



Teaser



ECHOLIGHT

Echolight SpA has developed the very first radiation-free solution for bone strength assessment and early diagnosis of Osteoporosis.

EchoS

EchoS is a breakthrough radiation-free device for bone characterization and micro-architecture assessment through an innovative approach that enables the scanning of central reference sites (lumbar vertebrae and proximal femur).

R.E.M.S. Technology

REMS (Radiofrequency Echographic Multi Spectrometry) technology is an innovative non-invasive approach to the diagnosis of Osteoporosis, exploiting all the spectral features of the “raw” radiofrequency (RF) signals acquired during an echographic scan to determine the status of internal bone architecture through advanced comparisons with previously derived reference spectral models of the possible pathological or normal conditions.

Algorithm

The technology is full automatic to reduce the dependence on operator experience. The implemented algorithm automatically identifies the target bone interfaces within the sequence of echographic images acquired, discards “noisy” acquisitions, ensuring that diagnostic evaluations are performed only on US datasets reaching a specifically determined quality threshold.

Medical Report

EchoS provides two numerical parameters: Osteoporosis Score O.S., which directly correlates with BMD measurements (in g/ cm²) and Fragility Score F.S., which provides an independent estimate of bone fragility and fracture risk. EchoS medical report contains all the common parameters for Osteoporosis diagnosis: BMD (g/cm²), T-Score, Z-Score. In addition, F.S. evaluates the quality of internal bone micro-architecture and the 10-year risks of osteoporotic fractures (generic/hip) are calculated through the integrated FRAX[®] software.

Database

Database includes 10.000 subjects from 30 to 90 years; the subjects underwent the following diagnostic examinations: DXA scan of lumbar spine and/or proximal femur, TBS calculation where applicable, echographic scan with EchoS system and FRAX[®] questionnaire. Data were used to calculate the corresponding pairs reference spectral models for the following bone conditions: “osteoporotic/healthy” and “frail/non-frail”. BMD values derived from O.S. calculation were compared with the results of DXA measurements, while F.S. values were evaluated against FRAX[®] predictions of 10-year probabilities of a generic osteoporotic fracture

QUANTITATIVE PERFORMANCE	SPINE	HIP
SMALLEST DETECTABLE DIFFERENCE (SDD) [g/cm ²]	0.010	0.005
INTRA-OPERATOR REPEATABILITY (RMS-CV) [%]	0.35%	0.25%
INTER-OPERATOR REPEATABILITY (RMS-CV) [%]	0.54%	0.41%
DIAGNOSTIC AGREEMENT WITH DXA	93.1%	94.2%



International Scientific Advisory Board.

Prof. Maria Luisa Brandi

Scientific Director of ORTOMED (Società Italiana di Ortopedia, Medicina e delle Malattie Rare dello Scheletro) University of Florence and Metabolic Bone Diseases Unit, University Hospital of Florence, Italy.

Prof. Adolfo Diez-Perez

Director of the Bone and Joint Research Unit at the Municipal Institute of Medical Research, Department of Internal Medicine, Hospital del Mar, Barcelona, Spain.

Prof. Jean-Yves Reginster

President ESCEO (European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis) University of Liège and Bone and Cartilage Metabolism Unit Liège, Belgium.

Prof. Cyrus Cooper

President IOF (International Osteoporosis Foundation) MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton SO16 6YD, United Kingdom.

Prof. René Rizzoli

Emeritus professor of medicine at the University Hospitals of Geneva, Switzerland. Editor-in-chief of *Calcified Tissue International* and *Musculoskeletal Research* and associate editor of *Osteoporosis International*.

Value Proposition

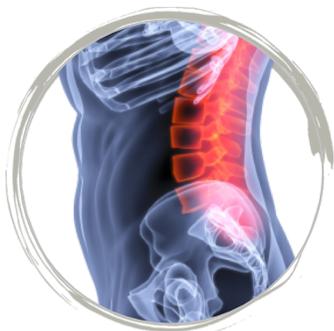
The peculiar feature of the method is the exploitation of RF signals acquired during an echographic scan of the target bone structure to determine the internal bone architecture through detailed comparisons with reference spectral models. Another important feature of the technology is its full automation, which reduces to a minimum the dependence on operator experience. The extreme ease of use of the described system has also been demonstrated, together with its compliance with time constraints of clinical routine, since each patient can be examined and diagnosed in less than 2 min. Because of its accuracy levels, combined with the complete absence of ionizing radiation and the proven ease of use, this method can be effectively employed for diagnosis of osteoporotic disease at an earlier stage through population mass screenings. Moreover, the US assessment of internal bone structure not only gives information related to BMD, but also provides further insights into the structural quality of bone and its real strength, offering a simultaneous, independent and accurate prediction of fracture risk. The integration of all these features makes EchoS technology the future state-of-the-art approach for the early diagnosis of Osteoporosis.

Product

There are two different versions of the product. EchoS, is the portable package including the echographic device simply connected to the laptop. EchoStation, is the cart version including the echographic device hooked into a medical cart with the medical panel pc.

Features

Radiation Free - Axial Sites - Lumbar Vertebrae - Proximal Femur - DXA Agreement: 94% - Bone Density - Bone Quality - FRAX integrated - No operator certified needed - No operator dependent - Fast (Less than 5 minutes) - High Accuracy - Early Diagnosis – Monitoring - Primary Care – Portable - Low Cost - CE Mark – FDA 510K Pending





ECHOLIGHT

www.echolightmedical.com