

Bucharest 2-4 October
2025

8th
International
Symposium
Intra
Articular
Treatment



Experience in the use of Bio-inductive Multifractional HA for the treatment of tendinopathies in professional athletes

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Member ISPRM: International Society of Physical and Rehabilitation Medicine



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**This report is the result of almost
2 years of rehabilitation work on patients
suffering from inflammatory tendinopathies, including post-
traumatic or overuse ones, that we presented at SIMFER 2024.**



**52° CONGRESSO
NAZIONALE SIMFER**

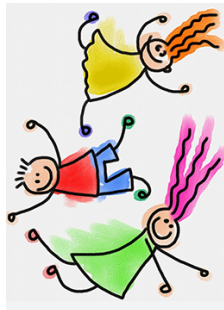
LA SCIENZA RIABILITATIVA E L'IMPEGNO NEL TERRITORIO
PER UNA NUOVA ETICA DELLA RIABILITAZIONE

PADOVA 6 | 9 OTTOBRE 2024



SIMFER
SOCIETÀ ITALIANA DI MEDICINA
FISICA E RIABILITATIVA
The Italian Society of Physical and
Rehabilitative Medicine

MOVEMENT IS AT THE HEART OF LIFE



TENDINOPATHY, TENDINITIS & TENDINOSIS

- **TENDINOPATHY**, is a degenerative state of tendon or ligamentous tissue, includes tendinitis and tendinosis.
- **TENDINITIS** is associated with an acute event accompanied by inflammation and pain.
- **TENDINOSIS** is rather a chronic tendon degeneration without inflammation, but is also accompanied by pain.

Tendinopathies are said to result from a variety of disease processes that lead to loss of tissue integrity and partial or total tissue breakdown.

EXTRINSIC FACTORS:

- High mechanical load obtained through sports or works activities
- Drug Abuse
- Chronic disease (rheumatoid arthritis, autoimmune diseases) or chronic treatment drugs

INTRINSIC FACTORS:

- Age
- Sex
- Body weight
- Anatomical variants
- Systemic diseases

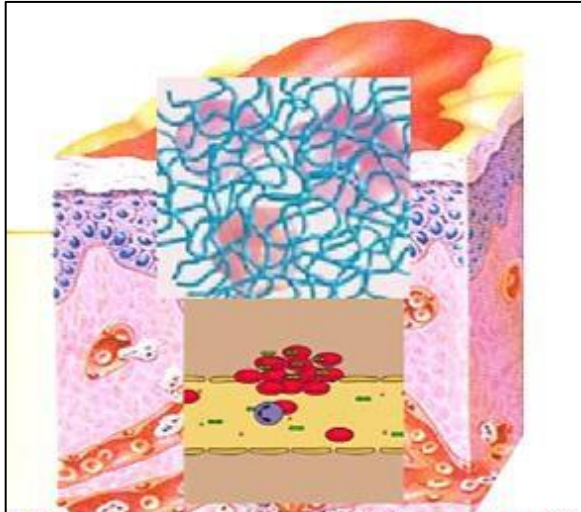
(Magnan et al., 2014)



TENDON HAS A SELF-REPAIR MECHANISM

INFLAMMATION PHASE

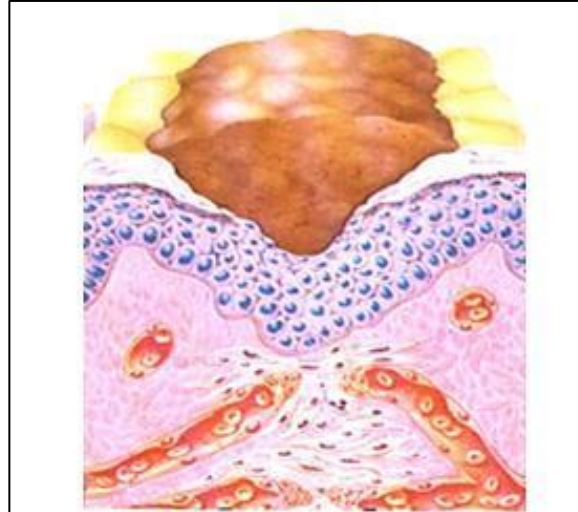
PDGF, EGF, FGF



Hemostasis
inflammation

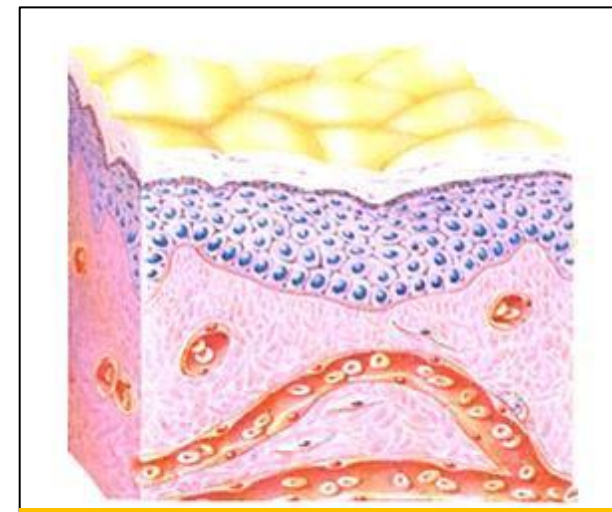
PROLIFERATIVE PHASE

PDGF, TGF- α , TGF- β



Proliferation

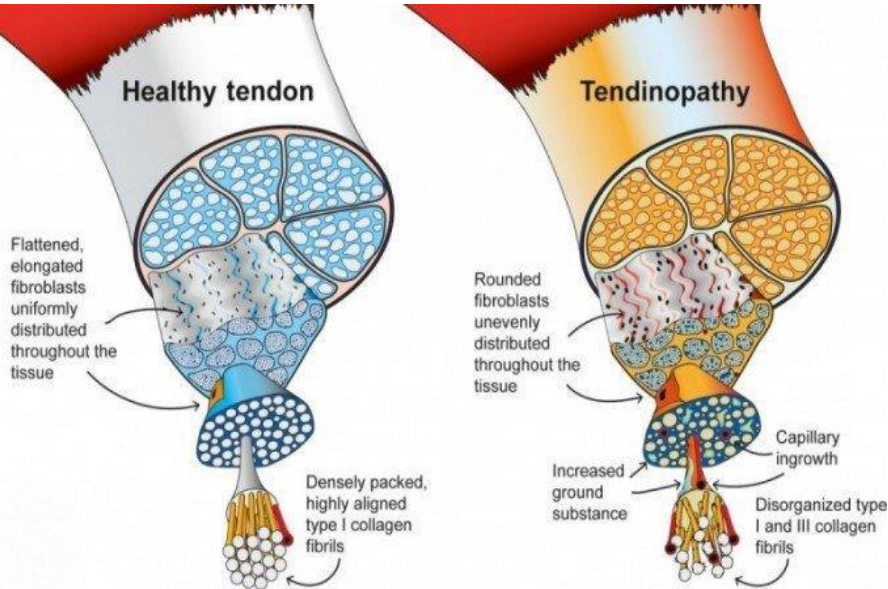
REMODELLING PHASE



Remodeling & Restoring
phase



WE NEED TO PROMOTE THIS MECHANISM



- REDUCTION OF PAIN AND THEREFORE AN INFLAMMATION
- RECOVERY OF MOVEMENT
- AVOID WORSENING AND REDUCE THE RISK OF IMMOBILIZATION AND SURGERY
- IMPROVEMENT OF QUALITY OF LIFE

PURPOSE

**Evaluate the use of Bio-inductive
Multifractional Hyaluronic Acid for
the treatment of tendinopathies in
professional athletes**

MATERIAL AND METHODS

Trial site:

**Azienda Ospedaliero-Universitaria delle Marche
i.e. the Regional Hospital of Ancona
ITALY**

- 200 professional athletes (practicing football, volleyball, tennis, padel and boxing with intensive training time, over 30 hours/week + competition)
- 99 males and 101 females, average age 38 years
- average weight 85 kg in males and 65 kg in females (in both groups with less than 15% body fat)

Subjects with severe post-traumatic Achilles tendinopathy: pain and functional limitation, inability to perform activities of daily living or to play sports at usual levels

- **confirmed by history, ultrasound and physical examination based on the Royal London Hospital Test**
- **not induced by chronic disease (rheumatoid arthritis, autoimmune diseases) or chronic treatment with tendon-damaging drugs (quinolones or cortisone)**
- **no systemic, topical or local NSAIDs or corticosteroids were administered**



WE USED A BIO-INDUCTIVE MULTIFRACTIONAL HA

The therapeutic dose was 2 ml acid with a concentration of 1.6%,

- With specific indication in IFU on tendons and ligaments
- Ultrasound-guided peritendinous injections with 16 mm needles
- 5 free fractions of hyaluronic acid with progressive molecular weight:

11



REGENFLEX T&M

for TENDONS and MUSCLES

MOLECULAR WEIGHT



2 KDA

MOLECULAR WEIGHT



100 KDA

MOLECULAR WEIGHT



200 KDA

MOLECULAR WEIGHT



500 KDA

MOLECULAR WEIGHT



1 MDA



MATERIALS AND METHODS. TERMS AND ACTIONS



¹ US of MTA (muscle-tendon area) Measurements: the type of injury, presence of exudate, tendon thickness, injury margins gap, the alignment of the bundles, the paratenon state

² Clinical evaluation with VAS scale of pain at rest and in movement, Measuring of active and passive Range Of Motion with the SFTR method

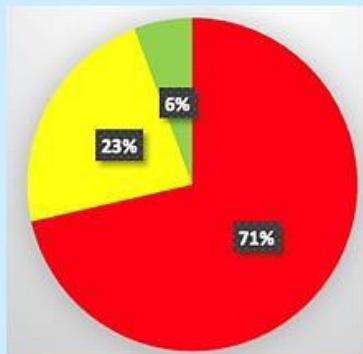
³ Reduction of inflammation assessment by measuring specific markers MMP-3 and Integrin by blood and urine analysis

- Rapid improvement of all instrumental and clinical parameters starting from T15 days – significant and rapid **reduction of the inflammatory and pain**
- Increase in movement capacity and rapid functional recovery of the tendon, maintained over time – demonstration of the **biological self-healing process support**
- Several cases with 12-months follow up and **in more than 70% of cases evaluated positive results**

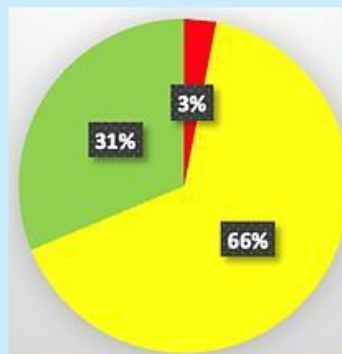


RESULTS. PASSIVE VAS ATHLETES

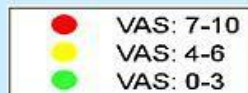
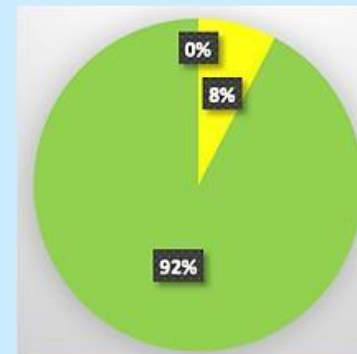
1° STAGE



2° STAGE



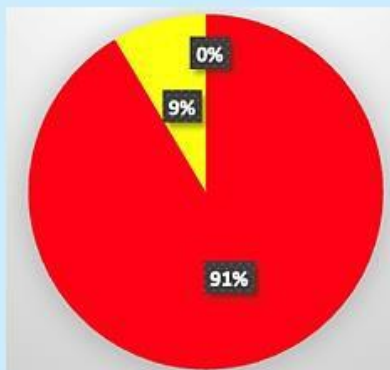
3° STAGE



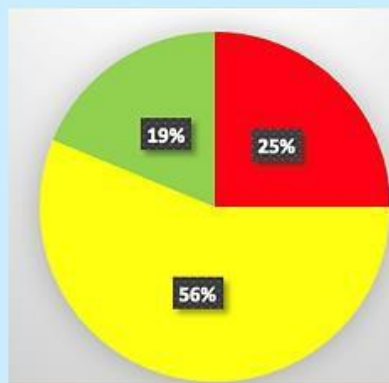


RESULTS. ACTIVE VAS ATHLETES

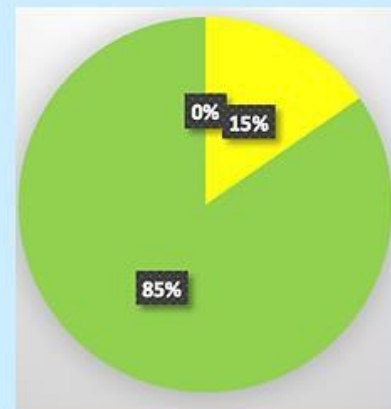
1° STAGE



2° STAGE



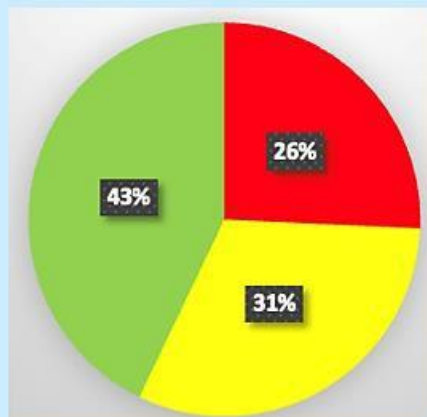
3° STAGE



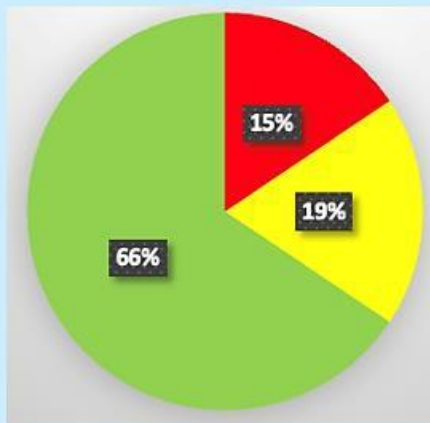


RESULTS. PASSIVE R.O.M. ATHLETES

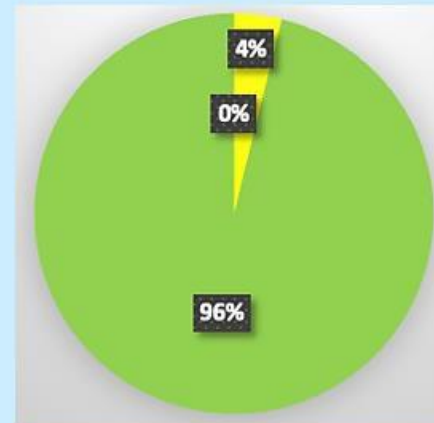
1° STAGE



2° STAGE



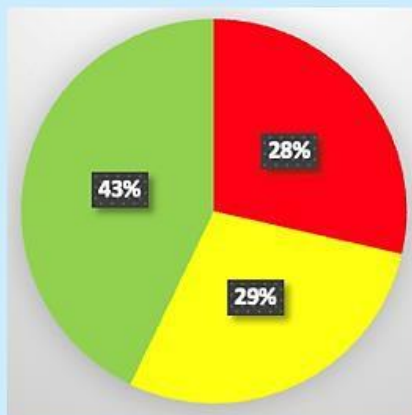
3° STAGE



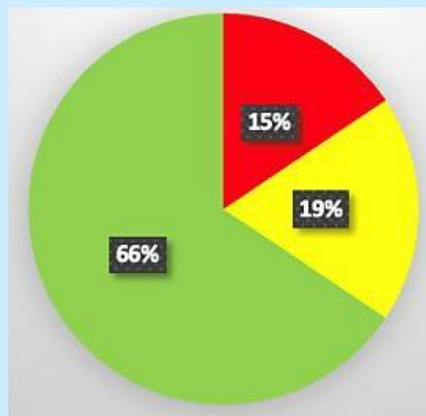


RESULTS. ACTIVE R.O.M. ATHLETES

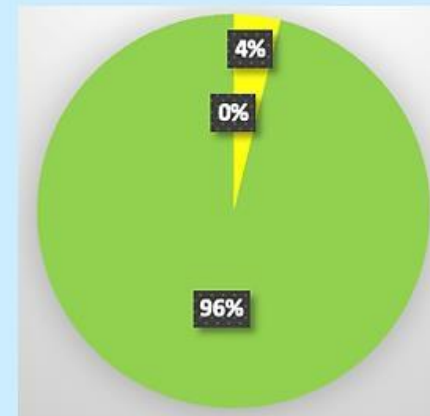
1° STAGE



2° STAGE

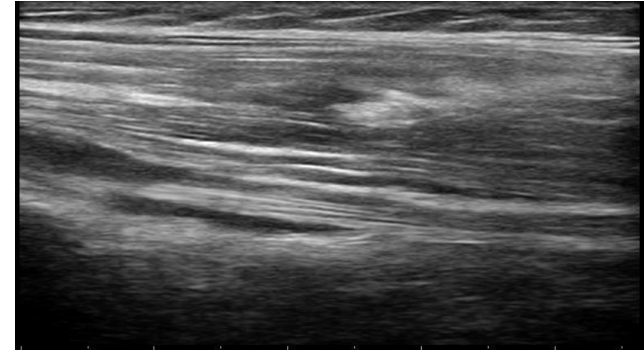
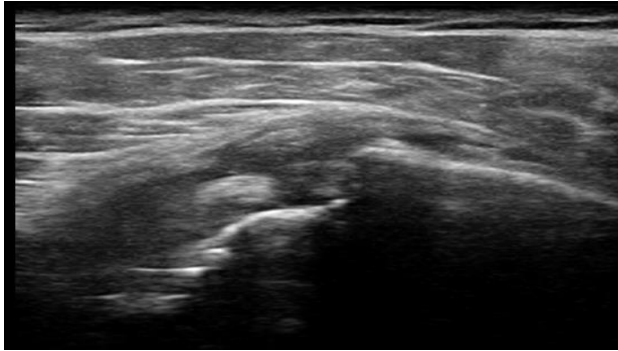


3° STAGE

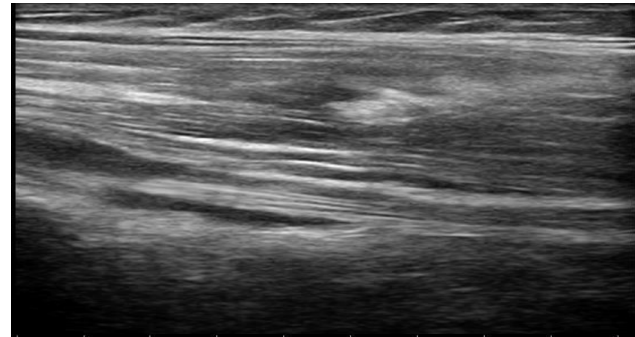




RESULTS: US EXAMINATION



US of a partial Achilles
tendon lesion:
D15, D120 –
good compaction
of the interrupted fiber

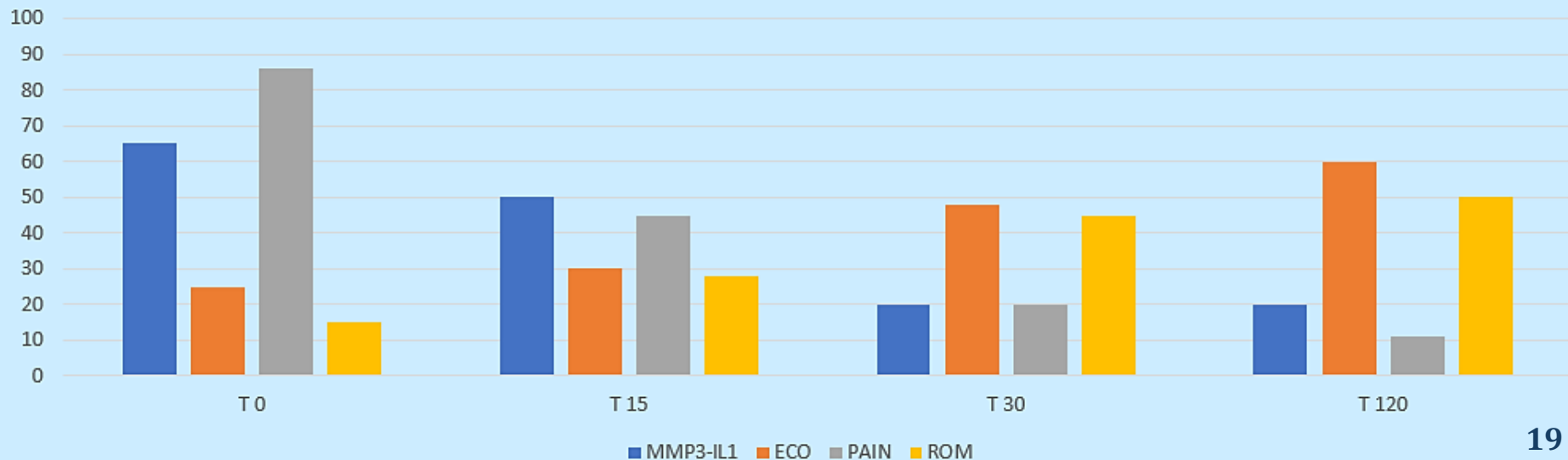




RESULTS: BIOCHEMICAL RESPONSE

Assessment of correlation between clinical and biochemical response:

DATA ANALYSIS



- Treatment with HA with a mix of 5 molecular weights (2 kDa – 1000 kDa) decrease the levels of inflammatory markers in the peritendinous effusion and reduce the symptoms associated with tendinopathy.
- The results obtained in a population of athletes with tendinopathy show a clear clinical and symptomatic improvement of the treated areas.
- Treatment of tendon injuries with Bioinductive Multifractional HA promotes a better self-repair process of the tendon, and reduces or prevents scar formation that can promote relapse and impair resumption of sports activities.

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*THANK YOU
FOR YOUR ATTENTION*

Dr. Stefano Stacchietti

