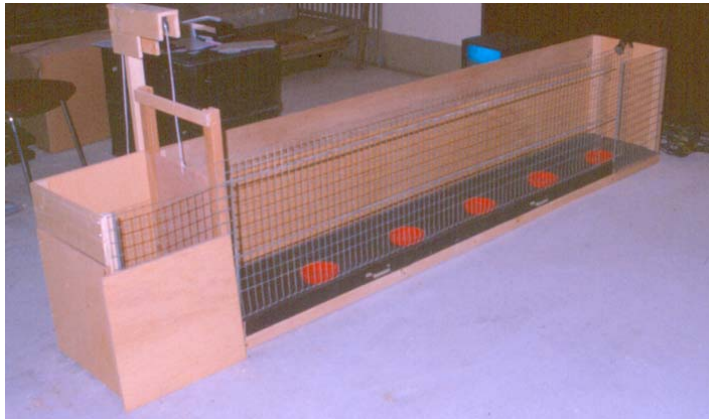


Broilers are young chickens kept to produce poultry meat. They grow from 50 g up to approximately 2.5 kg in 6 weeks, their slaughter age. Fast growth and high body weight are associated with heart, respiration, and leg problems which influence their activity. The decrease in physical ability has been extensively studied. However, little is known about the motivation to show behavior. The distinction between motivation and ability is relevant for the interpretation of activity in terms of welfare. In order to gain more insight into both motivation and physical ability in broilers, a runway experiment was conducted in which broilers had to walk a distance for a food reward. A distinction was made between males and females, because males are growing faster, which may affect their performance in the runway.

## **MATERIALS AND METHODS**

We chose to use EthoVision in order to analyze walking behavior of broilers in more detail than we could before. 24 male and 24 female day-old broilers were allocated to spacious floor pens with 10 cm high perches. The floor was covered with wood shavings. Birds could eat and drink ad libitum. A lighting schedule of 18h light and 6h dark was provided and temperature was maintained at standard values. The apparatus was situated in a separate room and consisted of a wooden start box (40 x 40 x 60 cm) and the actual runway (240 x 40 x 60 cm). A solid guillotine door separated start box from runway.



## **EXPERIMENT**

Five small, red, plastic bowls were placed in the runway at every 40 cm. Birds were trained individually during 3 days to walk for a reward in the runway. After this training, the birds were tested individually in the runway three times a week. They were exposed to only one trial per day. Three sessions were applied within one week: control, frustration and obstacle session. 1) Control session: one mealworm was put in each bowl. 2) Frustration session: no mealworms were put in the first four bowls; the last bowl contained five mealworms. 3) Obstacle session: each bowl contained one mealworm again, but now four 10-cm high wooden obstacles were placed between the bowls.

A camera and a microphone connected to a video recorder were placed above the runway. The start box and runway were painted black to have a high contrast between the bird (white) and the environment. All trials were recorded on video and analyzed afterwards with EthoVision. In the arena settings four zones were defined. A zone was the space between two lines that were drawn runway wide, 15 cm before and 15 cm behind the centre of a bowl. Other settings in EthoVision were optimized in pilot observations of the video tapes. Analyses were conducted with a sample rate of 16.66 samples/s and with a moving scan window (50 pixels). Latency to leave the start box, latency to reach each bowl, walking speed, sitting and preening behavior and number of vocalizations were measured during analyzing the runway tests.



### **RESULTS AND DISCUSSION**

Over all weeks, birds walked faster in frustration sessions than in control or obstacle sessions and faster in control than in obstacle sessions. Birds sat more in obstacle than in control sessions, indicating that ability to walk was affected by the difficulty of the task. Males walked faster in control and obstacle sessions than females, despite their higher body weight. The number of vocalizations in the runway decreased over time and males vocalized more than females. Differences between frustration and control sessions, and obstacles and control sessions at individual level, within a week were also calculated. Those differences were called the motivation and the ability effect respectively. Although sex differences were found for several measures, no sex effect was found for the motivation and the ability effect. That means that frustration and obstacles had similar impact on both sexes. Differences in walking speed seemed therefore to be a result of ability differences (males are stronger and bigger) rather than motivational differences.

### **REFERENCE**

Bokkers, E.A.M.; Koene, P. (2004). Motivation and ability to walk for a food reward in fast- and slow-growing broilers to 12 weeks of age. *Behavioural Processes*, **67**, 121-130.

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