



Is there a relationship between the age at which training the National Hunt Thoroughbred Racehorse commences and chiropractic assessment of skeletal symmetry

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Application: Commencing training of National Hunt (NH) racehorses at 3yrs (rather than 4) had, on average, fewer misalignments of the spine and pelvis. Training at an earlier age may be beneficial for skeletal symmetry

Introduction: Injury in the thoroughbred (TB) racehorse is the greatest source of lost training days and time off from the racetrack. Previous research has highlighted that Repetitive Strain Injury (RSI) is the most common cause of musculoskeletal failure in the horse (Reed et al 2013). The age at which training commences and the appropriateness of this training are key determinants in affecting RSI. Joint dysfunction and asymmetry are strong indicators for uneven loading of bones and joints and consequent RSI. Chiropractic method's aim to improve joint function (restoring optimal nerve and muscle function) and the symmetry balance of the musculoskeletal system through application of a combination of stimulating, mobilising and manipulative techniques. Limited research has shown that symmetrical horses are less likely to develop RSI. The aim of this study is to investigate if the age at which training commences, is related to the number of misalignments (MA's) observed in the racehorse training to run in Point to Points (P2P).

Material & Methods: 16 sound TB racehorses from a single racing stable in a similar training routine were assessed for MA's of the neck, spine and pelvis by a qualified McTimoney Animal Practitioner. All chiropractic assessments were carried out on the same day and in the same location. Appropriate written informed consents were obtained prior to the study. A pilot study confirmed the reliability of the method at the venue. Two groups of horses were assessed, 8 four year olds (4yo) who began training at 3 and 8 five year olds (5yo) who began training at 4. Each group contained 6 geldings and 2 females. Each randomly selected animal was manually assessed on a level concrete floor and MA's at specific anatomical locations noted. The mean numbers of MA's were computed by group according to age, anatomical location and sex. Data was analysed using JMP Statistical Discovery Software with Standard Deviation and Standard Error of Mean calculated using a 95% confidence interval. Students t-test's assuming unequal variances were used to compare data sets. Also calculated were O'Brien, Levene and 2-sided F-tests.

Results: Age had a significant effect ($p < 0.05$) on the number of MA's observed in the cervical spine and pelvis.

Table 1 Percentage of MA from possible MA by Anatomical Area and Age

Anatomical Area	% MA from possible MA		Mean SD Range			Mean SD Range		
	4yo	5yo	4yo	5yo	4yo	5yo	4yo	5yo
Cervical	32.14	39.29	2.25	0.71	1 – 3	2.75	1.58	0 – 5
Thoracic	35.00	38.33	5.25	2.87	0 – 8	5.75	3.11	1 – 10
Lumbar	14.58	31.25	0.88	0.99	0 – 2	1.88	1.89	0 – 5
Pelvis	12.50	25.00	0.38	0.52	0 – 1	0.75	1.04	0 – 2

The mean number of MA's observed in both groups were compared to the total number of MA's possible in each animal and expressed as a percentage. There were statistically significant differences ($p = 0.049$) between the number of MA's in the cervical spine of the 4yo ($n = 2.25$) group and the 5yo's ($n = 2.75$) when tested using a 2-sided F-Test. There was a statistical significance ($p = 0.0004$) observed in the number of MA's detected in the Pelvis area of the different groups when tested using Levene's test. A mean of 0.38 was present in the 4yo's compared to 0.75 in the 5yo's.

Conclusions: This study provides positive support for the commencement of training of NH racehorses at 3, rather than 4 years of age. The appropriate training of horses to run in 4yo P2P's has been shown to be beneficial in terms of MA observed, particularly in the pelvis and neck. Further study based on a larger cohort of participants is warranted and recommended.

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Reference: Reed S, Jackson B, Wood J, Price, J and Verheyen K 2013. The Veterinary Journal. 196: 339 – 344