

Thema: Digitale Patientenaufnahme, funktionelle Analyse, CAD/CAM-gestützte prothetische Rehabilitation: Der vollständige digitale Workflow in der modernen Zahnmedizin

Autoren: Dr. Karsten Kamm, Dr. Cyrus Alamouti und Dr. Dr. Stephan Weihe

Literatur

1. Weihe S, Collins D, Röers A. Ein Gesichtsscanner als Ausgangspunkt digitaler Prozesse: Arbeiten mit dem Scanner RAYFace. Quintessenz Zahntech 2024;50(2):158–171.
2. Kamm K. Gesichtsscan und digitaler Zwilling als entscheidender Faktor im digitalen Workflow. ZWL Zahntech Wirtsch Labor 2023;54(11):34–47.
3. Kamm K. Gesichtsscan und Funktionsanalyse als Ausgangspunkt digitaler Prozesse für Zahnersatz. ZWL Zahntech Wirtsch Labor 2024;55(4):28–32.
4. Kamm K, Weihe S, Alamouti C. Ray 5D: Weiterentwicklung, Möglichkeiten und Integration moderner Diagnostik. Quintessenz Zahntech 2026;52(2):156–163.
5. Hassan B, Greven M, Wismeijer D. Integrating 3D facial scanning in a digital workflow to CAD/CAM design and fabricate complete dentures for immediate total mouth rehabilitation. J Adv Prosthodont 2017;9(5):381–386.
<https://doi.org/10.4047/jap.2017.9.5.381>
6. Amornvit P, Sanohkan S. The accuracy of digital face scans obtained from 3D scanners: An in vitro study. Int J Environ Res Public Health 2019;16(24):5061.
<https://doi.org/10.3390/ijerph16245061>
7. Asutay HC, Turkyilmaz I, Benli M, Martinez JL. Transforming smiles using an intraoral scanner and face scan application on smartphone. J Dent Sci 2022;17(3):1413–1414.
<https://doi.org/10.1016/j.jds.2022.04.032>
8. Jafri Z, Ahmad N, Sawai M, Sultan N, Bhardwaj A. Digital Smile Design – An innovative tool in aesthetic dentistry. J Oral Biol Craniofac Res 2020;10(2):194–198.
<https://doi.org/10.1016/j.jobcr.2020.04.010>
9. Pérez-Giugovaz MG, Park SH, Revilla-León M. Three-dimensional virtual representation by superimposing facial and intraoral digital scans with an additively manufactured intraoral scan body. J Prosthet Dent 2021;126(4):459–463.
<https://doi.org/10.1016/j.prosdent.2020.07.012>
10. Revilla-León M, Kois DE, Zeitler JM, Att W, Kois JC. An overview of the digital occlusion technologies: Intraoral scanners, jaw tracking systems, and computerized occlusal analysis devices. J Esthet Restor Dent 2023;35(5):735–744.
<https://doi.org/10.1111/jerd.13044>
11. Solaberrieta E, Mínguez R, Barrenetxea L, Otegi JR, Szentpétery A. Comparison of the accuracy of a 3-dimensional virtual method and the conventional method for transferring the maxillary cast to a virtual articulator. J Prosthet Dent 2015;113(3):191–197.
<https://doi.org/10.1016/j.prosdent.2014.04.029>
12. Inoue N, Scialabba R, Lee JD, Lee SJ. A comparison of virtually mounted dental casts from traditional facebow records, average values, and 3D facial scans. J Prosthet Dent 2024;131(1):136–143. <https://doi.org/10.1016/j.prosdent.2022.03.001>
13. Amezua X, Iturrate M, Garikano X, Solaberrieta E. Analysis of the impact of the facial scanning method on the precision of a virtual facebow record technique: An in vivo study. J Prosthet Dent 2023;130(3):382–391. <https://doi.org/10.1016/j.prosdent.2021.10.025>

14. Leung MY, Lo J, Leung YY. Accuracy of different modalities to record natural head position in 3 dimensions: A systematic review. *J Oral Maxillofac Surg* 2016;74(11):2261–2284. <https://doi.org/10.1016/j.joms.2016.04.022>
15. Shuto T, Mine Y, Tani A, Taji T, Murayama T. Facial scans in clinical dentistry and related research: A scoping review. *Cureus* 2025;17(4):e81662. <https://doi.org/10.7759/cureus.81662>
16. Meto A, Halilaj G. The integration of cone beam computed tomography, artificial intelligence, augmented reality, and virtual reality in dental diagnostics, surgical planning, and education: A narrative review. *Appl Sci* 2025;15(11):6308. <https://doi.org/10.3390/app15116308>