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# **FLEXURAL LIMB DEFORMITIES IN THOROUGHbred FOALS IN NEW ZEALAND**

A thesis presented in partial fulfilment of the requirements for the degree  
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## Abstract

The aims of this thesis were to describe the descriptive epidemiology of congenital flexural limb deformities (FLD) in foals on commercial Thoroughbred stud farms, and to describe the management and treatment of these foals. Data were collected on five commercial Thoroughbred stud farms in the Auckland and Waikato regions. Data were collected primarily by stud farm personnel, and assisted by study personnel when on farm. Data were collected on a selective population of 203 foals during the 2013/2014 season.

Pre-selection by stud farm personnel towards foals with FLD prevented the calculation of prevalence and resulted in 67% (135/203) of the foals with records having one or more FLD recorded. Laxity was observed to affect 87/135 foals, contracture of at least one joint region 57/135 foals and 6/135 foals were back at the knee; nine foals suffered from multiple forms of deformity. The median score for laxity was 2 (IQR 2-3) on a four point scale. The median score for contracture affecting hoof-ground contact was 2 (IQR 2-3) on a three point scale, while the median score for contracture affecting the fetlock and carpal regions was 2 (IQR 2-2). Multiple scorings over time were provided for 69/135 foals, 64 of these foals showed improvement in the severity of deformities by the final scoring.

Inter-observer agreement (between study personnel) was strong when scoring flexural laxity ( $\kappa=0.95$ ), contracture affecting hoof-ground contact ( $\kappa=1.00$ ) and contracture in the joint regions ( $\kappa=0.85$ ). In contrast, inter-observer agreement between study personnel and stud farm personnel was lower when scoring flexural laxity ( $\kappa=0.69$ ) and when scoring contracture in the fetlock and carpal regions ( $\kappa=0.14$ ).

Treatment data were provided for 40/135 foals. Confinement was the most common form of treatment provided for mild and moderate cases of flexural contracture and flexural laxity; severe cases of flexural contracture required more invasive forms of treatment in combination with confinement. Improvement in the severity of deformities was observed following treatment in 28/42 (67%) cases of contracture observed to effect hoof-ground contact, 33/43 (77%) cases of contracture affecting the fetlock and carpal regions and 36/56 (64%) cases of laxity.

This thesis provides insight into the effect of FLD on Thoroughbred foals in New Zealand. The results indicate that foals tend to be mildly or moderately affected by FLD at birth and that treatment by stud farms is pragmatic.

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## List of Abbreviations

|       |   |
|-------|---|
| ALD   | Angular limb deformity (deformities)          |
| DIP   | Distal interphalangeal joint                  |
| DOD   | Developmental orthopaedic disease             |
| FLD   | Flexural limb deformity (deformities)         |
| HRNZ  | Harness Racing New Zealand                    |
| IQR   | Interquartile range                           |
| LF    | Left fore                                     |
| LH    | Left hind                                     |
| MCP   | Metacarpo-phalangeal joint                    |
| MTP   | Metatarso-phalangeal joint                    |
| NZ    | New Zealand                                   |
| NZB   | New Zealand Bloodstock                        |
| NZTBA | New Zealand Thoroughbred Breeders Association |
| RF    | Right fore                                    |
| RH    | Right hind                                    |
| SB    | Standardbred                                  |
| TB    | Thoroughbred                                  |



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