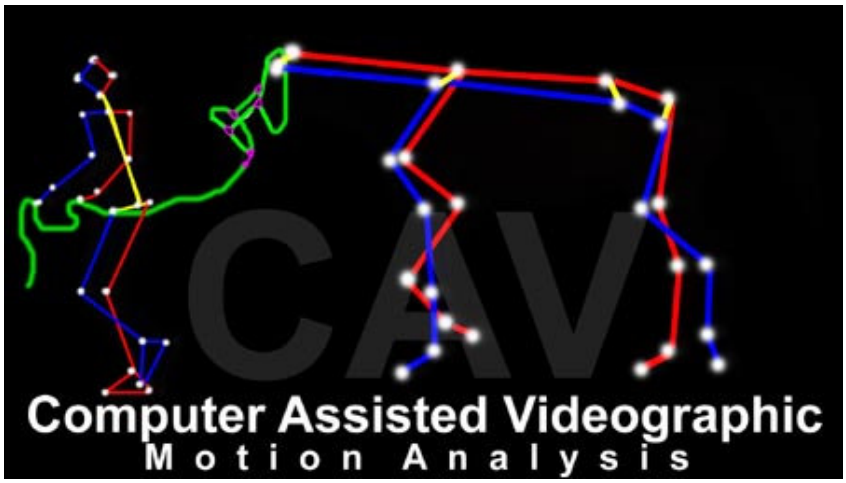
The Richard G. & Dorothy A. Metcalf
VETERINARY SPORTS MEDICINE PROGRAM
EQUINE & CANINE
AUBURN UNIVERSITY COLLEGE OF VETERINARY MEDICINE

MOTION ANALYSIS



The Auburn University Veterinary Sports Medicine Program (AUVSMP) has both a 2-D and 3-D Six Camera PEAK MOTUS 8.1 Motion Analysis System and a AMTI Force Plate System. We also have the Dartfish and KA Motion Analysis software systems. In addition, we have various cameras (e.g. high speed, miniture cameras) to facilitate capture of certian movements. Just recently the AUVSMP installed a remote camera system in our lameness arena (the view of the camera is seen below on the right) that allows us to capture and send video via the internet to our biomechanics lab. The video is then digitized and a kinematics report is issued to the attending clinician. We use the above mentioned systems and cameras to evaluate motion in a horse or dog. There are many kinematic parameters that can be quantified and analyzed in the various gaits used by dogs and horses during locomotion. Limb segment velocities, joint angles, suspension times, and stride lengths are just a few of the parameters that can be analyzed. The parameters can be used to aid in lameness diagnostics, sports skill analysis, and much more.

In order for the computer software to be able to see the joint centers of a dog or horse, the animal has to be first fitted with retroreflective markers. First the animal is palpated and markers are placed at major joints on the body that are concerned with locomotion. The markers are made of a highly reflective material that reflects light back to the camera. This light is what the computer system sees and plots on a coordinate system. The coordinates are then calculated and reveal quantifiable motion. The system can then determine many different aspects of the gait that are virtually invisible to the naked eye.

The measurements are placed on graphs and tables and are then set in a report with other gait parameters. Clinicians and researchers may use these to analyze specific joint angles, joint velocities, and more. For

example, a clinician may see a significant change in a particular joint angle or velocity and can then better assess the animal from that point or pinpoint what is causing the lameness. This test greatly increases our accuracy of lameness diagnostics because it reveals parameters that the naked eye cannot calculate. The AUVSMP continues to conduct cutting edge research to better evaluate lameness and kinematic performance in the athletic animal.

MOTION ANALYSIS VIDEOS

The following videos are of horses and dogs and contain graphs that we use to evaluate gait.