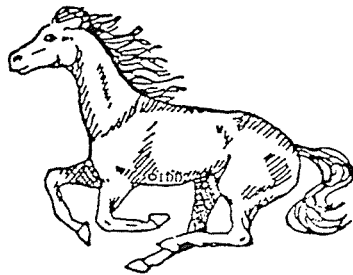


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# **Investigation of naturally occurring osteoarthritis in the metacarpophalangeal joints of wild horses.**



*A thesis presented in partial fulfilment of the  
requirements for the degree of*  
**Master of Veterinary Science**  
*at Massey University*

*Charlotte Emily Louise Cantley*  
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## Abstract

The purpose of this study was to assess the site, prevalence and characteristics of lesions affecting the proximodorsal aspect of the first phalanx (P1) in the forelimbs of wild horses.

An investigation was made of the metacarpophalangeal joints of 22 wild New Zealand horses with a mean age of  $7.36 \pm 3.27$  years (range 2 - 14 years). The articular surfaces of the metacarpophalangeal joints were stained with Indian ink and macroscopic lesions on the medial and lateral eminences of P1 were graded. Radiographs were taken of 2mm thick sagittal bone slabs sawn from both the lateral and medial eminences of proximodorsal first phalanx. The subchondral bone mineral density for five regions on the proximo-dorsal aspect of each bone slab was determined using a Norland XR-26 bone densitometer. Histological sections of the bone slabs were then prepared and the articular cartilage lesions on the proximo-dorsal aspect of P1 were assessed using both subjective and objective scoring methods.

Subjective assessment of cabinet radiographs showed subchondral bone sclerosis to be greater in those horses with severe articular cartilage damage. The subchondral bone mineral density also increased with age and with increasing severity of lesions in the overlying articular cartilage. Ossicles with a distinct trabecular bone pattern were identified at the proximo-dorsal margin of P1 in eight specimens from 5 horses. The macroscopic and histological articular cartilage scores increased significantly with age and the lesions were more severe on the medial compared with the lateral eminence of P1.

The study demonstrated cartilage changes, wear lines and subchondral sclerosis, consistent with osteoarthritis in the metacarpophalangeal joint of wild horses. The

severity of the changes increased with age. There was a significant relationship between subchondral bone sclerosis and overlying cartilage changes in the proximo-dorsal aspect of P1. The observations represent an age-related osteoarthritic process that may be present in all horses.

