

# CATS IN UNDERWATER TREADMILL: LOW STRESS, NO LIMITS

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## Introduction

After neurological and physiotherapy assessment, 4 cats were considered eligible for starting a rehabilitation program to promote the recovery of motor function. The rehabilitation program was established and personalized by the veterinarian physiotherapist for each patient, and it included aquatic therapy using an underwater treadmill (UWT).

The subjects included in the UWT program had to satisfy the following criteria: (1) the presence of complete clinical records, haematochemical tests, physical examination data, neurological status, and absence of behavioural pathologies; (2) history of trauma or diagnosis of neurological disorder, assessed by advanced imaging techniques (magnetic resonance imaging or computed tomography); (3) availability of data regarding the physical rehabilitation protocol (4) owners' reports based on any behaviours related to stress that was observed at home.

Data regarding signalment and type of lesion are reported:

Lepry, DSH, female, spayed, 2 years vertebral subluxation;

Pepe, DSH, male, castrated, 3 years, pelvic fracture;

Kessy, DSH, female, spayed, 9 years spinal cord compression, bulging disc;

Leo, DSH, male, castrated, 1 year, vertebral fracture.

## Key literature

UWT is increasingly used in dogs as an effective treatment in support of surgery and conservative therapy for a range of conditions, such as pre- and postoperative rehabilitation for orthopaedic and neurological conditions, as well as obesity-related problems and treatment of muscle atrophy. In literature, positive effects of UWT therapy are widely reported for dogs (Prankel, 2008). However, UWT therapy is rarely recommended for cats since they are considered fearful and reluctant to be trained using water (Gallucci et al., 2021). Moreover, a precise protocol for cats' UWT therapy has not been elaborated and felines patients are often precluded from the benefits of UWT exercises. However, more accurate observation of cats' stress signals could be a solution in order to obtain better compliance. Our aim was to compare, with important elements of innovation, a new approach to UWT therapy for cats' physical rehabilitation.

## Case management

Briefly the program is explained. Cats were involved in 8 weekly sessions, run over a period of 60 days. Each session was approximately 30 minutes in length, with pauses according to the cats' needs. The first three sessions were the most important to monitor whether the cats were willing to further participate in the UWT therapy. During the sessions, all manipulations followed the "Cat Friendly Clinic" guidelines (minimising stress during handling, examinations and procedures, recognising and minimising fear and anxiety in cats) (Heath, 2020). Pheromones, fraction F3, were diffused in the environment. Moreover, the cat, the respective owner, the veterinarian physiotherapist and the veterinarian with expertise in animal behaviour and welfare were always present throughout all sessions. In accordance with the literature, we considered 4 main variables related to stress (vocalisation, licking the nose/mouth, hiding

attempt, fear posture). In case one of these variables was observed, for more than 5 times in one minute (stress threshold), the session of UWT was stopped.

### **First session**

an exploration of the room and UWT (without water) was allowed and encouraged with food and vocal rewards. Based on previous literature (Uccheddu et al., 2019), explorations were considered successful if the cat (1) accepted food; 2) accepted physical interaction; (3) did not go back to the kennel more than once.

### **Second session**

An exploration of UTW was followed by short interaction with water.

### **Third session**

A short UTW session (5 minutes) was performed.

The UWT was performed according to the rehabilitation treatment plan, only when the stress threshold had not been reached.

After the first three sessions, 3 of 4 cats were able to perform the UWT without any stress signals. Just one cat continued the treadmill rehabilitation plan without water, since stress signals were considered more frequent compared to the threshold.

Already after the first sessions, positive outcome has been recorded by owners at home and by physiotherapist at the Clinic: (1) improvement of proprioception, balance and strength; (2) increase of articular range-of-motion and muscular tone; (3) progressive functional recovery of deambulation.

Moreover, thanks to the multimodal approach, cats started to explore their home environment again and owners reported an improvement in their quality of life.

Even if difficulties in managing feline patients are well-known, an approach that takes care of cats' ethology and well-being is essential to do not exclude a priori cats from UWT therapy. A strict collaboration between veterinarian physiotherapist and veterinarian with expertise in animal behaviour is mandatory to treat cats effectively and safely.

### **References**

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