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Effects of unbalanced and balanced applied loads on Norberg angle in ventrodorsal hip-extended radiographies

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Two radiographic distraction techniques (Standard Ventrodorsal Hip-Extended Radiography, SHER, and Balanced Hip-Extended Radiography, BHER) were evaluated for Canine Hip Dysplasia (CHD) diagnosis on 100 hip joints of 50 dogs to determine the most reliable method in the detection of higher hip laxity by means of Norberg-Olsson angle (NoA) evaluation (FCI hip scoring). Anesthesia was standardized due to uniformity in muscle relaxation and applied extending loads (SHERKg and BHERKg) were measured on hind legs using electronic weight scales (EWS) simultaneously with ventrodorsal (V/D) radiographies. Results of NoA scores were evaluated statistically together with weight scale (WS) values. Significant differences were found between groups of methods for both in WS results ($p < .001$) and NoA evaluations ($p < .001$). The difference between right and left sides in WS results was not found significant ($p > .05$). Even if there was no significant difference occurred in this, balancing the loads with BHER method caused a significant difference in NoA values between tested methods ($p < .001$). Moreover, the linear, positive and strong correlation between SHER and BHER methods was shown the reliability of BHER method in NoA evaluations ($r = .910$, $p < .001$). In conclusion, by having positive and strong correlation with the standard method, and better outcomes in FCI hip scoring with lower misdiagnose frequency thus affecting the clinical outcome, BHER method was offered as a reliable method in the diagnosis of CHD.

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