Guidelines for Prolonged Restraint of Research Animals

The University of Texas at Austin Institutional Animal Care and Use Committee

These guidelines have been written to assist faculty, staff, and students in performing vertebrate animal procedures in a humane manner and complying with pertinent regulatory requirements. Under some circumstances deviations from these procedures may be indicated but such variances must be approved in advance by the IACUC.

Prolonged restraint of conscious animals can be stressful and has the potential to cause harm the animal. The UT IACUC acknowledges that physical restraint of awake, unanesthetized animals may be necessary to accomplish the scientific goals of some studies. The IACUC has adopted the following guidelines to outline the minimally acceptable standards for physical restraint of laboratory animal species for experimental purposes.

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Section A – Definitions

Physical Restraint: The IACUC defines physical restraint as defined in *The Guide* as: "the use of manual or mechanical means to limit some or all of an animal's normal movement for the purpose of examination, collection of samples, drug administration, therapy, or experimental manipulation". Personnel safety may also necessitate restraint of an animal.

Momentary Restraint: Manual restraint (or restraint in a species-appropriate device) of an animal for a few moments to collect blood or perform an injection. Momentary restraint also includes the use of sedation or anesthesia to limit animal movements during imaging procedures, as well as transporting animals from one location to another in species appropriate carriers.

Prolonged restraint: The UT IACUC defines prolonged restraint as (1) a period of 30 minutes or longer for unanesthetized animals in a natural body position or (2) a period of 10 minutes or longer in an unnatural body position.

Natural position: a position in which an animal would normally engage (e.g. any normal postural position for that species).

Unnatural position: a position in which a healthy animal of that species would not typically engage.
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Section B – Guidelines for the use of prolonged restraint and protocol considerations

- All restraint utilized in the course of the study should be described in the IACUC protocol, though momentary restraint, as defined above, does not require the detailed protocol considerations described herein.

- Prolonged restraint should be avoided unless it is essential for achieving research objectives that are impossible or impractical to accomplish by other means. Restraint devices must not be used as normal housing, or simply as a convenience in handling or managing animals (2,3,4).

- When necessary, the use of prolonged restraint must be scientifically justified, and must be approved by the IACUC. The duration of restraint should be the minimum necessary to accomplish the research objectives (3,5).

- The purpose of the restraint, the duration of restraint, and a plan for routine monitoring during the restraint must be included in IACUC protocol.

- A description of the restraint device should be included in the IACUC protocol. Restraint devices must be suitable in size, design, and operation to minimize discomfort or injury to the animal. Less restrictive systems that do not limit an animal's ability to make normal postural adjustments should be used if compatible with research or teaching objectives. A picture of the device may be helpful for review of the protocol, and can be uploaded in the attachments section of the protocol for reference.

- Animals placed in restraint devices should be acclimated and given training to adapt to the equipment and personnel. The specific acclimation process should be described in the protocol. When possible, acclimation and placement in restraint devices should be combined with positive reinforcement (2,3,5).

- Criteria for temporary or permanent removal from the study should animals fail to adapt to the restraint should also be included (2,3,5).

- Frequent monitoring (ideally continuous) of animals subjected to prolonged restraint is required unless the investigator can justify why this would not be compatible with the research. The frequency and method of monitoring must be described in the animal use protocol (9,10).

- The clinical signs of pain and/or distress that will be monitored (and the amount of time that will be allowed to elapse before intervention if distress develops) should be described in the protocol.

- Veterinary care must be provided if lesions or illnesses associated with restraint are observed. The presence of lesions, illness, or severe behavioral change often necessitates temporary or permanent removal of the animal from restraint.

- Consideration of alternatives for the restraint device should be described in the IACUC protocol. The search for alternatives must include the phrase "prolonged restraint" or similar terms (3, 5).

- Prolonged physical restraint of non-acclimated animals must be described in the protocol, and can only be approved by the IACUC if it is required to achieve scientific objectives (e.g., to induce stress); and will warrant classification as pain category "E" (6,7,8).

- Personnel using restraint procedures must be trained on the specific equipment, procedures, duration, and monitoring. This training should be documented in the lab personnel training records (available on the IACUC website) (4,9).

Section H – References

1. U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research and Training (IRAC, 1985).
2. Public Health Service (PHS) Policy on Humane Care and Use of Laboratory Animals (2015).
3. Guide for the Care and Use of Laboratory Animals, 8th Edition (2011).
4. Animal Welfare Regulations, AWR 2.31 (d)(1)(i,ii,iii,iv) and APHIS/AC Policy 11.
5. Animal Welfare Regulations, AWR 2.32.
6. A chair for the chronic study of the pregnant baboon, Journal of Medical Primatology, Fleischman and Chez (1974).
7. Physiologic measures of nonhuman primates during physical restraint and chemical immobilization., Journal of the American Veterinary Medical Association, Bush et al., (1977)
8. Stress response of rats to handling and experimental procedures., Laboratory Animal, Gartner et al., (1980).
9. Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research. National Research Council (US) Committee on Guidelines for the Use of Animals in Neuroscience and Behavioral Research (2003).
10. Discriminative stimulus effects of the novel anxiolytic buspirone, Behavioral Pharmacology, Ator, (1991).

Portions of these guidelines adapted from:

1. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.cmich.edu/docs/default-source/academic-affairs-division/research-and-graduate-studies/office-of-research-compliance/iacuc/iacuc-policies/20191017-iacuc-policy-on-physical-restraint-and-prolonged-restraint604e4968-1a47-4461-8ce2-9a081192c5ac.pdf?sfvrsn=70bac42a_7
2. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.jmu.edu/researchintegrity/iacuc/guidelines/prolonged-restraint.pdf
3. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://animal.research.wvu.edu/files/d/6c8c7045-9052-4546-baf6-abf0432c67c2/prolonged-restraint-of-animals.pdf

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