Are our goals in orthodontics still up to date?

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Regardless of the technology used, every orthodontic treatment should be based on adequate diagnostics and precise planning. Today, practitioners have improved tools at their disposal for accurate diagnosis such that they are no longer dependent on just two usually handheld plaster casts, panoramic radiographs, cephalometric radiographs and photographs. Instead, they can utilise, among other things, scanning procedures with exact assignment of the mandible to the maxilla in centric occlusion, CBCT and digital joint tracking systems, which also and indeed especially include centric relation in the diagnosis. Orthodontic treatment is also becoming more efficient in terms of technology, less invasive and more patient-friendly, whether using fixed appliances, functional orthodontics or aligners.

To evaluate the diagnostic data, mean values are sometimes required, but these are not without problems. The mean describes the statistical average value and is one of the position parameters in statistics. To calculate the mean, we add up all the values in a data set and divide the total by the number of all values. For example, we might imagine that four friends go for a drink one evening. Karl drinks six beers, Hauke five, Paul one and Carsten none. In total, the friends drink 12 beers, which gives a mean of three each ([6 + 5 + 1 + 0]: 4 = 3). This example illustrates a problem with the mean: it can easily be misleading if there are extreme deviations. On average, each of the men drank three beers, but in reality, there were two sober and two rather drunk people sitting at the table. As such, the mean often provides a good guide, but must be critically questioned. German politician Franz Josef Strauss (1915–1988) ironically described it as follows: "If you have your head in the sauna and your feet in the fridge, statisticians speak of a pleasant average temperature."[1] This means that we should instead opt for more personalised, individual data analysis. Let me cite the method of cephalometric analysis described by Segner and Hasund[2] as an example. Here, the data collected from a patient are not compared with mean values for the population, but the individual measurements of the measured values serves as the basis for the cephalometric analysis.

We have sufficient information from orthodontics and aesthetic dentistry for aesthetic analysis, but what about occlusal analysis? Do the six keys to normal occlusion outlined by Andrews[3] still apply without restriction, or should we use the Euler angle norms for tooth rotation, torque and tip according to Steinvorth et al?[4] How can the values of the tooth position be individualised and how can we plan an individualised occlusion, initially in aligner orthodontics, in the virtual treatment simulation? Should we always aim to achieve an Angle Class I relationship, and is there sufficient evidence for this? There are questions upon questions, and yet one question in particular has been bothering me for a long time and is becoming increasingly prominent: everything mentioned so far relates exclusively to static occlusion, but not all the patients I have treated live with an exclusively static occlusion. All of them require their individ-

ual function and therefore their dynamic occlusion, or, more precisely, a static and dynamic occlusion in a corresponding, mutually related physiological condylar position. Is it not therefore time to deductively work out an improved target specification that takes this into account?

Planning and therefore treatment are only ever successful if the goal to be pursued is defined precisely. Let us rethink our previous beliefs in a fallibilist way and face up to criticism, criticism not in the sense of complaint or denigration, but in the original sense of distinguishing and judging, as Brandom[5] points out: "I call fallibilist meta-induction an interference that, firstly, starts from the observation that every belief we have had and every judgment we have made has ultimately turned out to be wrong, at least in detail, and which, secondly, draws the conclusion that all beliefs or judgments that we will ever have or could have will ultimately turn out to be defective in an analogous way if they are only subjected to a sufficiently critical examination."

References

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