

TITLE: NIMH Guidelines for the Use of Restraint Chairs with Non-human Primates

I. General

The temporary holding of non-human primates in restraint chairs for research purposes has become standard practice for many types of neurobehavioral, neuropharmacological, and neurophysiological research. Once acclimated to a chair a monkey readily transfers from its home cage to the chair, will sit quietly and fully engage in behavioral training. The use of restraint chairs should be in a manner that minimizes possible stress during the acclimation process. The scientific soundness of this type of restraint must be considered in the context of the objectives of the research protocol, the ultimate significance of the research, and the qualifications and attitudes of the personnel conducting the research.

Although the use of any restraint must be scientifically justified, the use of more restrictive restraint devices, including full body restraint, as well as “forced” physical restraint (e.g. restraint without acclimation), commonly requires additional scientific justification. Restraint devices and the acclimation process to be used must be clearly described in the investigator’s Animal Study Proposal and require prior approval by NIMH ACUC.

The potential for psychological stress or physical trauma during the acclimation process and restraint mandates special care and the need for procedural guidelines. Therefore, depending on the duration and the nature of the research, chair restraint is in most cases the preferable technique. Short periods of restraint in a primate chair for the purposes of behavioral testing with positive reinforcement (rewards) may be beneficial to the psychological well-being of non-human primates by providing them with an engaging and dynamic environment. The purpose of this document is to provide NIMH investigators with guidelines for the proper use of non-human primate restraint chairs and establish prerequisites for animal study proposal approval. They are designed to inform and instruct and to establish minimum standards for use of these devices.

II. Chair Design

- A. Non-human primate restraint chairs of proven design for use in research are available commercially. The apparatus must be durable, sanitizable, secure, and provide adjustable features to adapt the restraint to the size and conformational differences between individual animals.
- B. All surfaces in contact with or in reach of the animal should be smooth and free of parts that may injure the animal. Weight-bearing surfaces should be configured to prevent pressure-induced ulcerations.

- C. Adequate provision must be made for minimizing skin contact with waste materials generated by the animal, and features to facilitate frequent collection and removal of waste are necessary.
- D. Whenever possible the design should permit the animal to make postural adjustments throughout the restraint period.

III. Acclimation

- A. Each animal intended to be restrained for experimental purposes must be conditioned to the chair. Periods of short exposure to the device, coupled with the presentation of a highly desirable reward such as food or juice, etc. is commonly used to facilitate physical and psychological acclimation to the restraint prior to experimentation. Several conditioning periods of increasing length are often necessary. **In all situations the acclimation period and program should be adjusted to meet the requirements of the individual animal.**
- B. During initial conditioning, animals must be monitored frequently (at least every 10 minutes) for signs of nonadaptive behavior, such as aggression, anxiety, or persistent struggling. Animals that demonstrate a prolonged period of such behavior should be returned to their home cage and the acclimation/desensitization process reinitiated. Although it is uncommon, some animals may be rejected for use in chairing procedures because they can not be acclimated to the restraint device. Injuries are also uncommon, but if an animal should become injured, they should be immediately, removed from the restraint device and medically evaluated by a veterinarian. Some cases may require the sedation of the animals to facilitate their safe transfer back to their home cage.
- C. The use of sedatives, tranquilizers, or chemical restraining agents to assist in the transfer and placement of animals in restraint chairs should be avoided if at all possible. Although they maybe helpful during initial stages of conditioning with some aggressive animals, their continued use can conflict with the objectives of the research. The use of chemical agents to facilitate the chairing process shall be under the direct oversight of the IC veterinarian.

IV. Duration of Restraint and Observation

- A. All uses of chair restraint must be fully justified in the animal study proposal. Additional scientific justification is required for periods of restraint lasting longer than 12 hours.
- B. Animals must be monitored during the period of restraint by a qualified technician or investigator, and the means of monitoring should be described in the animal study proposal. The frequency and type of monitoring required will depend on the period of restraint, the state of the animal (e.g., awake or sedated), the design of the chair, the use of invasive devices (such as catheters), and the requirements of the research.

There are multiple methods available for inspection, for example, direct visualization of the animals, video observation, and review of computer behavioral performance records. For some periods of restraint of fully acclimated

animals in a computer controlled behavioral testing apparatus, periodic inspection of the ongoing computer records, rather than visual inspection of the animal, may be sufficient. These records can indicate that an animal is actively engaging in a task and thus comfortable and safe in the chair. Video monitoring and observation of performance records can be done in rooms away from the actual test apparatus, however, if a problem arises the responsible observer must be able to make a quick and appropriate response. The animal's experience and behavior determines the frequency of monitoring of the animal. In all cases the level of observation must be adequate to prevent harm to the animal. During the period of restraint, the availability of equipment, supplies and personnel with appropriate qualifications to address medical emergencies must be assured.

V. Personnel Conduct

Animals in restraint devices will become accustomed to their surroundings, animal caretakers, technicians and investigators and the procedures being performed on them. Every effort should be made to limit potentially stressful situations, such as excessive activity, unnecessary loud noises, and strangers within the immediate environment of the chair-restrained animal. However, stimulation by the sight and sounds of familiar persons and other animals is highly desirable to relieve boredom.

VI. Staff Training

- A. Qualifications, experience, and concern by the attending staff are critical and necessary elements of experiments involving restraint of non-human primates.
- B. It is mandatory that persons identified as responsible shall have sufficient experience and training with non-human primate restraint to assure adequate and humane care during experimentation. Specific attributes required include:
 - 1. Knowledge of the care and handling of non-human primates
 - 2. Experience with placement and adjustment of non-human primates in restraint chairs
 - 3. The ability to recognize signs and symptoms requiring medical attention
 - 4. Knowledge regarding the availability of veterinary care
 - 5. An understanding and sensitivity to the well-being of non-human primates involved in biomedical research

VII. Animal Proposal Review

- A. Animal Study Proposals involving non-human primates to be placed in restraint chairs should be written with due consideration of these guidelines.