

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

KINEMATICS ANALYSIS OF MARCHA BATIDA SIMMETRY ON MANGALARGA MARCHADOR HORSES

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Mangalarga Marchador (MM) breed, originated in Minas Gerais, Southeastern Brazil, are valued for their gait known as “marcha”. The aim of this study was to compare the “marcha batida” symmetry at three different speeds through equine kinematics analysis of the MM breed. Fourteen equines were assessed (five males and nine non-pregnant females), adults (87 ± 22 months old) and registered at the studbook. Animals were filmed by camera with a 240 Hz frequency (model JVC GC-PX100 Full HD Everio Camcorder) placed seven meters from the animal on a sagittal movement plane in a seven by one previously marked track on hard ground. Horses were mounted by their own trainer and were requested to perform three “marcha batida” strides according to the following speeds: slow, intermediate and fast. Next, speed was determined based on time and distance covered by the animals, which resulted in 2.34 m/s, 2.89 m/s and 3.27 m/s for slow, intermediate and fast “marchas”, respectively. Diagonal symmetry was calculated by the ratio between diagonal bipedal footfall support timing (right and left) whereas lateral symmetry was calculated in the same way, except that it employed lateral bipedal footfall support timing (right and left). A spreadsheet was used to record the symmetry, in which the closer to the absolute value one, the better is the animal symmetry. Symmetry was compared by the paired t test ($p < 0.05$) through R software. Right and left diagonal support of slow “marcha” (1.0035 ± 0.04) was different from those of intermediate and fast “marchas” (1.0185 ± 0.03 and 1.0100 ± 0.02) ($p < 0.05$). Slow “marcha” lateral support symmetry (0.9871 ± 0.03) also differed from those of intermediate and fast “marchas” (0.9907 ± 0.02 and 0.9852 ± 0.02). There was no difference regarding diagonal and lateral support symmetry between intermediate and fast “marchas” ($p > 0.05$). Animals were less symmetric in diagonal bipedal support as the gait speed increased.

Keywords: biomechanics, movement, objective methods, videography

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