study.
- All cats were neutered, and no significant difference was found between the two groups for their age, sex, breed, BCS or temperament.
- FMPI** scores were **lower** in Case than Control cats ($p = 0.003$).
- VetMetrica** scores were **lower** in Case than Control cats in all domains; vitality ($p = 0.009$), comfort ($p = 0.002$), emotional wellbeing ($p = 0.018$).
- Total **pain** ($p < 0.0001$), **crepitus** ($p = 0.002$) and **thickening** ($p = 0.003$) scores were **higher** in Case than Control cats.
- Case cats were **more likely** to have **bilateral disease** compared to Control cats (OR = 14, $p = 0.005$), and had a **higher number of bilaterally affected joints** ($p = 0.001$).
- Accelerometer data** from 55 cats were included in the analysis.
- Cats were classified correctly with a **90.9%** overall accuracy; a precision of 91% for Controls (p_0) and 90% for Cases (p_1). Accuracy was not improved by the addition of age as a covariate.



Discussion

- Both **FMPI** and **orthopaedic examination** were able to differentiate cats with early owner-reported signs of impaired mobility from healthy cats and can thus be used for the timely diagnosis of DJD.
- The **VetMetrica** questionnaire indicated that cats with early owner-reported signs of impaired mobility have an impaired QoL compared to healthy cats.
- Accelerometry** provided a good reflection of owner-reported mobility changes and may be a useful tool in the future of DJD diagnosis.
- Possible study **limitations** included response, reporting and measurement bias as the study depended on owner-reported data, and omission bias as a result of the exclusion criteria.

Conclusion

- The ability to detect DJD-related changes early would allow veterinary surgeons to adopt a preventative multimodal approach to delay DJD progression and improve the QoL of cats with DJD.