# Virtual canine lameness: the development of a training tool

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**Background:**
Lameness is commonly encountered in veterinary practice, however precise visual lameness detection requires experience. This skill is challenging to teach: exposure of students to many patients is needed to learn the necessary perceptual skills; however patients might not be readily available. Video recordings of patients can be useful, but depend on the quality of recording and variety of cases available. They are limited to two dimensional views which don't fully replicate a real-life three dimensional examination.

Following on the success of an equine lameness training tool (www.lamenesstrainer.com) developed at the Royal Veterinary College; a 3D virtual canine lameness tool is being developed based on current research in biomechanics. The aim of this tool is to teach students to reliably recognise lameness in dogs.



**Summary of Work:**
We collected 3D motion capture data from 10 non-lame Labrador retrievers at walk and trot on a treadmill. Data were captured using eight Oqus7™ cameras (Qualisys®, Sweden). The 3D movement of these dogs was recorded based on 32 reflective markers positioned over key anatomical locations. Marker positions for twenty steady strides for one dog were averaged to drive the skeleton movement of a matching 3D dog model in Autodesk MotionBuilder®.

The final clips were rendered to show a realistic-looking shaded wireframe of the dog model at normal walk and trot. Varying types and degrees of lameness were then introduced to this animation based on previous kinematic studies[1].
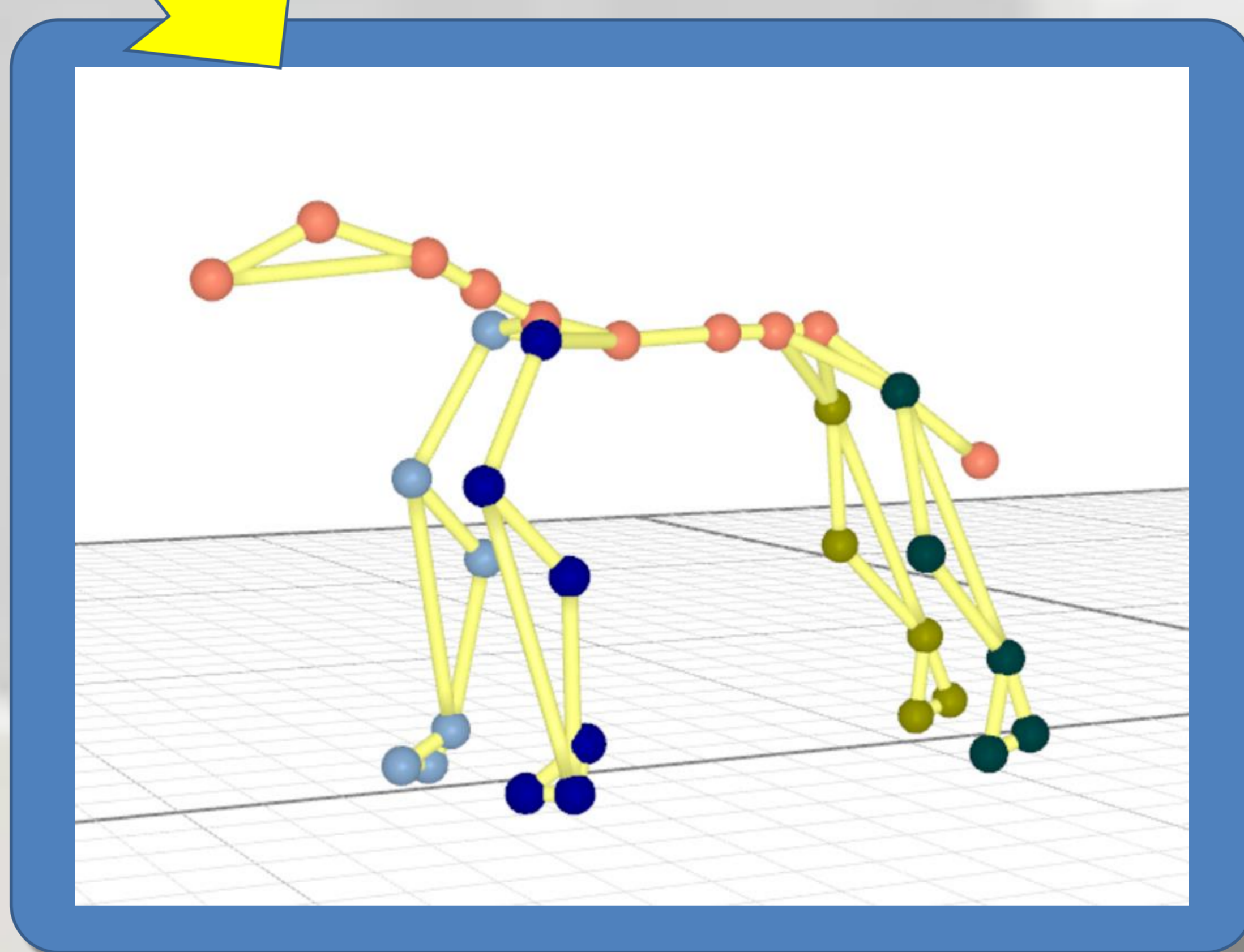




**Next Steps:**
Next stages of work will involve the inclusion of this model in a tool to enable it to be used for veterinary education; once validated it will be released as an Open Educational Resource.

1. Gómez Álvarez, C.B., Gustås, P., Bergh, A., Rhodin, M., 2017. Head and pelvic movement symmetry in trotting dogs with induced supporting lameness. *The Veterinary Journal*, In press.