

An investigation into the relationship between rider pelvic asymmetry and equine pelvic asymmetry in relation to the use of physical therapy

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There is increasing use of physical therapy for both horse and rider but limited scientific research linking the horse, the rider and their symmetry together. Pelvic asymmetry can indicate musculoskeletal imbalance and affect performance. Asymmetry of the horse and rider partnership is a challenging and complex area. Physical therapy may have an impact on the pelvic asymmetry of both the horse and the rider as independent parties. This study aimed to investigate the hypothesis that single horse/rider combinations who have regular (4 or more times per year) physical therapy will have improved pelvic symmetry than horse/rider combinations that have no physical therapy. Fifty single horse (age, 6-14yrs) and rider (age, 18-45yrs) combinations (minimum 6-month partners) were selected with inclusion/exclusion criteria. Treatment group(n=25) horse and rider had both received regular physical therapy (chiropractic, osteopathy, physiotherapy or sports massage therapy). Control group(n=25) pairs, received no physical therapy treatment for a minimum of 1 year prior to the study. On level ground, triplicate measurements of horse tuber coxae (TC) heights (stood square) and rider anterior superior iliac spine (ASIS) (feet@30cm) to floor were taken using a plumb line. All measurements for both horses and riders were taken by the same person, blinded to the groups. Symmetry indices (SI) were calculated from raw data. Data were tested for normality (Shapiro Wilk test) and Mann Whitney test, regression analysis used with level of statistical significance at $p < 0.05$. There was a significant difference between treatment and control groups of pelvic symmetry values for horses (mean $SI \pm SD$: control, 4.69 ± 2.48 ; treatment, 2.35 ± 0.61 , $p < 0.0001$) and riders (mean $SI \pm SD$: control, 3.4 ± 1.25 ; treatment, 2.11 ± 0.88 , $p < 0.0001$). There was no significant correlation between horse TC and rider ASIS asymmetry means for treatment group ($r^2 = 0.04$, $F = 0.95$, $p = 0.34$) or control group ($r^2 = 0.01$, $F = 0.29$, $p = 0.6$). This study provides positive evidence that regular use of physical therapy for both horses and riders may improve pelvic symmetry measures of the horse and rider individually. In this study there was no relationship between the amount of pelvic rotation symmetry of the horse and the rider ASIS pelvic symmetry. Further research would now be warranted of the effects of individual physical therapy on specific pelvic symmetry measures for both horse and riders individually and as a pair and in relation to performance parameters to investigate this relationship further.

Lay person message: Pelvic asymmetries can alter body mechanics which may affect performance. Physical therapy to improve pelvic symmetry is increasingly provided for both horses and riders. This study shows that when horses and riders receive regular physical therapy, the pelvic symmetry of both improves compared to horses and riders receiving no physical therapy. This should be an encouragement to riders to not only look after their horses but themselves as well.

Key words: asymmetry; pelvis; symmetry; horse; rider; therapy

Declarations

Ethical code: Legal and ethical requirements have been met with regards to the humane treatment of animals described in the study, reviewed by the McTimoney College of Chiropractic Research Ethics Committee before commencement of the study.

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