
Starting in 2001, the World Organisation for Animal Health (OIE) has made one of its strategic objectives to develop international standards on animal welfare. The OIE guiding principles on Animal Welfare (Chapter 7.1 of the Terrestrial Animal Health Code), published in 2004, emphasized the critical relationship between animal health and animal welfare, the valuable guidance provided by the “five freedoms” and the importance of science and outcome-based recommendations. An additional article (7.1.4) published in 2012 further outlined the general principles for the welfare of animals in livestock production systems. The OIE has published 9 chapters on animal welfare with 6 of relevance to the poultry sector: introduction to the recommendations for animal welfare, transportation by land, transportation by air, slaughter of animals for human consumption, killing of animals for disease control purposes and use of animals in research and education. The OIE standards are drafted using the global expertise available in governments, non-governmental organizations, academia and the private sector. Several ad hoc groups of experts have been established over the years, with a permanent Working Group on Animal Welfare overseeing the overall process. As the science of animal welfare evolves rapidly, these standards are revised regularly and therefore constitute excellent tools for the poultry sector when local legislations and codes of practices are not frequently updated. Current and future work of the OIE will address both broiler chickens and laying hens. All partners of the poultry industry along with local veterinary services have a key role to play in the education and training of the poultry sector to ensure the proper implementation of these welfare standards.

Key Words: animal welfare, OIE, World Organisation for Animal Health, poultry industry


Lameness in the New Zealand meat chicken industry was determined by gait scoring (GS) 300 housed Ross (308) birds on each of 20 farms in 3 liveweight (LW) ranges (light, L = 1.6–1.9kg, medium, M = 2.0–2.8kg and heavy, H = 2.9–3.6kg) using a 0–5 scale where 0 = normal and 5 = unable to stand. Pathological examinations were carried out on 20 GS3 (obvious defect affecting movement), 20 GS4 (severe defect) and 20 GS5 birds from each farm. Stocking density, mortality, and culling were recorded. Most birds (61%) had an abnormal gait that did not restrict movement (GS2). There were 28% GS3 and 17% GS4–5. As birds grew from L to H, GS rose from 1.96, to 2.59 (P < 0.001); the prevalence of GS3–5 birds rose from 13 to 56%, P < 0.001 and GS4–5 increased from 0.1 to 4.2% (P < 0.05). GS increased with age (P < 0.001). Identifyable causes of lameness increased with GS (P < 0.05). No pathological cause was found for 65 ± 9.7% at GS3, this fell to 35 ± 10.0% at GS4 and 6 ± 3.1% at GS5. Foot pad dermatitis was most common at GS3 and 4 (24 ± 9.0% and 23 ± 10.4%). Joint infections and twisted legs rose with GS (P < 0.05) to peak at GS5 (27 ± 8.2% and 27 ± 9.7%). Maximum stocking density was before first thin at 35 ± 0.6 kg/m² and 20 ± 0.2 birds/m² vs. 8 ± 0.5 birds/m² at final slaughter (43 d age). Mortality rate was 2.7 ± 0.22% and most (65 ± 2.9%) were found dead by the farmer. Culling rate was 1.0 ± 0.12% with 0.2 ± 0.02% culled for leg problems. The leg problems found likely reduce welfare by being painful and/or reducing ability to access food and water. These problems were more common in heavy birds of which 56% showed movement restriction, however no pathological cause was found in many GS3 birds. Culling would be the best option for GS 4 or 5 birds and there were 4% of these in heavy flocks under current industry culling practices.

Key Words: tibia, tendon, vitamin E, vitamin C, walking ability

The effect of toe trimming on behavior and mobility of turkey toms. K. Schwane-Lardner*, J. Fournier, T. Knezacek, S. Gomis, and H. L. Classen, University of Saskatchewan, Saskatoon, SK, Canada.

Toe trimming of turkeys is a common industry practice used to reduce carcass downgrades and condemnations at slaughter. However, it is important that the impact the procedure has on the well-being of the bird be considered. An experiment was conducted to determine the impact on behavior and mobility (completely randomized design) of trimmed (T) versus untrimmed (UT) turkey toms to 20 weeks of age, with 9 pen replicates (17 males per pen) for each treatment. T birds were treated with microwave energy and UT sham treated at a commercial hatchery before transport to the study facility. Behavior was monitored via direct scan sampling at 1, 3 and 5 d of age (15 min per pen), and...
with the use of infrared cameras at 19 weeks of age (24 h observation with scans at 30-min intervals). Mobility was assessed with 5 birds per pen scored (Nestor et al., 1985) at each of 7, 11, 16 and 20 weeks of age. At d 1, T birds rested more (41.4 vs. 56.6%; \( P = 0.0067 \)), and fed (0.4 vs. 10.4%; \( P = 0.0001 \)), stood (1.83 vs. 10.4%; \( P = 0.0001 \)), and walked (1.4 vs. 7.32%; \( P = 0.0008 \)) less than UT birds. At 3 d of age, T birds sat for a larger percentage of time (17.6 vs. 9.1%; \( P = 0.0052 \)), and walked (4.8 vs. 8.9%; \( P = 0.0206 \)) less than UT birds. The reduction in activity continued at 5 d of age, with less T birds feeding (4.7 vs. 5.6%; \( P = 0.0015 \)) and running (0.1 vs. 0.7%; \( P = 0.0023 \)) than their UT counterparts. At 19 wk of age, T birds walked less than UT birds (4.6 vs. 5.6%; \( P = 0.0281 \)), and stood more (27.1 vs. 24.21%; \( P = 0.0279 \)). This difference could not be attributed to mobility, as gait scores were not different between T and UT birds at any of the weeks measured (>0.05). To conclude, trimming the toes of turkeys results in less active birds, particularly at young ages. This research did not determine if this is a pain-induced change.

Key Words: turkey, toes, behavior, mobility

128 Can a duck’s waddle serve as an accurate indicator of lameness? M. M. Makagon*1, R. L. Woolley1, R. M. Fulton2, and D. M. Karcher2, 1Purdue University, West Lafayette, IN, 2Michigan State University, East Lansing.

Lameness is an important welfare concern in commercial duck production. An abbreviated gait score system (AGSS) has been used to assess lameness among commercial ducks. However, as its validity and reliability have not yet been assessed, the use of AGSS could lead to data interpretation inaccuracies. We examined a) the relationship between AGSS, gait structure parameters, and leg integrity, and b) the inter- and intra-rater reliabilities of AGSS. Commercial Pekin ducks, ages 14 (57 ducks), 21 (70 ducks) and 31 d (50 ducks), were video recorded and gait scored as they walked over a Tekscan gait analysis system. The effects of gait score on gait structure parameters were evaluated for each age group using ANOVA and Kruskal-Wallis tests. \( t \)-tests and Wilcoxon Mann Whitney tests were used in post-hoc analyses. Across age groups, shorter gait distances (\( t_{35} = 2.45, P = 0.02 \), 14d; \( t_{42} = 3.71, P < 0.001 \), 21d; \( z = -3.11, P = 0.002 \), 32d) and larger differences between peak pressures exerted by the 2 feet (\( z = 2.23, P = 0.02 \), 14d; \( z = 2.85, P = 0.004 \), 21d; \( z = 2.20, P = 0.03 \), 32d) were associated with poor (score = 2) vs. good gait (score = 0). Leg health was assessed for each duck during necropsy. Gait score was related to the incidence of leg inflammation, but not the occurrence of tibial head deformities or tibial dyschondroplasia. Inflammation was rare in 14d old ducks, but was noted in 3%, 28% and 40% of older ducks with gait scores of 0, 1 and 2, respectively. AGSS reliabilities were calculated separately for Naive (\( N, n = 10 \)) and Trained (\( T, n = 13 \)) scorers, who assessed the gait of ducks from video. Inter-rater reliability (Fleiss kappa) was lowest for 14 d old (\( N; k = 0.47 \), \( T; k = 0.61 \)) and best for 32 d old ducks (\( N; k = 0.74 \); \( T; k = 0.8 \)). Overall intra-rater reliabilities (Pearson correlation) were high and were unaffected by the scorer’s level of training (\( N; r = 0.87 \); \( T; r = 0.87 \); \( t_{21} = 0.43 \)). The results suggest that AGSS may be inappropriate for evaluating lameness among young ducks. The method’s validity warrants further assessment.

Key Words: Pekin duck, welfare, gait, lameness

129 Duck gait score: Relationship to hip angle, bone ash, bone density and morphology. C. I. Robison*1, M. M. Makagon*, R. M. Fulton1, and D. M. Karcher1, 1Michigan State University, East Lansing, 2Purdue University, West Lafayette, IN.

Lameness in a production setting is a welfare concern. Lameness has been attributed to altered hip angulation or changes in bone structure in other species. It is unknown as to whether these skeletal changes contribute to lameness in ducks. Therefore, the study examined the relationship between an abbreviated gait score system (AGSS) and bone parameters and pelvic hip angle. Commercial Pekin ducks, ages 14 d (\( n = 60 \)), 21 d (\( n = 75 \)) and 32 d (\( n = 73 \)) were weighed and gait scored as they walked over a Tekscan gait analysis system. Ducks were humanely euthanized, full body scanned using CT (CT), and the right femur and tibia were extracted. Leg bones were cleaned, measured, fat extracted and ashed. CT scans were rendered to create computerized 3-D models where pelvic hip angles were measured. Statistical analysis was conducted using Proc Mixed with age and gait score in the model. Gait score displayed a negative linear correlation with body weight in all ages of ducks (\( P < 0.01 \)) and a positive linear correlation with age (\( P < 0.01 \)). As expected tibia and femur bone circumference and bone length increased with age in a linear fashion (\( P < 0.01 \)). Femur and tibia bone ash displayed a negative linear correlation as gait score increased (\( P < 0.01 \)) such that the lowest percent ash was found in ducks with a gait score of 2. Tibia and femur ash were positively correlated in 14 and 21 d old ducks (\( P < 0.05 \)). No differences were detected in hip angle regardless of age or gait score; however there was a positive correlation between right and left hip angle in the 14 and 21 d old ducks (\( P < 0.01 \)). A positive correlation was found between right and left leg length, which increased linearly with age (\( P < 0.01 \)). Maximum right femur cortical bone density displayed a main effect of age and increased linearly with age (\( P < 0.01 \)); however, left femur and tibia cortical density were not affected by age or gait score. Therefore, duck growth resulted in changes to bone parameters more than gait score. Based on the study measurements, gait score cannot be predicted by any specific bone measurements.

Key Words: Pekin duck, bone, gait, lameness