

Chapter 74

T-Scan 8 Recording Dynamics, System Features, and Clinician User Skills

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ABSTRACT

The newly designed T-Scan 8 Computerized Occlusal Analysis system represents the state-of-the-art in occlusal diagnosis. The reliability of the system's high definition recording sensors, the many occlusal analysis timing and force software features, and the modern-day computer hardware electronics that record occlusal function in 0.003 second real-time increments affords a clinician unparalleled occlusal contact timing and force information with which to predictably diagnose and treat many occlusal abnormalities. T-Scan 8 represents the culmination of 30 years of T-Scan technology innovation and development with revised desktop graphics and less toolbar buttons for simpler graphical display designed to shorten the T-Scan learning curve. The chapter also discusses five useful diagnostic occlusal recordings employed when treating commonly observed occlusal problems. Lastly, the chapter outlines the three Learning Levels of T-Scan mastery that must be accomplished for a clinician to become an effective and competent T-Scan user.

INTRODUCTION

Present day computerized occlusal analysis represents the State of the Art in occlusal diagnosis. T-Scan 8 (Tekscan, Inc., S. Boston, MA, USA) represents the culmination of thirty years of T-Scan technology innovation into the science of Dental Occlusion. T-Scan 8 has revised desktop graphics for simpler display, with less toolbar buttons and icons to minimize clinician complexity, which had made previous T-Scan versions somewhat difficult to readily learn and effectively implement clinically. The combination of

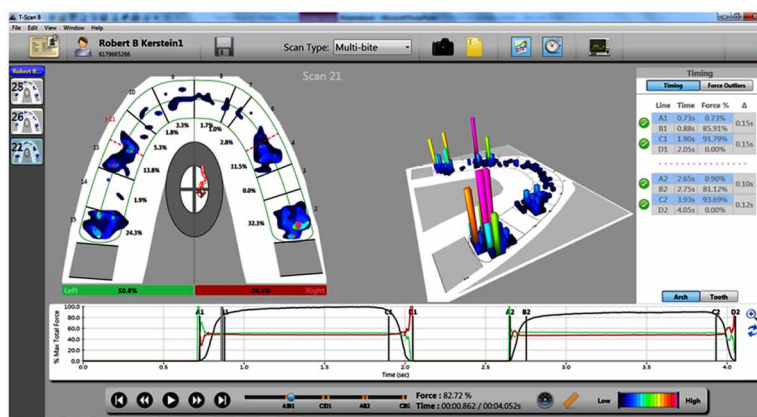
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the reliability of the High Definition (HD) T-Scan recording sensors, the occlusal timing and relative force analysis software features, and the modern-day computer hardware electronics, affords the clinician unparalleled occlusal force and timing information, with which to diagnose and treat a wide range of commonly observed occlusal problems. The T-Scan technology's studied abilities to measure time durations (Kerstein & Wright 1991; Hirano, Okuma, & Hayakawa, 2002), illustrate ordered tooth contact time-sequences (Kerstein, Chapman, & Klein, 1997; Koos, Holler, Schille, & Godt, 2012), reproduce relative occlusal force (Kerstein, Lowe, Harty, & Radke, 2006; Koos, Godt, Schille, & Göz, 2010), and locate excessively forceful occlusal contacts (Maness, 1988; Maness, 1991), is a vastly superior diagnostic method compared to the commonly utilized, non-digital occlusal indicators which dentists routinely employ to determine occlusal contact force levels (articulating paper markings, wax imprints, silicone imprints, and articulated stone dental casts (Kerstein, 2010). None of these dental materials have demonstrated any scientifically proven capability to record tooth contact time-sequences, or describe relative differences in contact occlusal force levels. Moreover, all of these non-digital occlusal indicators require the clinician to "Subjectively Interpret" their meaning and their supposed occlusal function representations (Kerstein & Radke, 2013).

T-Scan 8 has a definitively simpler user presentation, designed to shorten the learning curve for the clinician while standardizing the display and eliminating any significant clinician preferential software set up options present in prior T-Scan versions. Desktop changes from T-Scan 7 include an enlarged Force vs. Time graph for easier visualization of all the color-coded force and timing lines, and a rotating 3-Dimensional ForceView window that improves the visualization of the moving individual force columns observed during movie playback. The rotating 3-D ForceView allows the clinician to orient the window in any view that during playback, best eliminates the overlap of the rising and falling force columns (Figure 1).

Clinically, the T-Scan 8 system is used to record a number of distinctly different functional mandibular movements that illustrate to the clinician, differing aspects of a given patient's occlusal contact force and time-sequencing patterns. Occlusal data is gathered by the patient occluding into and compressing the HD recording sensor, and then making repeated closures, or excursive movements across its' surface.

Figure 1. The T-Scan 8 desktop with a rotating 3-dimensional ForceView window, and an enlarged force vs. time graph



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