



# Johns Hopkins University Animal Care and Use Committee

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## Guidelines on Restraining Animals<sup>1</sup>

### Physical restraint

Physical restraint is the use of manual or mechanical means to limit some or all of an animal's movements for the purpose of examination, collection of samples, drug administration, therapy or experimental manipulation.<sup>2</sup> Animals are restrained for brief periods, usually minutes, in most research applications.

Physical restraint may cause distress and/or pain, if, not carried out properly or, if, animals are not habituated to a restraint procedure. The period of restraint should be the minimum required to accomplish the objective. Species-specific methods of restraint should always be used.

Frequent handling or desensitization of an animal to particular forms of restraint reduces the level of discomfort or distress. Routine restraint usually does not require detailed description in the animal protocol form. Restraint devices must not be used simply as a convenience in handling or managing animals.

### Short-term Restraint

Short-term physical restraint of a conscious animal involves manual restraint, animal confinement or placement in a standard restraining device for less than 30 minutes, wherein the device is appropriate for the species and the animal is in a natural body position, or less than 10 minutes in an unnatural or atypical body position, including fixation a body part. The procedure is for the purposes of sample collection, substance administration, presentation of stimuli, conduct of procedures, including animal physical evaluation.

### Prolonged restraint

Prolonged physical restraint is defined as restraint of a conscious animal for 30 minutes or longer in a natural body position, or 10 minutes or longer in an unnatural or atypical body position, including fixation a body part when the animal is not able to voluntarily free itself or its body part (e.g., head). Prolonged restraint must be scientifically justified, and must be approved by the JHU ACUC. The type and maximal duration of restraint must also be stated within the protocol. When prolonged physical restraint is required, animals should be desensitized to the restraint equipment by a gradual process, such as increasing the time of restraint on each occasion, and ideally via the use of positive reinforcement training following a shaping plan. A description of the desensitization or training regime should be included in the protocol, as well as a plan for monitoring the animal while restrained.

## General Considerations

Habituating animals to the restraint process can significantly reduce human and animal stress and the likelihood for injury or accidents to occur, both to animals and personnel. Given that, the use of a training or habituation plan is always recommended. When it is not possible to acclimate an animal to cooperate to physical restraint because of time or other constraints, chemical methods of restraint may need to be considered. The following are considerations when determining the most appropriate restraint equipment or method to use:

1. Time required for animal habituation and training to restraint method
2. Potential impact on the research;
3. Frequency of handling required and total number of restraint events;
4. Type of equipment required/available;
5. Duration of restraint;
6. Species-specific behavioral and postural differences; and
7. Other considerations (e.g., pregnancy, animals with pre-existing conditions, animals with jackets or implants).

## Guidelines for Restraint

- Restraint devices should be suitable in size, design, and operation to minimize discomfort, pain, distress, and the potential for injury to the animal and the research staff.<sup>2</sup> Restraint devices are not to be considered normal methods of housing.
- Frequent handling or desensitization of an animal to particular forms of restraint reduces the level of discomfort or distress and must be considered. Ideally, a shaping plan that uses positive reinforcement, should be developed to fully acclimate the animal to the restraint process.<sup>2,3</sup>
- Prolonged restraint should be avoided unless it is essential for achieving the research objectives that are impossible or impractical to accomplish by other means, or to prevent injury to animals or personnel.
- The search for alternatives must include the phrase “prolonged restraint” or similar terms.
- The period of restraint must be the **minimum** required to accomplish the project objectives, and when possible, animals placed in restraint devices should be offered positive reinforcements to acclimate to restraint equipment and related personnel in advance of experimentation (i.e., counter conditioning).
- Provisions must be made for monitoring the animal at appropriate intervals.
- Attention must be given to the possible development of lesions or illnesses associated with the restraint including contusions, decubital ulcers, dependent edema, and weight loss. If these or other problems occur, prompt veterinary care must be provided. This may require temporary or permanent removal of the animal from the restraint device depending upon advice of the attending veterinarian.
- Evidence of distress or behavioral change must be reported to the veterinarians and behavioral management team. Animals that do not adapt to necessary restraint systems should be removed from the study.
- Personnel using restraint procedures must be trained on the specific equipment, procedures, duration, and monitoring. The purpose of the restraint and its duration should be clearly explained to personnel involved in the study.
- Less restrictive systems that do not limit an animal’s ability to make normal postural adjustments, such as tether systems for nonhuman primates and stanchions for farm animals, should be used when compatible with protocol or teaching objectives.<sup>4</sup>

- Nonhuman primates must not be maintained in restraint devices unless required for health reasons, as determined by the attending veterinarian, or by a research proposal approved by the JHU ACUC at research facilities. Maintenance under such restraint must be for the shortest period possible. In instances where long-term (more than 12 hours) restraint is required, the nonhuman primate must be provided the opportunity daily for unrestrained activity for at least one continuous hour during the period of restraint, unless continuous restraint is required by the research proposal approved by the Animal Care and Use Committee at research facilities.<sup>5</sup> For the comfort and safety of the animal, certain kinds of restraint equipment such as jackets or harnessing devices<sup>6</sup> animals should be periodically monitored. Animals in chairs and slings require closer monitoring than those restrained by tethering jackets or harnesses.

**References:**

<sup>1</sup>Approved by the Animal Care and Use Committee: September 19, 2002; reviewed September 25, 2012, January 31, 2018, 1/20/15, 1/10/18, 1/5/21; March 2024.

<sup>2</sup>Guide for the Care and Use of Laboratory Animals. NRC. National Academy Press, 2011. p29.

<sup>3</sup>Association of Primate Veterinarians guidelines for nonhuman primate restraint. 2019. Journal of the American Association for Laboratory Animal Science. 58(3):282-284.

<sup>4</sup>Methods and Animal Welfare Considerations in Behavioral Research with Animals: Report of a National Institutes of Health Workshop. Morrison, AR, Evans, HL, Ator, NA, Nakamura, RK (eds.) 1996. NIH Publication No 02- 5083. Chapter 5.

<sup>5</sup>9 CFR Chapter 1 Subchapter A Part 3 § 3.81 (d).

<sup>6</sup>Methods and Animal Welfare Considerations in Behavioral Research with Animals: Report of a National Institutes of Health Workshop. Morrison, AR, Evans, HL, Ator, NA, Nakamura, RK (eds.) 1996. NIH Publication No 02- 5083. Chapter 5.