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Cat Tips

Discover Your Cat's Level of Pain With 97% Accuracy

Kitties may be masters at hiding their pain, but now there's a way to beat them at their game. A potential game changer, this new app uses artificial intelligence to read your cat's health and mood to reveal his level of pain, and with surprising accuracy.

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- Cats excel at hiding pain, but a new app — Tably — may make recognizing pain in cats easier
- Tably uses artificial intelligence (AI) to read your cat's health and mood based on facial cues
- Tably uses machine learning and the feline grimace scale (FGS), which interprets pain from feline facial expressions
- Tably is said to be 97% accurate with a high-quality image of your cat, but the context in which the image is taken must be considered
- The app is being geared toward veterinarians and cat guardians to provide insight into cats' pain levels
- Tably could be a useful tool to assess pain levels in cats, but it should represent just one part of the overall pain assessment; if in doubt, visit your integrative veterinarian

Editor's Note: This article is a reprint. It was originally published October 19, 2021.

Cats are masters at hiding pain, making it easy to miss early warning signs of illness. A new app called Tably, developed by animal health technology company Sylvester.ai,[1] may be a game changer, helping veterinarians and pet guardians to more accurately assess whether cats are happy and feeling fine or in distress or pain.

Tably uses artificial intelligence (AI) to read your cat's health and mood based on facial cues. It uses machine learning, a form of AI in which computers can "learn" as they analyze data, identifying patterns across a large number of images.

Tably also relies on the feline grimace scale (FGS), which interprets pain from feline facial expressions.[2] Taken together, the app may allow veterinarians to one day monitor cats recovering from surgery or struggling with chronic conditions, ensuring that their pain signals aren't overlooked.

How Cats' Facial Cues May Reveal Pain

Researchers with the Veterinary Teaching Hospital of the Faculty of Veterinary Medicine, at the University of Montréal conducted a study that took videos of painful and non-painful cats. Cats in pain were given pain relievers, and the images of the painful and pain-free cats were compared. Five facial features were found to be distinctly different, including:

- Ear position

- Orbital tightening
- Muzzle tension
- Whiskers position
- Head position

According to the study, for instance, a cat in no pain will have ears facing forward, while a cat in mild to moderate pain will pull their ears slightly apart. A cat in more severe pain will rotate its ears outward and flatten them. For eyes, a non-painful cat will keep eyes opened, but eyes will become partially opened, progressing to squinting, as pain becomes more severe.[3]

A cat's muzzle also changes with pain, becoming tense and changing from a round shape (no pain) to an elliptical shape with moderate to severe pain. Whiskers tend to be loose and curved in pain-free cats but become slightly curved or straight with mild to moderate pain, and straight and moving forward with more severe pain.

A cat's head may also give away its pain status, sitting above the shoulder line in pain-free cats, aligned with the shoulder line in cats with mild or moderate pain and below the shoulder line or tilted down in cats with severe pain.[4]

Researchers concluded in Scientific Reports in 2019, "The FGS is a valid and reliable tool for acute pain assessment in cats."[5] However, there's still much room for interpretation of these signals, which is where Tably comes in.

Using AI to Gauge Your Cat's Mood

Tably combines the FGS with machine learning, making it a more user-friendly and reliable method for gauging how your cat is feeling. It works by picking up specific points on a cat's face, tabulating them according to FGS and giving a percentage, which represents the machine's confidence level in its results.

"With a high quality and full face front image of the cat, the accuracy is 97% [with adults cats of most breeds], which we are tremendously happy with," Tably's senior product manager, Michelle Priest, told Wired.[6] There are potentially endless uses for such an app, from satisfying an owner's curiosity about how their cat is feeling to becoming part of routine veterinarian follow-up or new veterinarian training.

"It could be used to decide if you should take the cat to the vet or even an end-of-life decision," Priest added. "You might have had a cat for 18 years, but you don't want it to suffer. We also had this one guy say he wanted to find out why his cat was howling at night."[7]

An app, however, should not be used as the sole guidance on whether or not to provide your cat with pain relief, take a trip to the veterinarian or in end-of-life decisions. As Paulo Steagall, lead author of the FGS Scientific Reports study and associate professor of veterinary anesthesia and pain management at the University of Montreal, told Wired, the context in which the image is taken must be considered:[8]

> *"She hears some background noises and she has her eyes partially closed and her ears backwards. So she would get a high score on the grimace scale, saying that you should probably give what we call rescue analgesia, but she was not in pain at all. She was just sleeping and paid attention to the background noise."*

The 25 Signs of Cat Pain

Tably could be a useful tool to assess pain levels in cats, but it should represent just one part of the overall pain assessment. The Feline Musculoskeletal Pain Index (FMPI) is another option, designed for use not only by veterinary staff but also by cat guardians. It involves a questionnaire — found at PainFreeCats.org[9] — that scores the degree to which your cat is suffering from pain due to a chronic musculoskeletal disorder.

A 2016 U.K. study also investigated signs of pain in cats, revealing 25 signs considered to be sufficient to indicate pain. They include:[10]

- Lameness
- Hunched-up posture
- Difficulty jumping
- Shifting of weight
- Abnormal gait
- Licking a particular body region
- Reluctance to move
- Lower head posture
- Reaction to palpation
- Blepharospasm (eyelid contraction)
- Withdrawn or hiding
- Change in form of feeding behavior
- Absence of grooming
- Avoiding bright areas
- Playing less
- Growling
- Appetite decrease
- Groaning
- Overall activity decrease
- Eyes closed
- Less rubbing toward people
- Straining to urinate
- General mood
- Tail flicking
- Temperament

As your cat's guardian, you know her best. If she seems "off" in any way, schedule a visit with your integrative veterinarian to rule out any hidden health conditions and keep your cat feeling her best.

Sources and References

[1] Reuters July 27, 2021

[2] AVMA September 11, 2019

[3,4] Feline Grimace Scale, About

[5] Scientific Reports volume 9, Article number: 19128 (2019)

[6,7,8] Wired June 16, 2021

[9] Pain Free Cats

[10] PLOS One February 24, 2016