Available online at www.sciencedirect.com
SCIENCE DIRECT
ELSEVIER
Applied Animal Behaviour Science 95 (2005) 199–203
APPLIED ANIMAL BEHAVIOUR SCIENCE
www.elsevier.com/locate/applanim

How does the running wheel affect the behaviour and reproduction of golden hamsters kept as pets?

Sabine G. Gebhardt-Henrich *, Evelyne M. Vonlanthen [1], Andreas Steiger

Division of Animal Housing and Welfare, Institute of Animal Genetics, Nutrition and Housing, Vetsuisse Faculty of the University of Bern, P.O. Box, CH-3001 Bern, Switzerland

Accepted 24 February 2005
Available online 3 June 2005

Abstract

Although there are many studies on the running wheel in laboratory animals, it is not clear if a running wheel should be provided for golden hamsters kept as pets. Unlike laboratory animals, golden hamsters kept as pets usually have larger cages, more varied food, and are kept singly. In this study, 10 sister-pairs of golden hamsters were kept singly in large enriched cages with a functional or a non-functional large running wheel. Using video-recordings, the behaviour of hamsters of both groups was compared. Hamster females with a functional wheel showed significantly less climbing and stereotypical bar-mouthing than females with non-functional wheels.

In order to compare the physical condition of the females, they were regularly mated and raised up to four litters before they stopped reproducing. Body masses did not differ between the groups, but females with functional wheels had significantly larger litters. Offspring growth did not differ, probably because the females decreased running in the wheel during pregnancy and stopped running completely during lactation. Therefore, we conclude that a large well-constructed running wheel will have no detrimental effect on golden hamsters kept in large and enriched cages with ad libitum access to adequate food and water. On the contrary, the running wheel may have had a beneficial effect on the well-being of the hamsters since it significantly decreased stereotypic bar-mouthing.
© 2005 Elsevier B.V. All rights reserved.

Keywords: Golden hamster; Running wheel; Reproduction; Behaviour; Stereotypy; Pet animal

* Corresponding author. Tel.: +41 31 631 2366; fax: +41 31 631 2640.
E-mail address: sabine.gebhardt@itz.unibe.ch (S.G. Gebhardt-Henrich).
[1] Present address: Ausserdorfstr. 80A, CH-5054 Moosleerau, Switzerland.

0168-1591/$ – see front matter © 2005 Elsevier B.V. All rights reserved.
doi:10.1016/j.applanim.2005.02.019

1. Introduction

The running wheel has been the subject of many scientific studies (see the thorough review by Sherwin, 1998). Positive and negative effects on rodents under captive conditions have been found (Sherwin, 1998). The results of these studies may be largely dependent on the diet and husbandry condition of the laboratory animals and bear little resemblance to conditions for golden hamsters kept as pet animals. Laboratory kept hamsters have smaller cages than are recommended for pets, lack a dark shelter, and are often kept in groups which causes stress in the hamsters (Gattermann and Weinandy, 1996). Therefore, it is unclear if a running wheel can or cannot be recommended for the pet hamster based on laboratory studies alone.

The measurement of animal welfare is difficult and includes physical and psychological aspects (Mason and Mendl, 1993). Therefore, in this study the behaviour and the lifetime reproductive success (Darwinian fitness) were measured. Stereotypies are often used as an indication of poor welfare (e.g. Mason, 1991; Würbel, 2001) and evidence on how the running wheel influences stereotypies in golden hamsters has been lacking. It is conceivable that the difference in physical condition of the females with and without wheels will be seen as differences in litter sizes and offspring growth. Likewise, infant mortality was correlated with minimum natural home ranges of zoo-kept animals which correlated with the rate of stereotypies (Clubb and Mason, 2003). The running wheel had to be evaluated as negative if it decreased fitness. To our knowledge, there have been no studies so far that investigated the effect of the running wheel on reproductive success.

2. Methods

2.1. Animals and housing conditions

The room temperature was constantly 21 °C and the light cycle was 12-h light:12-h dark. At 28 days of age, 20 females (Laklbm: FUME from RCC Ltd. at Füllingsdorf, Switzerland) were placed singly into a commercially available hamster cage (length × width × height: 95 cm × 57 cm × 45 cm). All cages were furnished with a wooden nestbox (20 cm × 14 cm × 14 cm), litter, hay, paper towel, cardboard tubes, branches, and a running wheel (diameter: 30 cm, width of wire bottom: 10 cm). Pet hamster food (Witte Molen®, NL-Meeuwen) and water were offered ad lib. This diet was augmented by dry cat food, vitamin and mineral supplements, and fresh fruits. From an age of 90 days onwards, females were mated. Young remained with their mothers for 28 days. Thirty days after weaning, females were mated again. Matings were stopped after a female had not become pregnant after three ‘successful matings’.

2.2. Analyses

Revolutions of the running wheels were registered (Chronobiology Kit™, Stanford Software System).

Download English Version:

https://daneshyari.com/en/article/9475831

Download Persian Version:

https://daneshyari.com/article/9475831

Daneshyari.com