

## **Forced Swim Test (Porsalt Swim Test)**

The Veterinary Consortium for Research Animal Care and Welfare (VCRACW or the Consortium) is a new group composed of representative veterinarians from the American College of Laboratory Animal Medicine (ACLAM), the American Society of Laboratory Animal Practitioners (ASLAP), the American Association for Laboratory Science (AALAS) and the Association of Primate Veterinarians (APV). The goal of the newly formed VCRACW is to provide accurate information on the care and use of research animals to inform the public, lawmakers, and the scientific community about the veterinary care and welfare of these animals. The Porsalt Swim Test or Forced Swim Test is herein described on behalf of the Consortium.

Institutions that conduct research involving animals must have in place a committee called the Institutional Animal Care and Use Committee (IACUC). This committee's job is to review and approve proposed research studies to assure that they are done according to government regulations and policies. There is always at least one veterinarian serving on this committee. Veterinarians are closely involved in helping to design and provide oversight of research studies that utilize animals. The veterinarian provides input and knowledge based on the anatomy, physiology, nutrition and behavior of each species. The veterinarian on this committee and others that work in research institutions ensure that when animals are involved in research projects, they are treated humanely.

One test that involves input from the veterinarian in both the design and performance is the Porsalt Swim Test. It is the most commonly used test to study "depressive-like" states and behavioral anxiety in animal models and is used to test the effect of anti-depressant drugs taken by humans. This test is based on the assumption that a mouse or rat will try to escape a stressful stimulus. If they cannot escape, they eventually will give up and stop swimming. However, when the animal is given an antidepressant, they do not give up.

Rodents are naturally strong swimmers. In this test, rodents are placed in a container that is partially filled with water. The water must be deep enough to prevent the animal from touching the bottom of the container with their tail and tall enough to prevent escape. The water is kept at a temperature that is comfortable for the rodents and they are acclimated to the room and tank prior to testing. The animals are constantly monitored, and the amount of time spent immobile or floating is recorded during a testing session that lasts several minutes. Any animal that fails to swim or is unable to keep its head above water is removed immediately. Sudden loud noises could startle the animals, so if it is not possible to maintain a quiet environment, white noise generators are often provided. Upon completion of the test, animals are removed from the container, allowed to self-groom or gently dried and placed back into their home cage on top of a heat source. In the design and conduct of this test, veterinarians are consulted to determine many aspects of the test, including the ideal depth of the water, temperature of the water and how to help ensure the animals recover well following the procedure. If you are interested in learning more about this test and seeing how it works, click [here](#).

If an animal stops swimming and floats on the surface of the water, this is considered a measure of depression because the animal appears to have given up. Animals may learn quickly that if they stop swimming, they will be removed from the tank, making it difficult to assess their level of depression. While administration of antidepressants in rodents shows immediate results in this model, in human medicine, patients must be treated for several weeks before experiencing relief from their symptoms. This test is just one example of how researchers and veterinarians work together to find ways to treat and cure depression disorders for millions of people around the world.

## References:

Can, Adem et al. "The mouse forced swim test." *Journal of visualized experiments : JoVE* ,59 e3638. 29 Jan. 2012, doi:10.3791/3638

Hascoët M, Bourin M. In Mood and Anxiety Related Phenotypes in Mice. 2009;42:85–118

National Research Council. 2003. *Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research*. Washington, DC: The National Academies Press.

<https://doi.org/10.17226/10732>

Slattery, D., Cryan, J. Using the rat forced swim test to assess antidepressant-like activity in rodents. *Nat Protoc* **7**, 1009–1014 (2012). <https://doi.org/10.1038/nprot.2012.044>