sports.medicine. newspaper

2022
international edition of
sportärztezeitung

LIFE AFTER A CAREER

Ian Beasley, MD
» S. 46

CONSERVATIVE TREATMENT & REHABILITATION

REGENERATIVE CELLS
Prof. Christoph Schmitz, MD /
Prof. Nicola Maffulli, MD
» S. 18

INFRARED THERMOGRAPHY
Stefan Mattyasovszky, MD
» S. 22

PROPHYLAXIS I PREVENTION, TRAINING & REGENERATION

ANTI-GRAVITY TRAINING
Gerrit Borgmann, MD
» S. 42

SPORTS NUTRITION

VITAMIN K2
Klaus Pöttgen, MD
» S. 54

INTERNAL MEDICINE & SPORTSCARDIOLOGY

COVID-19 INFECTION
Jochen Veit, MD
» S. 48

Marko Arnautovic, austrian striker by FC Bologna, has tested positive for Covid-19. Prophylaxis is more important than ever.

WWW.SPORTAERZTEZEITUNG.COM

CONSERVATIVE TREATMENT & REHABILITATION

PROPHYLAXIS / PREVENTION, TRAINING & REGENERATION

INTERNAL MEDICINE & SPORTSCARDIOLOGY

SPORTS NUTRITION

GREETINGS FROM THE PUBLISHER
Exchange of knowledge and exchange between experts – that is our mission. So we are proud to cooperate with the Isokinetic Conference 2022 in Lyon and wish you an interesting conference with many innovative topics. Also, enjoy this issue.

Best regards yours thesportgroup-Team

IMPRINT

EDITOR
thesportgroup GmbH
J.-Pierre-Jungels-Str. 6 | 55126 Mainz

Tel.: +49 6131/240 53 17
info@thesportgroup.de
www.thesportgroup.de

DIRECTORS
Robert Erbeldinger | Joachim Messner
Trade registry: Mainz HRB 46334
International VAT-ID: DE 301342633

EDITORIAL STAFF
Masiar Sabok Sir | editor in chief
sabok@thesportgroup.de

Robert Erbeldinger
Patrick Göller
PD Dr Felix Post MD

ADVERTISEMENT
Robert Erbeldinger

Patrick Göller + Events
goeller@thesportgroup.de

In accordance with the prices listed in June 2021

DESIGN, LAYOUT, PRODUCTION
Angelique Sarka | Art Director
sarka@thesportgroup.de

PRINT
GPrinted on 100 per cent recycling paper (Certificates: Blauer Engel, EU Eco-Label, Nordic Swan) by AC medienhaus GmbH, Wiesbaden-Nordenstadt

FURTHER INFO
ISSN: 2365-8754 | Volume 7 | International Issue 2022

COVER
© imago IMAGES / AFLOSPORT

INFRARED THERMOGRAPHY

Examples of use in orthopaedic and sports medicine disorders

STEFAN MATTYASOVSZKY, MD /
GALENOS ORTHOPAEDICS AND SPORTS MEDICINE, MAINZ

The diagnostic value of body temperature has been known for centuries. Disorders such as encephalitis (symptoms: fever, tremor, seizures, confusion, delirium, anxiety and vomiting) were even described by Hippocrates and Galenos in ancient Greece. Body temperatures that are too high or too low affect metabolism, metabolic processes and organ function and can even damage tissue.

Infrared thermography has long been used in veterinary medicine as a routine diagnostic procedure (see the book by Barbara Bockstrahler MD: Physical medicine, rehabilitation and sports medicine in a nutshell – VBS (publisher) 2019). In just a few seconds it allows the visual assessment of internal inflammation in animals, compensating postures, impaired gait, hoof disorders, painful pressure points and muscle and joint inflammation. Based on these findings in veterinary medicine, we began to use this procedure two years ago in the diagnostic assessment and rehabilitation of muscle injuries in professional football and have now also integrated infrared thermography as a complementary imaging procedure into our routine clinical practice for the clarification of musculoskeletal and neurological disorders. Case studies follow below as an illustration.

CASE STUDIES

CASE 1 (SEE FIGS. 1 + 2)

A 58-year-old female marathon runner presented with pain around the insertion of the right Achilles tendon. Clinical examination and imaging (ultrasound, X-ray and MRI) showed Haglund's deformity with a partial tear in the deep layers of the Achilles tendon at the calcaneal insertion. Under ongoing treatment, the patient complained of sciatica on the right without a sensory motor deficit after returning to full sports loading. Clinical examination and imaging showed a facet joint cyst at L4/5 on the right with marked narrowing of the spinal canal on the right and nerve root compression at L5 and S1 on the right.

CASE 2 (SEE FIG.3)

A 34-year-old male patient with bilateral cam-type femorocetabular impingement. Due to the lack of success under conservative treatment, hip arthroscopy was performed on the right with debridement of the torn labrum and offset restoration (removal of a bony hump).

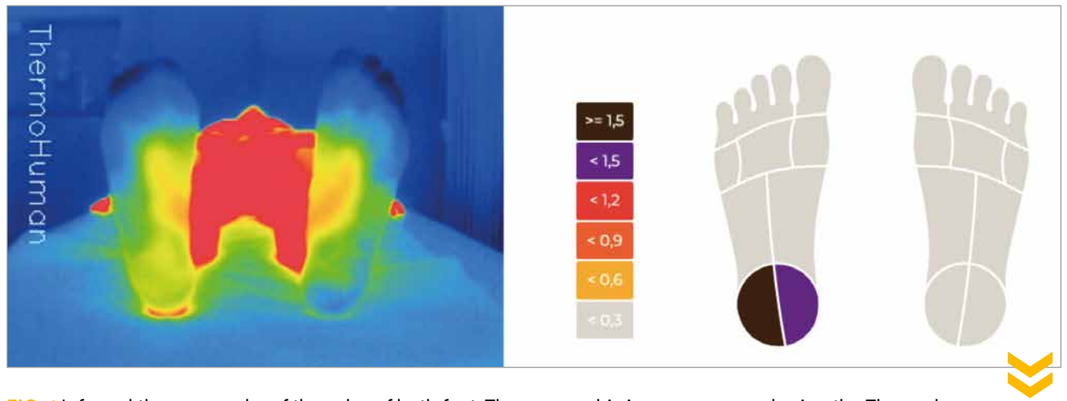

FIG. 1 Infrared thermography of the soles of both feet. Thermographic images assessed using the Thermohuman software, camera: X4VIson by HT ITALIA SRL. Temperature difference between the right and left heel, 2.19°

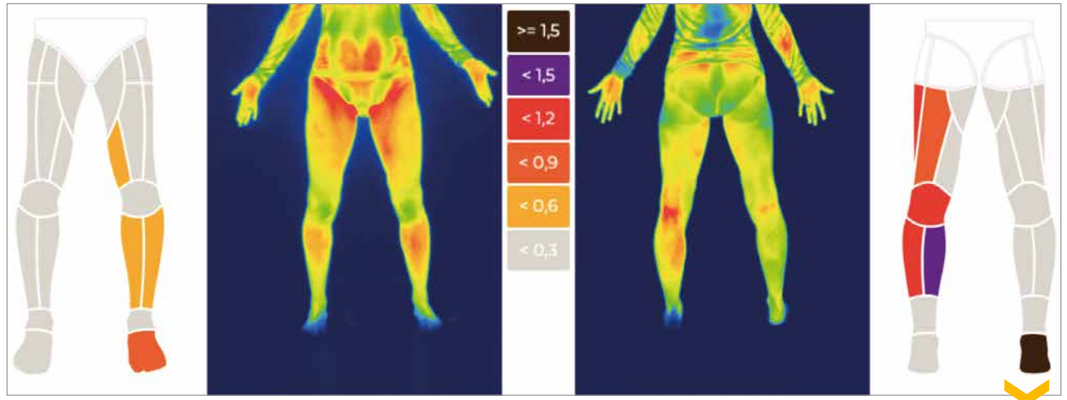

FIG. 2 Thermography of both legs. Six weeks post microsurgical root decompression at L5 on the right and resection of a facet joint cyst at L4/5 on the right. Although the patient was entirely free of pain, a temperature difference between the medial left and right gastrocnemius was still detectable (1.2 – 1.5°). Temperature around the Achilles tendon insertion and the heel markedly warmer on the right than on the left (2.5°)

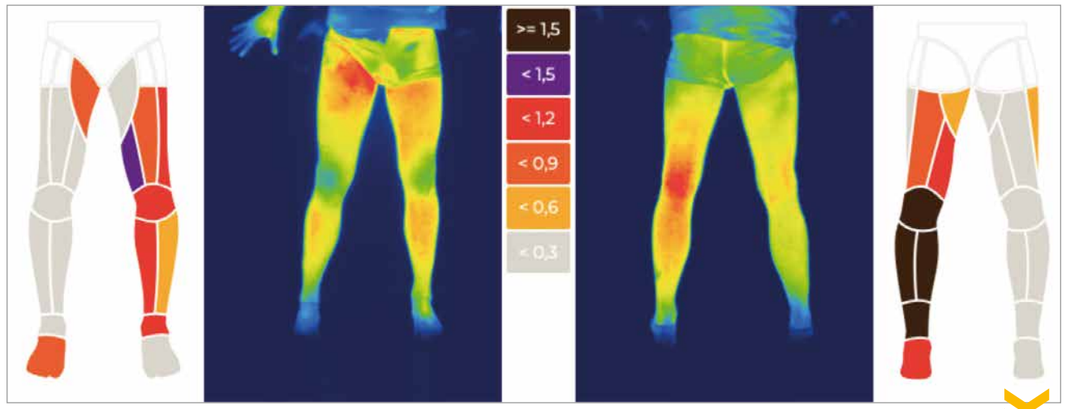

FIG. 3 Thermography of the legs on suture removal twelve days post-surgery with partial weight-bearing on the operated right leg (sole contact, approx. 15 kg). Postoperatively, abnormal warmth in the area operated on still detectable in the right hip and groin. On the other hand, the temperature of the entire right leg under partial weight-bearing on the rest of the thigh and lower leg is lower than that of the left leg under full weight-bearing (0.42°– 2.14°).

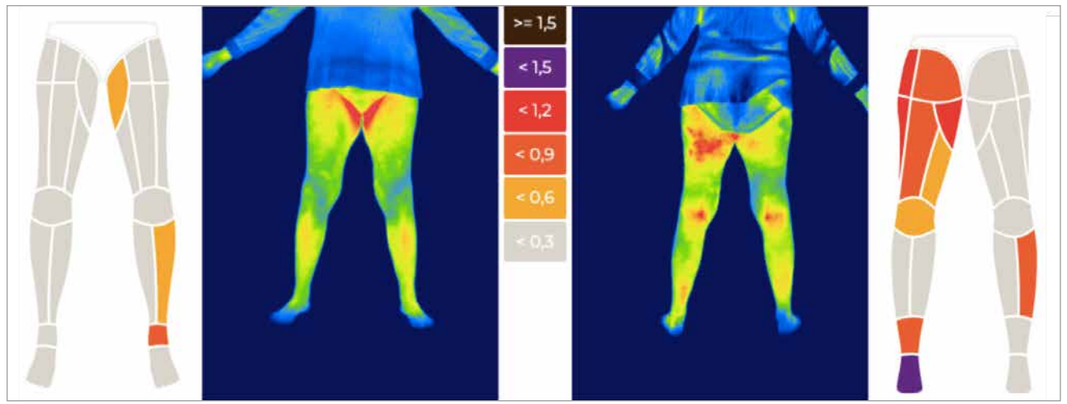

FIG. 4 Thermography of both legs shows a temperature difference between the left and right dorsal thigh (0.8 – 1.06°). The temperature difference between the right and left heel is 1.38°).

STEFAN MATTYASOVSZKY, MD

is a consultant in orthopaedics and trauma surgery with additional qualifications in sports medicine, manual therapy, specialist trauma surgery and specialist orthopaedic surgery. He has been joint head of GALENOS In Mainz with Philipp Appelmann MD since 2021 and was previously chief consultant in orthopaedics at the Centre for Orthopaedics and Trauma Surgery, University Hospital, Mainz. He has also been team doctor of the 1. FSV Mainz 05 football club since 2012.

CASE 3 (SEE FIG. 4)
An 80-year-old female patient with activated osteoarthritis on the left confirmed by imaging and immobilising pain under weight-bearing. Alleviation of the symptoms under conservative treatment.

CASE 4 (SEE FIG. 5)
A 48-year-old male runner with ongoing heel pain for the previous six months. Clinical examination and imaging (MRI) confirmed the diagnosis of plantar fasciitis with a degenerative partial tear of the plantar tendon at the calcaneal insertion.

CONCLUSION

Infrared thermography provides us in our orthopaedic and sports medicine practice with a complementary imaging procedure that is fast, non-invasive, painless, objective and above all radiation-free. The colour-coded visualisation of slight differences in skin temperature and the specialist Thermohuman software (camera: X4VIson by HT ITALIA SRL) allow assessment of thermographic images that is easily standardised. In an online article in the sportärztezeitung, the sports scientist Kornelius Kraus MD wrote about his many years of experience in infrared thermography as an assessment method for sports medicine and performance physiology (www.sportaerztezeitung.com/rubriken/therapie/10735/infrarotthermografie/). This included the finding that pain correlates with coordination deficits and that the ability to relax was poorer in the warmer hamstrings (Kraus 2019). To date, the diagnostic interpretation of the images depends to a great extent on the investigator and requires experience. In our view, infrared thermography has the potential of becoming a valuable and innovative complementary imaging procedure in orthopaedics and sports medicine alongside established diagnostic procedures such as ultrasound, MRI and electromyography. To date, there have been no randomised prospective studies comparing the informative value of this procedure with that of other imaging procedures. Well-designed studies are required to further investigate the value of this imaging procedure in musculoskeletal diagnostics.

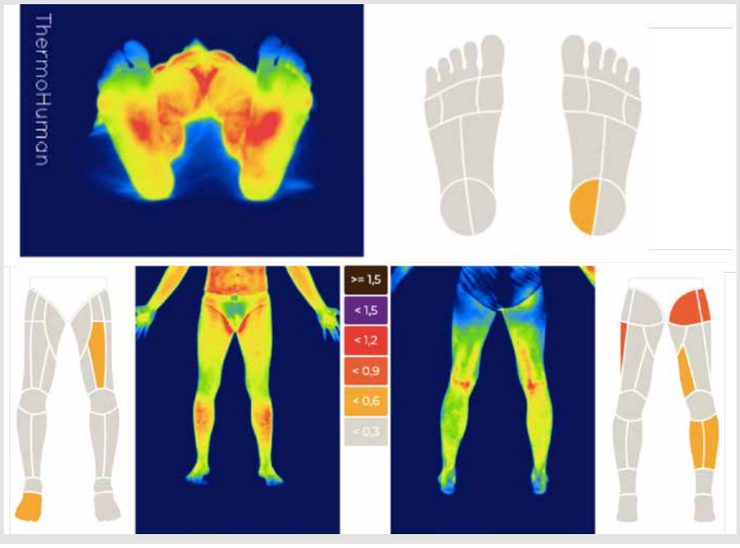

FIG. 5 This shows a rise in temperature around the medial left heel (1.13°). On the other hand, the temperature around the left calf is lower, possibly indicative of pain-induced compensation (0.53°)

THERMOGRAPHY AND CRYOTHERAPY

Innovative diagnostic investigations and treatment of trigger points in the shoulder girdle

PROF. OLIVER TOBOLSKI, MD /
MEDICAL DIRECTOR, SPORTHOMEDIC COLOGNE

Myofascial trigger points are palpable areas of muscular hardening, usually in the neck or between the shoulder blades, which may be associated with considerable impairment of the quality of life.

Due to pain in the region of the shortened musculature and the associated stiffness of the affected mobile segments, e.g. the atlanto-occipital and atlantoaxial joints in the cervical spine or the shoulder, the further course may lead to postural imbalance in more distant joints (ascending/descending chain) and to chronified pain syndromes that often have to be treated with drugs. One can differentiate between active myofascial trigger points that are frequently extremely painful and often weaken the affected muscle, latent myofascial trigger points that are only painful on movement, and associated myofascial trigger points that develop due to dysfunction of the neighbouring muscle groups.

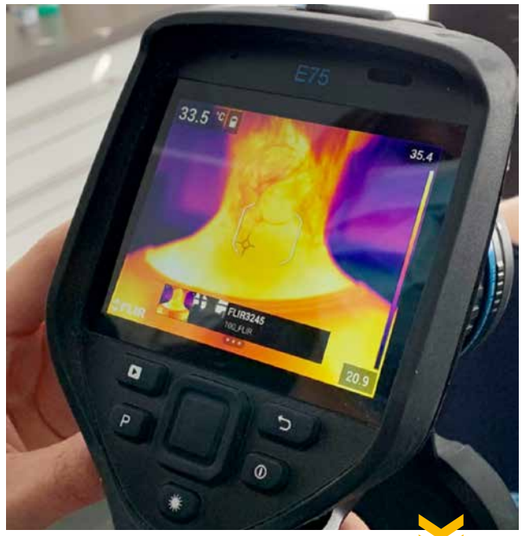

FIG. 1 thermography

In many cases the latter myofascial trigger points are areas of painful muscular tension in the muscles of the shoulder (girdle) (rhomboideus major/minor muscles) that react to muscular shortening, particularly at the superior border of trapezius or in the short cervical muscles. The causes of trigger points are many and varied: shortening of the muscle groups due to damp/cold/draughts, associated fascial adhesions, postural imbalance, overstrain, or blunt trauma. Imaging has only been of very limited use for trigger points to date. Many patients with chronified neck problems show no structural anomalies on imaging (MRI, digital volume tomography, radiographs of the cervical spine). Ultrasonography is also only of limited use for assessing trigger points.

A dedicated manual examination gives indications of shortened muscle groups. Intensive examination of the ranges of movement of the atlanto-occipital and atlantoaxial joints often reveals muscular swelling at palpation. More recently clinicians have been turning their attention to thermography because this specific examination system can demonstrate hyperaemia in the affected muscular segment. Thus, for the first time ever, trigger points can be visualised without exposure to radiation, relatively problem-free, and in a short time.

CASE EXAMPLE

A young athletic woman presented at our surgery with progressive recurrent episodes of symptoms in the region of her left trapezius radiating cranially to the left occipital area that she had had for several weeks. She said she did sports regularly (tennis).The patient is right-handed and could not remember any trauma. She has a sedentary occupation (works at a computer). Her intensive stress situation had worsened over the last few weeks as she had had to take on additional work due to staff reductions as a result of coronavirus. She had treated herself with deep heat, massage and analgesic gels. Clinical examination showed marked elevation of the left shoulder with massive tension of the superior border of trapezius and considerably restricted mobility of the atlanto-occipital and atlantoaxial joints on right rotation. She had tenderness to pressure over the insertions of the short cervical muscles on the occiput and along the course of the left levator scapulae muscle. Palpable myogeloses/ trigger points, particularly at

**PROF.
OLIVER TOBOLSKI, MD**

is the Medical Director of Sporthomedic, Sportorthopädische Praxisklinik Cologne, official medical centre of the Olympic Centre Rhineland. He is a specialist for surgery with additional qualifications in sports medicine and chirotherapy. Prof. Tobolski is also the team physician of the Middle Rhine Tennis Association and ATP-tournament physician.

the superior border of trapezius and in the rhomboideus minor muscle.

Slight pain relief in the affected muscle groups on extension of the neck. Clinical examination revealed no attributable radiculopathies. The MRI of the cervical spine the patient brought with her showed findings in the cervical spine that were compatible with her age without any higher-grade degenerative changes of the facet joints/intervertebral discs. No neuroforaminal narrowing. In the infra-red thermography we initiated (FLIR E75 thermal imaging camera, Fig. 1) the camera displays more than 75,000 measuring points with a thermal sensitivity of <0.04 degrees temperature difference, and can thus accurately demonstrate small areas of hyperaemia (trigger points). In the present case the clinically diagnosed trigger points in the region of the superior border of trapezius and in the short right cervical muscles are shown (Fig. 2, see black circles). In order to confirm the diagnosis further we also ran EMG tests on the muscles in the shoulder girdle that gave clear evidence of elevated resting tone in the left trapezius (Fig. 3 and 4). Therapy was given at the same sitting as treatment with neuroreflex cryotherapy (Cryolight). With the help of the applicator and a temperature probe, the entire muscle area (in this case the trapezius on the left) is "cooled down". During the treatment, the entire trapezius muscle is treated from the shoulder area to the area of the short neck muscles for approx. 60 – 90 seconds and then a dosed stretching treatment is carried out. The total duration of therapy per session is a maximum of 2 minutes. Depending on the intensity of the symptoms, 3 – 5 sessions are usually necessary (Fig. 5). Taping was then applied (Fig. 6). The thermography we repeated directly after the cryotherapy showed marked regression of the size of the pre-existing left nuchal trigger points (Fig. 7). In the further course the follow-up (EMG) examination also showed a marked reduction of the imbalance with clear harmonisation of muscle tone (Fig. 8). The patient's treatment was repeated once. After the second sitting (six days after the first treatment session) there was almost complete regression of the symptoms with a considerably improved range of movement and no residual muscular limitations.

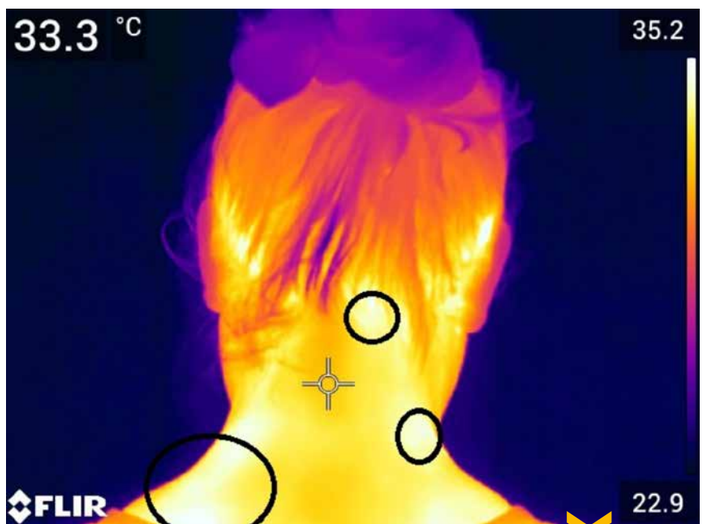

FIG. 2 Trigger points are shown

SUMMARY

Thermal imaging (thermography) readily demonstrates trigger points – especially in the region of the cervical spine – with associated muscle weakness, restricted mobility and chronified pain syndrome. The application of cryotherapy is recommended for confirmed trigger points (neuroreflex cryotherapy) followed by taping. Furthermore, EMG testing (with concomitant biofeedback training) can be used for further diagnostics/treatment or used to evaluate the outcome of cryotherapy. Our EMG tests showed a marked reduction of muscular tension after cryotherapy indicating in summary that this technique, which is simple to apply, is a fast-acting form of treatment and is virtually free of side effects.

FIG. 3 Positions of the EMG electrodes

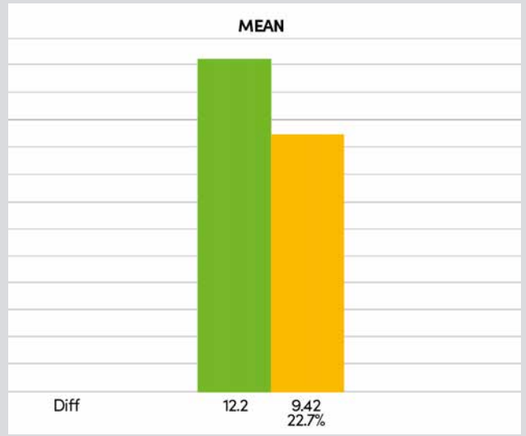

FIG. 4 Elevated resting tone in the left paravertebral cervical muscles

FIG. 5 Cryotherapy

FIG. 6 Taping

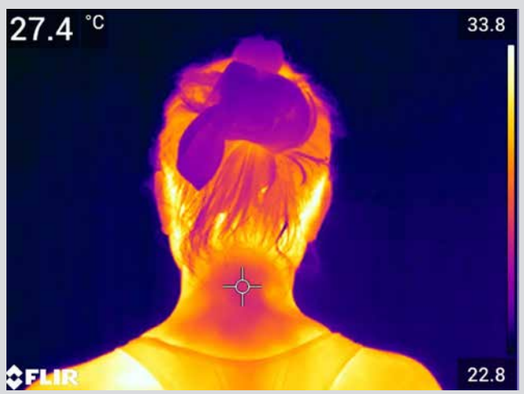

FIG. 7 Thermography after cryotherapy

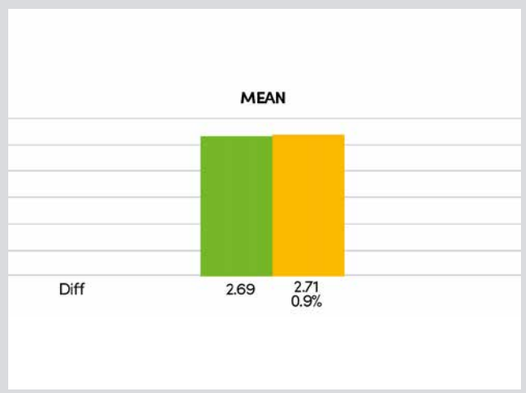

FIG. 8 Follow-up EMG after cryotherapy