Precise determination of lower extremity

Simonsen, Ole; Andersen, Mikkel Meyer; Skou, Søren Thorgaard; Thomsen, Hanne

Publication date: 2013

Document Version
Accepted author manuscript, peer reviewed version

Link to publication from Aalborg University

Citation for published version (APA):
Precise determination of lower extremity.

Simonsen, Ole¹; Andersen, Mikkel Meyer²; Skou, Søren Thorgaard³,⁴; Thomsen, Hanne⁵.

¹ Department of Orthopaedic Surgery, Aalborg University Hospital, Aalborg, Denmark
² Department of Mathematical Sciences, Aalborg University, Aalborg, Denmark
³ Orthopaedic Surgery Research Unit, Aalborg University Hospital, Aalborg, Denmark
⁴ Center for Sensory-Motor Interaction, Department of Health Science and Technology, Aalborg, Denmark
⁵ Department of Radiology, Sygehus Vendsyssel, Frederikshavn, Denmark

Introduction: Assessment of the mechanical axis (MA) is routine in the examination of patients with lower extremity pain. Long leg x-ray examination is the golden standard for exact measurement, but associated with a significant x-ray dose. An alternative method to examine the MA exactly has been highly warranted. We developed a computerized photo method to calculate MA from a digital photo.

Methods: 25 patients, 10 f/15 m, mean age 65 (43-78) had both legs examined by the photo method and long leg x-ray simultaneously. The location of the centre of the femoral head was calculated from ink marks on both superior iliac spines.

Results: The digital photo method was found to be highly reliable: The inter-observer average difference was 0.008 +/- 1.30 (mean+/- SD) and the intra-observer average difference (day to day variation was 0.003 +/- 1.33. MA determined by the two methods was highly correlated (R = 0.943). The 95% prediction interval for the photo values was ± 1.88 dg. (95% confidence interval).

Conclusion: Among the examined age group and severity of malalignment the photo method appears to be a very attractive alternative to the conventional long leg x-ray. It seems most convenient for routine clinical examination, and also for screening and control purposes in primary health care.

Peer-reviewed abstract for the 34th SICOT Orthopaedic World Conference 2013, Hyderabad, Indien, 17.-19. Oktober 2013

Topic: Information Technology - n/a