



Osstell ISQ

Your guide to
optimal implant loading decisions

Three reasons why you need Osstell ISQ.

With a success rate above 95%, who needs diagnostics?

Implant treatment is one of the most predictable dental therapies, with near-perfect success rates.

However, the nature of the treatment is evolving. Today, more patients ask for immediate loading of their implants. And patients who in the past might not have been candidates for implants ask to be treated, too.

This naturally puts greater requirements on the dentists and the technology. Allowing early loading, and successfully treating risk patients – despite the less favorable odds – create a need for more capable diagnostic tools.

Osstell ISQ is such a tool. It's a complete diagnostics system for determining dental implant stability. It provides the treating dentist with the accurate, consistent and reliable stability measures needed for making informed load decisions, avoid failure and give patients added quality assurance.

1. Optimal loading decisions
2. Early warnings – preventing failure
3. Quality assurance

1. When is the right time to load? Osstell ISQ helps you decide.

The Osstell® ISQ system makes it easier for dentists to decide when is the optimal time to load implants. It's the ideal complement to their own tactile assessment.

The decision will always be a complex one. Several key clinical parameters and risk factors are involved – most of them related to the stability of the implant. Accurate measurements of implant stability therefore provide valuable diagnostic insight that helps ensure successful treatments.

At placement, stability can be difficult to quantify objectively by merely relying on tactile perception. Torque measurements are difficult to repeat once the implant has started to integrate and can therefore not provide a baseline for subsequent comparisons. The invasive torque method may even damage the healing if used for monitoring osseointegration.

The Osstell ISQ meter addresses this dilemma in a unique way. Not only does it measure and quantify the primary implant stability with unparalleled accuracy. In a two-step treatment – still the predominant scenario – it also provides secondary measures. This makes it possible to monitor osseointegration over time and determine the optimal time for loading the implant.

2. Early warnings instead of failure.

A failed treatment results in suffering for the patient and considerable costs for both the patient and the dentist. A precise and reliable diagnostics tool like Osstell ISQ reduces the risk of failure.

Each implant patient is unique and must be judged by his/her own characteristics. Factors affecting the

outcome of loading include the patient's age, the density and volume of the bone – as well as the degree of osseointegration.

Dentists sometimes encounter patients whose initial stability score is low. The reason could be that they have had to undergo a bone graft. In such higher-risk situations, most surgeons would avoid an early-loading protocol.

Similarly, a significant decrease in stability indicates a potential problem and should be considered an early warning. The surgeon may prefer to unload the implant – or perhaps place additional implants – and then wait until stability increases.

Thanks to the accuracy of ISQ measurements, surgeons can make a more well-informed choice of protocol for each patient. And by comparing initial and secondary stability readings, they can detect and act on any unexpected development during healing and osseointegration.

This makes the treatment of high-risk patients easier and more predictable – allowing more of these patients to be treated and more of their treatments to be successful.

3. Diagnostics add quality.

Because Osstell ISQ helps the dentist decide when to load and avoid failure in high-risk situations, it becomes a quality-assurance system for the clinic. Most patients intuitively understand the stability measures and how they govern when to load an implant and when to wait. This increases their sense of confidence, security and quality.

Osstell ISQ also facilitates communications – between surgeon and dentist, as well as between different clinics. They can now compare treatments and results in an objective manner, and transfer valuable knowledge and experience among themselves or to dentists in training.

*Dr Tiziano Testori, Private Practice, Como, Italy:
"I use the Osstell meter as a quality-assurance tool for documentation and for communication within my team, with referrals and with my patients."*

*Dr Peter Andersson, Private Practice, Feltre, Italy:
"I use the Osstell meter to follow ISQ for implants in compromised situations, and for quality assurance."*



ISQ. The blessings of a universal scale.

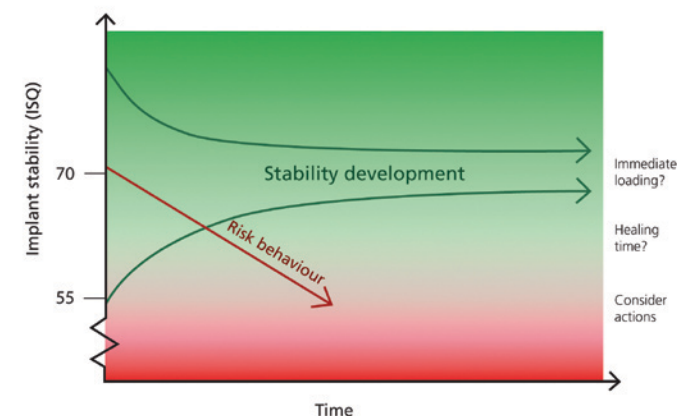
ISQ (Implant Stability Quotient) is a measurement scale for use with the RFA (Resonance Frequency Analysis) method of determining implant stability. It's a mapping of resonance frequencies (kHz), presented as a clinically useful scale of 1-100 ISQ.

Here is how ISQ works and what it achieves.

The Osstell ISQ meter stimulates a SmartPeg™ mounted on the implant, by emitting magnetic pulses. These cause the SmartPeg to resonate with certain frequencies depending on the stability of the implant. The resonance is picked up by the Osstell ISQ meter.

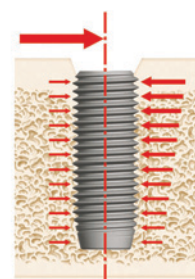
The SmartPegs have been calibrated in such a way that they all show comparable values for the same degree of stability, even when measuring implants from different systems.

The ISQ scale makes it possible to establish a standard clinical range within which stability values should fall to make a successful treatment outcome likely. Several



studies have been conducted based on RFA measurements and the ISQ scale. They provide valid indications that the acceptable stability range lies above 55 ISQ.

ISQ values have also been used to generate the graph shown here, which has proven useful for determining if an implant is sufficiently stable at any stage of the treatment process.

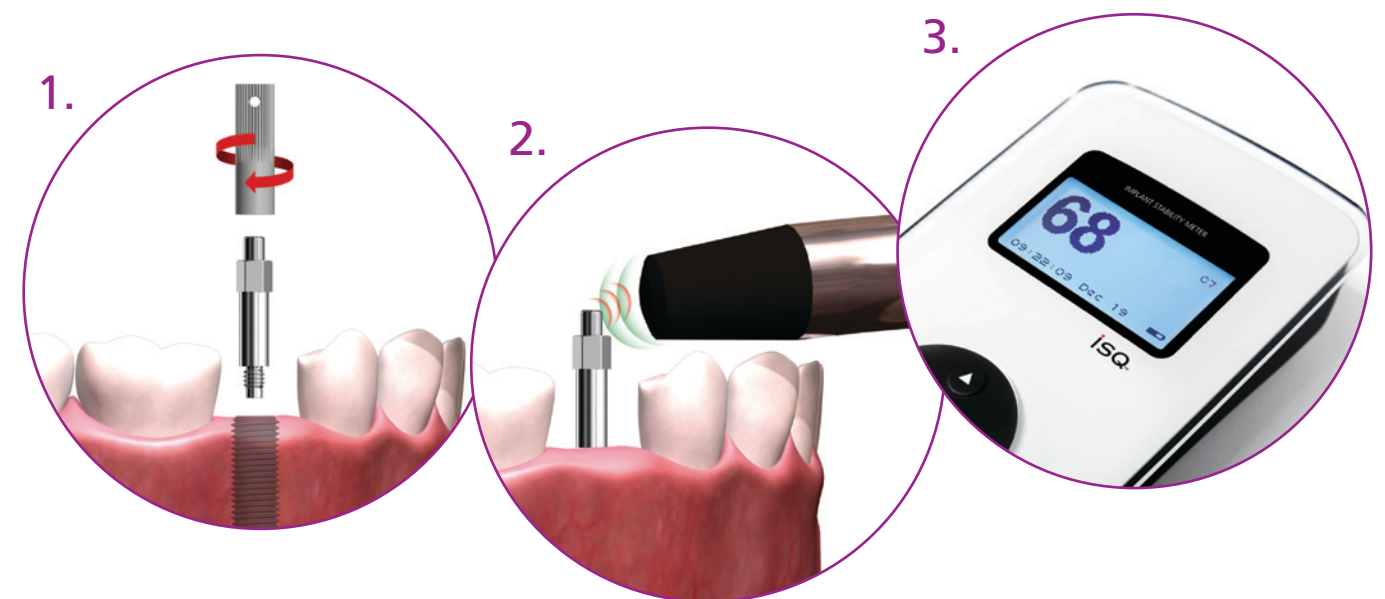


The lateral stability of an implant depends on the rigidity of the bond between the implant surface and the surrounding bone. This rigidity can easily be measured.

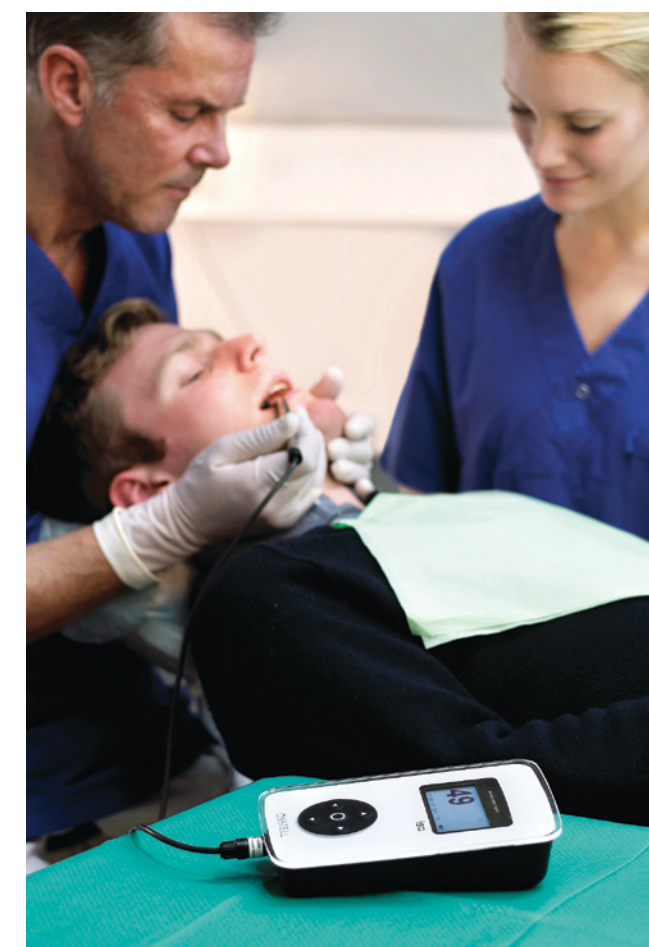
This graph illustrates the progress of implant stability over time, expressed in ISQ terms. The converging green curves show the two most likely scenarios: implant stability eventually sets at around 70 ISQ. A high initial ISQ value tends to decrease, as mechanical stability is supplanted by osseointegration. And a low initial value tends to increase, as osseointegration sets in. The scenario to watch out for is illustrated by the red curve. Here, osseointegration is not progressing as planned, and loading such an implant may result in a failed treatment.

Osstell ISQ. Comfortable, fast and easy to use.

Obtaining exact implant stability measures using the Osstell ISQ meter is a completely non-invasive procedure. It can normally be performed in a few seconds. Experience shows that patients find it both comfortable and reassuring.



1. The SmartPeg is attached to an implant. It screws effortlessly into the implant's inside thread.
2. The hand-held probe stimulates the SmartPeg magnetically, without actually being connected to it – or even touching it.
3. An ISQ value is generated and shown on the display. It reflects the level of stability on the universal ISQ scale – from 1 to 100. The higher the ISQ value, the more stable the implant.



Meet Osstell ISQ. And the people behind it.

The instrument kit

The actual Osstell instrument (1 below) is attractively designed, compact and very easy to use. Measurement results are clearly visible on the large display. They are also stored in memory and can be transferred to a Windows PC using a USB cable (4). The meter is powered by a rechargeable battery and is delivered with a measurement probe (2), a mains plug (3), a testing device (5) and user manuals.

Technical data

Rated power:	5 VA, Type FW 7660M/05
Instrument size:	195 x 120 x 45 mm
Package size:	280 x 240 x 63 mm
Instrument weight:	0.4 kg
Total gross weight:	1.0 kg

The SmartPeg

The SmartPeg is a small, precision-crafted metal rod that attaches to the implant (or abutment) while a measurement is being performed. It's easy to mount and requires minimal space in the patient's mouth. SmartPegs are available for most major implant systems. They are single-use and delivered sterile in boxes of five units.



In non-homogenous bone, the SmartPeg automatically resonates in two perpendicular directions – thus providing a correct value for the highest as well as the lowest stability direction of the implant.

The Data Manager

The Data Manager is an optional software application that allows measurements to be received and analyzed by a standard Windows PC.



Osstell ISQ Instrument Kit



Prof. James Rynar, New Jersey Dental School, USA:
"Osstell helps me decide when to load my implants."

Warranty

Every Osstell ISQ is covered by a global 24-month warranty. Users always have free access to Osstell support by phone and e-mail, should questions arise that are not covered by the operating manuals.

Availability

Osstell ISQ is available globally through certified distribution partners. Please refer to the distribution partner list provided on Osstell's web site, www.osstell.com

Diagnostics by Osstell – a personal commitment.

Osstell AB develops and produces high-quality instruments and tools for dental diagnostics.

Our company was founded in 1999 by two scientists – a dentist and an engineer. They shared a frustration of not being able to determine implant stability in an accurate, objective and consistent way – beyond their own dexterity and tactile skills.

They developed the innovative RFA technology and a universal measuring scale – ISQ. Today, the Osstell ISQ meter, in its current and earlier generations, is used by more than 7,000 clinicians all over the world.

Osstell is based in Gothenburg, Sweden. We manufacture our products there and market them globally through distribution partners and direct channels. Every one of us is personally committed to the worldwide adoption of our unique diagnostics solution and to the continuous growth of our company. To succeed, we make sure our customers get the unrelenting support and service they deserve.

Since 2007 Osstell is part of the Biolin Scientific group. BiolinScientific is a leading provider of analytical instruments for the nanoscale study of interfaces (www.biolinscientific.com).



Scientific references.

More than 300 scientific reports and papers on the measurement of dental implant stability have been published around the world. Some of these are listed below. More can be found on Osstell's website, www.osstell.com

Bornstein M, Hart C, Halbritter S, Morton D, Buser D.

Early Loading of Nonsubmerged Titanium Implants with a Chemically Modified Sand-Blasted and Acid-Etched Surface: 6-Month Results of a Prospective Case Series Study in the Posterior Mandible Focusing on Peri-Implant Crestal Bone Changes and Implant Stability Quotient (ISQ) Values.

Clin Implant Dent Relat Res 2009.

Degidi M, Daprile G, Piattelli A.

Determination of primary stability: a comparison of the surgeon's perception and objective measurements.

Int J Oral Maxillofac Implants. 2010 May-Jun;25(3):558-61.

Jimenez D, Shah K, El-Ghareeb M, Aghaloo T, Pi-Anfruns J, Hameed S, Chiang J, Judge N, Ivry B, Wakimoto M, Moy P.

Use of Osstell for determination of implant staging and loading protocols to improve implant success rates.

Poster at AO Academy of Osseointegration Annual Meeting 2009

Peev S.

Application of Platelet-Rich Plasma as an Accelerator of the Secondary Stability of Immediate-Loaded implants.

Inside Dentistry, September 2007, Special Issue 2

Rodrigo D, Aracil L, Martin C, Sanz M

Diagnosis of implant stability and its impact on implant survival: a prospective case series study.

Clin. Oral Impl. Res. 21, 2010; 255-261

Sennerby L, Meredith N.

Implant stability measurements using resonance frequency analysis: biological and biomechanical aspects and clinical implications.

Periodontology 2000, Vol. 47, 2008, 51-66.

Trisi P, Carlesi T, Colagiovanni M, Perfetti G.

Implant Stability Quotient (ISQ) vs direct in vitro measurement of primary stability (micromotion): effect of bone density and insertion torque

Journal of Osteology and Biomaterials, Volume 1, Number 3, 2010

Östman P-O.

Direct loading of implants.

Tandläkartidningen årg 100 nr 3, 2008

