



IACUC Guidance:	TAMU-G-051	Title:	Guidelines on the Use of Physical Restraint
	Location	Effective Date	Review By
	College Station/Dallas/Galveston/Kingsville	12/01/2022	11/30/2025
	Houston	01/01/2023	11/30/2025

1. PURPOSE

- 1.1. To identify the requirements regarding conscious, unanesthetized physical restraint in animals used for research, teaching or testing activities at Texas A&M University.

2. SCOPE

- 2.1. This Guidance applies to the conduct of research, teaching or testing activities involving animal use as defined in TAMU Rule 15.99.07.M1.

3. RESPONSIBILITY

- 3.1. The **PI** is responsible for:
 - 3.1.1. Avoiding prolonged restraint unless it is essential for achieving scientific or learning objectives and is specifically approved by the IACUC.
 - 3.1.2. Describing prolonged restraint in the animal use protocol. This includes acclimation procedures, as well as monitoring and removal criteria for animals that do not acclimate.
 - 3.1.3. Ensuring that restraint devices are suitable in size, design, and operation to minimize discomfort, pain, distress, and the potential for injury to the animal as well as the research staff.
 - 3.1.4. Performance of routine inspection and maintenance of equipment as needed to avoid injury to animals and users.
 - 3.1.5. Performance of sanitation as described in TAMU-G-026.
 - 3.1.6. Clearly explaining to personnel involved with the study, the purpose of the restraint and its duration.
 - 3.1.7. Training personnel, and documenting training, on the use of hydraulically operated restraint devices where applicable as described in TAMU-G-029.
- 3.2. **Director/Manager of Core Support Units** are responsible for routine inspection of equipment belonging to the unit, including restraint devices, and having a program of regular maintenance and sanitation based on use.
- 3.3. The **IACUC** is responsible for reviewing and approving animal use protocols describing prolonged restraint, including the description of the conditioning regimen and monitoring of the restraint.

4. DEFINITIONS AND/OR ACRONYMS

- 4.1. **AV:** Attending Veterinarian. Individual designated by Texas A&M University to fulfil the regulatory role of AV. May also describe veterinary staff who report directly to, and have delegated authority from, the AV.
- 4.2. **Core Support:** Individuals performing professional activities such as husbandry or technical services as a function of a dedicated service organization.
- 4.3. **Director/Manager of Core Support Unit:** Faculty or staff member that has direct responsibility for an animal facility and serves as the point-of-contact for the AV and the IACUC in matters related to animal facility management, animal health concerns, and compliance with animal care and use protocols.
- 4.4. **Electrical Immobilization:** The use of electrical current to restrain an animal by inducing tetanic contraction of skeletal muscles preventing voluntary movement. **Note:** Electrical immobilization is a completely different technology from, and not to be confused with, electric prods or electrical stunning equipment that is used to induce instantaneous unconsciousness before slaughter.
- 4.5. **IACUC:** Institutional Animal Care and Use Committee. Institutional body responsible for ensuring adherence to federal regulation and institutional policy relating to the care and use of animals in teaching, testing and research. Appointed by the Institutional Official.
- 4.6. **Metabolism Stall:** A specialized piece of equipment used in many studies of the nutrition and physiology of agricultural animals.

- 4.7. **Physical Restraint:** The use of manual or mechanical means to limit some or all of an awake animal's normal movement for the purpose of examination, collection of samples, drug administration, therapy, or experimental manipulation. Animals are restrained for brief periods, usually minutes, in many research and teaching applications.
- 4.8. **PI:** Principal Investigator. The individual who has ultimate administrative and programmatic responsibility for the design, execution, and management of a project utilizing vertebrate animals.
- 4.9. **Prolonged (Physical) Restraint:** Defined by the IACUC as physical restraint of unanesthetized animals for 30 minutes or longer in a natural body position or 15 minutes or longer in an unnatural body position. **Note:**
 - 4.9.1. Holding any species by hand would not be considered prolonged restraint.
 - 4.9.2. Prolonged physical restraint of agricultural species involves the restriction of normal animal movements for an extended period, sometimes hours or days depending on the activity. Restraint by halter tying for durations of less than 1 hour would not be considered prolonged restraint.
 - 4.9.3. Prolonged physical restraint of wildlife during trapping/capture involves the restriction of normal postural movement in the trap for an extended period of time, sometimes hours depending on the collection method.

5. GUIDELINES OR PROCEDURE

5.1. Alternatives to Physical Restraint

- 5.1.1. Alternatives to physical restraint should be considered.
- 5.1.2. Dogs, nonhuman primates, and many other animals can be trained, through use of positive reinforcement techniques, to cooperate with research procedures or remain immobile for brief periods.
- 5.1.3. Systems that do not limit an animal's ability to make normal postural adjustments (e.g., subcutaneous implantation of osmotic minipumps in rodents, backpack-fitted infusion pumps in dogs and nonhuman primates, and free-stall housing for farm animals) should be used when compatible with protocol objectives.

5.2. Restraint Devices

- 5.2.1. Restraint devices should not be considered a normal method of housing.
- 5.2.2. When restraint devices are used, they should be specifically designed to accomplish research goals that are impossible or impractical to accomplish by other means or to prevent injury to animals or personnel.
- 5.2.3. It is important that such devices be suitable in size and design for the animal being held and be operated properly and routinely maintained to minimize stress and avoid pain and injury.
- 5.2.4. Restraint devices should not be used simply as a convenience in handling or managing animals.
- 5.2.5. Restraint devices must be maintained to avoid injury to animals and users and sanitized on a frequency that minimizes transmission of disease between animals or groups of animals.
- 5.2.6. Species-specific methods of restraint should always be used. Consultation with the AV or designee is encouraged.
- 5.2.7. Restraint of agricultural animals:
 - 5.2.7.1. Physical restraint of agricultural animals involves the use of manual or mechanical means to restrict an animal's movements for the purpose of examination, collection of samples, administration of drugs, or a variety of other experimental and clinical manipulations.
 - 5.2.7.2. Physical restraint can be accomplished with devices such as stocks, head gates, stanchions, halters, squeeze chutes, or snares with swine.
 - 5.2.7.3. Electrical immobilization must not be used as a method of restraint; it is highly aversive to cattle and sheep. Electrical immobilization is a completely different technology from, and not to be confused with, electric prods or electrical stunning equipment.
 - 5.2.7.4. Handling and restraint will be safer and animals will remain calm if animals have nonslip flooring (e.g., grooved concrete, rubber mats, or metal rod grids).

5.3. The Metabolism Stall

- 5.3.1. These stalls give animal research and care personnel easy access to the animal and its excreta.
- 5.3.2. The degree of restraint of animals housed in metabolism stalls is substantially different from that of other methods that restrict mobility (e.g., stanchions and tethering). Animals in metabolism stalls are often held by a head gate or neck tether and are restricted in their lateral and longitudinal mobility.
- 5.3.3. Metabolism stalls should be used only for approved studies, not for the purpose of routine housing.
- 5.3.4. Animal-based measures (e.g., lying time) should be used to determine the animal's adjustment and comfort.
- 5.3.5. At least enough space should be provided in the metabolism stall for the animal to rise and lie down normally. When possible, metabolism stalls should be positioned so that the animal is in visual, auditory, and olfactory contact with conspecific animals to minimize the effects of social isolation.
- 5.3.6. Thermal requirements of animals may be affected when they are placed in metabolism stalls.
- 5.3.7. Animals in metabolism stalls should be observed more frequently than those in other environments, and particular attention should be paid to changes in behavior and appetite and the condition of skin, feet, and legs.

5.4. Acclimation

- 5.4.1. Animals to be placed in restraint devices should be given training (with positive reinforcement) to adapt to the equipment and personnel.
 - 5.4.1.1. Cattle, pigs, and other animals can be trained with food rewards to accept and cooperate with various procedures.
- 5.4.2. Animals should be conditioned to restraint equipment by a gradual process such as increasing the time of restraint on each occasion.
- 5.4.3. The use of tranquilizers may render restraint less stressful and enable animals to adapt more easily to novel situations. Contact the AV, or designee, for species-specific recommendations and describe drugs selected in the AUP.
- 5.4.4. Animals that fail to adapt to necessary restraint systems should be removed from the study.

5.5. Period of Restraint

- 5.5.1. The period of restraint should be the minimum required to accomplish the research or teaching objectives.
- 5.5.2. Provision should be made for observation of the animal at appropriate intervals.
- 5.5.3. Attention should be paid to the possible development of lesions or illness associated with restraint, including contusions, knee or hock abrasions, decubital ulcers, dependent edema, and weight loss.
- 5.5.4. The presence of lesions, illness, or severe behavioral change often necessitates the temporary or permanent removal of the animal from restraint.
- 5.5.5. Veterinary care must be provided if lesions or illnesses associated with restraint are observed. Contact the AV or designee for assistance.

5.6. Social Isolation

- 5.6.1. When restraint requires single housing of social species, a description of the environmental enrichment planned to compensate for the lack of social experience (or a scientific justification for enrichment being withheld) is required in the protocol. See TAMU-G-012 and TAMU-G-027.
- 5.6.2. Beef cattle separated from conspecifics in a restraint device for six hours are more likely to have dark-cutting meat, a physical sign of stress.
- 5.6.3. Providing socially isolated cows with mirror images or images of familiar cattle may help reduce stress associated with isolation, if the animals have to be isolated.
- 5.6.4. If possible, it is recommended that sheep and goats not be housed alone and that they be able to maintain visual contact with other animals.



5.7. Prolonged Restraint – AUP Requirements

5.7.1. Prolonged restraint must be described in the AUP and scientifically justified; including:

- 5.7.1.1. A description of the restraint device or method of restraint;
- 5.7.1.2. A description of acclimation activities;
- 5.7.1.3. The frequency and maximum duration of restraint;
- 5.7.1.4. Frequency of animal monitoring; and
- 5.7.1.5. Anticipated clinical signs and criteria for early removal from restraint.

6. EXCEPTIONS

- 6.1. The PI may request an exception to the above standards by describing the departure in the AUP
- 6.2. For programmatic exceptions, the facility director or manager may submit a request for the exception using TAMU-F-013

7. REFERENCES, MATERIALS, AND/OR ADDITIONAL INFORMATION

- 7.1. References:
 - 7.1.1. National Research Council Guide for the Care and Use of Laboratory Animals, Eighth Edition. National Academy of Sciences, 2011
 - 7.1.2. The Federation of Animal Science Societies Guide for the Care and Use of Agricultural Animals in Research and Teaching.
- 7.2. IACUC/AWO Referenced Documents: (requires TAMU NetID authentication)
 - 7.2.1. TAMU-F-013 Request for Programmatic Exception From Animal Welfare Standards
 - 7.2.2. TAMU-G-012 Suggestions for Environmental Enrichment of Agricultural Species
 - 7.2.3. TAMU-G-026 Guidelines for Evaluation of Sanitation Practices
 - 7.2.4. TAMU-G-027 Guidelines on Environmental Enrichment, Single Housing of Social, Biomedical Species Housed Indoors
 - 7.2.5. TAMU-G-029 Guidelines for Animal Protocol Participation and Handling

8. HISTORY

Effective Date	Version #	Description
03/18/2021	000	College Station/Galveston: New Document
05/1/2021	001	Houston/Kingsville: New Document
05/18/2021	002	Dallas: New Document
03/24/2022	003	College Station/Dallas/Galveston: Merging of Dallas animal care and use program with College Station/Galveston
12/01/2022	004	College Station/Dallas/Galveston/Kingsville: Renewal; addition of Kingsville, updated definitions, addition of exceptions section. Reviewed and approved via email.
01/01/2023	005	Houston: Renewal; movement of Kingsville to IACUC1, updated definitions, addition of exceptions section. Reviewed and approved via email.