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## When it comes to back care, size really doesn't matter, in African safari elephants, does carrying a rider or multiple riders' impact on musculoskeletal integrity?

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This study investigated the effect of weight bearing on joint and limb segment angles in forelimbs and hind limbs of the ridden elephant. Five sound working safari elephants completed walking trials on firm level ground under eight different rider conditions; no rider, one, two and three riders, all with and without saddle. Self-adhesive retro-reflective markers were attached at ten anatomical locations; five on the left forelimb and five on the left hind limb. Digital video cameras recorded and data was analyzed using 2D motion-analysis software. Forelimb and hind limb segment angles (relative to vertical) and joint angles (degrees) were measured at mid stance (MS); range of motion (ROM, degrees) from touchdown to toe off was calculated for each valid (n=970) stride. Data was analyzed by ANOVA and T-Test statistics. The presence of riders significantly influenced ( $P<0.01$ ) a greater number of limb segments and joint angles in MS than the presence of a saddle. Riders or saddle had no significant effect ( $P>0.05$ ) on MS angles of manus, carpus, pes or femorotibialis/femoropatellaris joint. At MS, humerus angle of retraction increased with rider number; tarsus joint angle reduced as rider number increased with no saddle with saddle, there was no significant effect. Carpus joint ROM reductions were significant ( $p<0.001$ ) for 3 riders with and without a saddle. The presence of riders influences limb kinematics in elephants indicating compensation for weight bearing and the potential for musculoskeletal compromise. The use of a saddle may modify the potential for musculoskeletal compromise.

### Biography

Jan Selfridge has completed her Postgraduate training at the McTimoney College of Chiropractic to earn a Master's degree in Animal Manipulation. Her practice covers South Oxfordshire, South Buckinghamshire and occasionally South Africa. Her lifelong passion for the protection and greater understanding of elephants led her to apply knowledge gained through her first degree in Animal Behavior & Welfare and her MSc studies to explore the impact of riders on elephants as their survival becomes increasingly dependent in the tourism industry. Her smaller equine, canine and feline clients whether working or enjoying domesticity was also benefitted from her application of chiropractic techniques, optimizing musculoskeletal wellbeing.

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