



DEPARTMENT OF THE ARMY
HEADQUARTERS TRIPLER ARMY MEDICAL CENTER
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HST-DS-0

15 September 1975

Commander
Fitzsimons Army Medical Center
ATTN: Captain Cornelius J. Scanlon, AMSC
Physical Therapy Section
Denver, Colorado 80240

Dear Captain Scanlon:

Despite my late reply to your letter, I am still vitally interested in the study of prosthetic fit of AK amputees by means of X-ray techniques. We do not have as many AK amputees here at Tripler, however, I have managed to obtain a few films on a few patients. They again confirm the observation of the typical fitting and alignment of the AK socket. The femur is not placed in any adduction.

Concerning the reliability of the measurement technique concerning leg length discrepancy, the technique you have devised of placing one arm of the goniometer along the apex of the two heads of the femur with the movable arm down the center of the femur I feel is basically valid. Ideally, the leg length should be equalized, however, when it comes down to the real nitty-gritty of what we are trying to show is abduction of the femur in relationship to functional capability of the amputee. The leg length discrepancy does contribute to the functional disability and that the femur on the short side is in abduction, therefore, putting the short hip abductors at a relatively poor position. Perhaps in the future, care should be taken to make sure the pelvis is level with the patient standing by building up under the prosthetic side, however, it would seem that the prosthesis should be of the same length and would be a more preferable manner, both for the X-rays for this study as well as for the patient.

I agree with the concept of Ivan's special alignment. Certainly before and after type of evaluation of the patient's gait, "pelvic stability" and the frontal plane are important and hopefully you are able to get some of this data from the patients there at Fitzsimons. So far here, I am limited to just measurements of prostheses that have been fitted

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in the past, however hopefully on any patients fitted in the future, we will be able to get some better alignments.

I cannot add anything particular concerning the 10 points that you are looking for on the X-ray as I feel they are all very valid points. Hopefully, the patients' X-rays are being taken with the feet either straight forward or in equal amount of external rotation as I am interested in the amount of hip rotation and can obtain this from those X-rays by direct measurement. I also reviewed the literature a little over a year ago and found no articles referring to X-ray study of the AK amputee concerning alignment. I did not run across the Upsala Journal of Medical Science, I will review that article however. I know of only one other facility during the Vietnam war that was doing this type of evaluation. That was at Valley Forge Army Medical Center where apparently this technique was used according to an X-ray technician I have subsequently known.

I am interested in cooperating with you in any articles that may be published concerning this matter. I will be in Denver the week of December 8th through the 12th for a Pediatric Orthopedic Surgery meeting and hope to get together with you at that time. Perhaps we can get something together for publication.

Sincerely,



GERALD W. MAYFIELD, M.D.

Colonel, MC

Assistant Chief, Orthopaedic Service