

1           The importance of limb deformity and limb lengthening training: a fellow's perspective

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3 Dear Editor of the World Journal of Orthopedics,

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5           I am currently a fellow in Limb Lengthening and Complex Reconstruction at the Hospital for  
6 Special Surgery (HSS) in New York. I previously completed a Foot and Ankle Surgery fellowship  
7 where I was exposed to complex deformities. As the year progressed I noticed how many patients with  
8 foot and ankle deformities also had femur, knee, or tibia deformities that were “not of our  
9 competence”. I started thinking that two adjacent segment deformities should probably not be  
10 considered completely independent of one another. I wanted to be able to thoroughly understand,  
11 evaluate, and possibly treat any malalignment above the ankle. I therefore decided to apply for a  
12 fellowship in Limb Lengthening and Complex Reconstruction.

13           In the USA there are only 3 fellowship programs, directed by Drs. Paley, Herzenberg, and  
14 Rozbruch, respectively. All three directors have contributed extensively – clinically and scientifically -  
15 to the diffusion of the Ilizarov technique (and much more) in North America. Dror Paley's *Principles*  
16 *of Deformity Correction*, in my humble opinion, is one of the greatest contributions to the field of  
17 Orthopaedics in the last 50 years [1]. He must be credited for the introduction and popularization of  
18 tools that allow to objectively assess upper and lower extremity alignment and deformity. Over the past  
19 20 years, said principles have been further investigated by Drs. John E. Herzenberg and S. Robert  
20 Rozbruch. They have had the vision and foresight of disseminating this knowledge to the young  
21 surgeons by establishing their own fellowship program. The fellowship at HSS is the only one in an  
22 academic institution, but only over the past year have the residents been expected to complete a  
23 rotation on the service. Like me in residency, I noticed that almost none of the residents were much  
24 familiar with the concept of lateral distal femoral angle (LDFA), medial proximal tibial angle (MPTA),

25 posterior proximal tibial angle (PPTA) etc. to identify the *type* of deformity, the *degree* of deformity,  
26 the *origin* of the deformity, and the *biomechanical impact* of the deformity on the limb.

27 As part of my duties as a fellow I present at monthly combined conferences with other  
28 orthopaedic services at the hospital (i.e. Sports Medicine, Hip Preservation, Arthroplasty, Foot &  
29 Ankle, Pediatric Orthopedics, etc). During these events our service discusses clinical cases in depth,  
30 more often than not analyzing and measuring deformity, and creating an algorithm to treat it  
31 accordingly. The most important aspect of these combined meetings is stressing the overall limb  
32 alignment without focusing on a specific bone segment or joint. For instance, what is the sense of  
33 performing a knee replacement alone in a patient with knee arthritis and extra-articular deformity?  
34 Could realigning the femur or tibia prior to the replacement contribute to the success of -or even  
35 prevent the need for- the arthroplasty? In a patient requiring a triple arthrodesis for a rigid flatfoot who  
36 also has genu valgum, should the latter be addressed prior to performing the triple? Wouldn't  
37 realigning the knee AFTER a triple affect the plantigrade position of the foot?

38 Orthopaedics, like many other specialties, is becoming more and more subspecialized. While this is  
39 allowing for more rapidly evolving technological advances, it is making us ignore the more important  
40 big picture. Dr. Chitranjan S. Ranawat says that "the eyes see what the mind knows" [2]. Unfortunately  
41 many of us only have marginal knowledge of the principles of extremity deformity/alignment. How can  
42 this not have an impact on our practice? If I stop and think that I almost went into practice without a  
43 limb deformity training, I am grateful to myself and to my mentors that I decided to invest one more  
44 year of my life to do a second fellowship. Despite seeing my future as a foot and ankle surgeon, I know  
45 that the limb deformity fellowship (often thought as a specialty that only wants to make people taller!) I  
46 am completing now will substantially affect my approach to the treatment of deformities.

47 Obviously it is not possible for all orthopaedists to complete a formal a limb deformity  
48 fellowship, but it is possible for ALL residents to have exposure to it. More academic institutions

49 should take action to account for this educational shortcoming because before being foot and ankle,  
50 knee, hip, hand, shoulder, or spine specialists, we are orthopaedic surgeons.

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52 Sincerely,

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