Voluntary Acceptance of Restraint by Sheep

T. GRANDIN

126 Animal Science Laboratory, University of Illinois, 1207 West Gregory Drive, Urbana, IL 61801 (U.S.A.)
(Accepted for publication 16 February 1989)

ABSTRACT


Four Suffolk ewes which had no previous experience with aversive restraining methods were mixed with twelve ewes which had experienced varying amounts of electro-immobilization and restraint in a squeeze tilt table. With successive voluntary passes, previously restrained ewes become more and more willing to be voluntarily restrained in a tilt squeeze table for a grain reward. Initially four ewes which had never experienced electro-immobilization entered the tilt table first. Six of the previously restrained ewes voluntarily entered the tilt table and were squeezed and tilted 6 times in a row without missing a pass. Less time was required to move each ewe during the last 5 passes compared to the first 5 passes.

INTRODUCTION

Livestock producers sometimes have difficulty in moving animals through races, especially if the animals have had an aversive experience previously in the same handling facility. Sheep become increasingly reluctant to enter a race if they have had previous aversive restraint experiences (Rushen, 1986; Hutson, 1985; Grandin et al., 1986).

The purpose of this experiment was to determine if naive sheep and sheep with previous aversive experience could easily be trained to voluntarity enter and be repeatedly restrained in a squeeze tilt table. Training livestock to voluntarily accept restraint would be useful for handling and treatment of animals used for research and breeding.

METHOD
Sixteen mature Suffolk ewes were used. The sheep had been subjected to a 2-way choice test the previous day with a choice between electro-immobilization and a squeeze tilt table (Grandin et al., 1986). Four of the ewes were the decoys used in the choice test and they had never experienced either form of restraint. The other twelve ewes had experienced both electro-immobilization and restraint in the squeeze tilt table (Livestock Systems, Inc., Sidney, Nebraska). The ewes had adlib hay and were not fasted prior to handling.

All sixteen sheep were driven into the crowd pen of the same sheep handling system described in Grandin et al., 1986. It consisted of an 8-m long, curved race with a tilt table at one end and a crowd pen which could hold sixteen sheep at the other end. Guillotine gates were located at the front and the rear of the tilt table. No hock boards or gates were used to prevent sheep from backing out of the race after voluntary entry. After release from the tilt table the sheep entered a holding pen which led back to the crowd pen. All sheep movements from the crowd pen into the race and squeeze tilt table were voluntary.

A single experimenter used small handfulls of grain to entice the sheep to enter the race and tilt table. A grain reward was used because previous research indicated that feed rewards facilitated movement (Hutson, 1985). Ewes were allowed to eat a small handful (- 25 g) of palatable grain while they were in the tilt table and another handful after release. Animals that refused to enter the race and move toward the tilt table were not forced through. After all the volunteers had gone through the tilt table, they were returned to the crowd pen for the next pass.

A total of 10 passes was made on the same day. A new pass was started immediately if no more sheep volunteered to enter the tilt table within 60 s. There was a 2-h break in between the 5th and 6th passes. On pass 1, each volunteer was clamped upright in the tilt table for 15 s. On passes 2 and 3, each volunteer was clamped and tilted 70° for 15 s and on pass 4, they were clamped and tilted 45° for 30 s. On passes 5-10 the volunteers were clamped and tilted to a horizontal position for 30 s.

RESULTS

The four decoy sheep which had no previous experience with either form of restraint entered the tilt table on the 1st pass along with two previously restrained sheep (Table 1). With successive passes, more and more of the previously restrained sheep voluntarily entered the tilt table. On the 9th pass, one decoy sheep refused to enter the tilt table, but additional previously restrained sheep entered. One decoy sheep repeatedly jumped up on the tail gate of the tilt squeeze chute attempting to get in. Two decoys and two previously restrained sheep refused to leave the tilt table after being released on 2 or more passes. Sheep which voluntarily entered the tilt table quietly ate feed while held in the tilted position (Fig. 1). Six (50%) of the previously restrained sheep completed all 6 fully tilted passes and never missed a pass after they started entering the tilt table. Two previously restrained animals entered for the first time on the 7th and 9th passes and completed all remaining passes.

Table 1: Number of sheep voluntarily entering a tilt squeeze table during ten repeated passes on the same day
<table>
<thead>
<tr>
<th>Pass</th>
<th>4 sheep with no restraint experience</th>
<th>12 sheep with immobilization and tilt table experience</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass 1 (Squeeze only)</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pass 2 (Tilt 70°)</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Pass 3 (Tilt 45°)</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Pass 4 (Tilt 45°)</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Pass 5 (Tilt horizontal)</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Pass 6 (Tilt horizontal)</td>
<td>4</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Pass 7 (Tilt horizontal)</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Pass 8 (Tilt horizontal)</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Pass 9 (Tilt horizontal)</td>
<td>3</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Pass 10 (Tilt horizontal)</td>
<td>3</td>
<td>10</td>
<td>13</td>
</tr>
</tbody>
</table>

Fig. 1. Ewe being rewarded with grain after voluntary entering the tilt table
One previously restrained animal entered the tilt table on the 7th pass and never returned, and an other never entered. Another previously restrained animal that entered on the 1st pass skipped the 8th and 10th passes.

As the passes progressed, less time was required to handle each animal. During passes 1-5, a total of 43 sheep entered the tilt table with a mean time of 147 s per animal. During passes 6-10, a total of 64 sheep entered the tilt table and the mean time per animal was reduced to 127 s. These times include recycling the sheep back into the crowd pen and the time required to restrain and release each animal.

**DISCUSSION**

During the retraining passes, previously restrained sheep became progressively more willing to pass through the race and be restrained in the tilt table. These same sheep in the choice test had quickly learned to avoid the immobilizer side. They had been previously restrained in the tilt table 3–4 times and had experienced immobilization only once or twice. During the choice experiment the tilt table was clearly aversive, but in the retraining experiment the tilt table had lost most of its aversiveness.

Hutson (1985) reported that during the training phase when no restraint was applied, less time was required to push up the sheep after each successive pass. Clamping sheep in a sheep handler in an upright position increased pushup time with each successive pass (Hutson, 1985). In the author's experiment less time was required to handle each animal during the last 5 passes (all animals horizontal tilt) compared to the first 5 passes with less severe restraint. A possible explanation for the difference between Hutson's (1985) results and the author's results may be because of the comfort of the restraint devices. The tilt table used by the author had no sharp edges or protrusions pressing against the sheep.

The number of times the animals were immobilized had no effect on voluntary entry. The ewe which never entered the tilt table and the ewe which entered only once and never returned, experienced electro-immobilization only once. Both these animals remained in the crowd pen. Six animals previously experienced electro-immobilization twice and six experienced it only once. The first previously restrained animal that entered the tilt table had been immobilized twice.

Fourteen out of sixteen ewes returned for one or more additional passes. Three out of four decoys and six out of twelve previously restrained sheep entered the tilt table for all 6 passes where the table was tilted to the horizontal position. The tilt table appeared no longer to be aversive to these sheep.

The tilt table may have been aversive in the choice test because the table may have been associated with the electro-immobilizer, even though the sheep had learned to avoid immobilization. This may be similar to the stress response and lost weight gain that occurs in pigs when they are approached by a person who occasionally shocked them (Hemsworth et al., 1987). Even though the pigs had learned to avoid the shock by avoiding the person, they were still stressed when the person entered their pen. The number of people present may also have been associated with the aversiveness of the situation. Only one experimenter was present during retraining whereas during the choice test nine people were present. The experimenter who conducted the retraining, was the person who provided the feed reward in Grandin et al. (1986). This person never participated in chasing, grabbing or electro-immobilizing
the sheep. Sheep in the choice test were given a grain reward. They entered the race easily with little resistance prior to electro-immobilization so it is doubtful that driving them through the race was aversive.

CONCLUSIONS

Sheep can definitely be trained to voluntarily accept repeated restraint in a relatively comfortable restraint device. The tilt table had no sharp edges or bars which dug into the sheep. Sheep which have had a previous aversive experience can be retrained to voluntarily re-enter the same race and be restrained in a tilt table. Training sheep to voluntarily accept restraint would be practical for sheep used in research and valuable breeding animals. Labor requirements would be reduced because one person can easily restrain the animals. Stress on animals may be reduced because sheep which voluntarily accept restraint seldom struggle.

REFERENCES


