

Appendix 1. Final criteria list

Introduction

The statements are focused on the adult population. Each statement was developed based on the scientific literature (i.e., evidence) and the experience of content experts from the Associazione Italiana di Fisioterapia - AIFI (i.e., expertise) with details for clinical conditions in the relevant rehabilitation fields.

Target group: statements were developed for adults (> 18 years). Physical agents modalities (PAMs) are delivered by expert healthcare professionals (who had undergone formal education and training) to ensure patient safety in both inpatient and outpatient settings.

Conditions of application: statements were presented within the relevant rehabilitation field according to *informed-evidence* and *expertise-based* consensus.

Evidence: this section has been defined based on a scoping review of the literature conducted by two independent reviewers focusing on the safety of PAMs from 117 systematic reviews in physiotherapy and rehabilitation medicine (5).

Expertise: this section has been formulated by the steering committee, which included different content experts from AIFI (e.g., neurological, musculoskeletal, pelvic floor, physical therapies), with additional inputs from the multidisciplinary and multi-professional panel of experts.

Final list of statements

1. Electrical stimulation (e.g., Functional electrical stimulation (FES), Neuromuscular electrical stimulation (NMES), Electrical muscle stimulation (EMS)) is safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

- o Evidence: neck pain, knee osteoarthritis, musculoskeletal pain, muscle hypotrophy.
- o Expertise: spinal osteoarthritis, knee osteoarthritis, musculoskeletal pain, knee osteoarthritis, muscle and joint pain.

- in pelvis-perineal disorders, especially in the following conditions:

- o Evidence: urinary incontinence, fecal incontinence, lower urinary tract symptoms in postpartum women, overactive bladder.
- o Expertise: prolapse, descending perineum syndrome, perineal hypotonia, bladder-sphincter or anorectal dyssynergia, erectile dysfunction, premature ejaculation, abdominal diastasis.

- in neurological disorders, especially in the following conditions:

- o Evidence: migraine, spasticity in multiple sclerosis, stroke, spinal cord injury.
- o Expertise: post-stroke urinary incontinence, neurogenic bowel dysfunction in spinal cord injury, second motor neuron disease (e.g., Amyotrophic Lateral Sclerosis), muscular dystrophies, head trauma, lesions of the peripheral nervous system.

2. Neuromodulation, antalgic and interferential electrical currents (e.g., TransCutaneous Electrical Nerve Stimulation (TENS), Transcutaneous Tibialis Posterior Stimulation (TTNS)) are safe in the adult population

- *in musculoskeletal disorders, especially in the following conditions:*

o Evidence: low back pain, neck pain, rotator cuff disease, whiplash-associated disorders, fibromyalgia.

o Expertise: musculoskeletal pain, spine osteoarthritis, neuropathic pain.

- *in pelvis-perineal disorders, especially in the following conditions:*

o Evidence: overactive bladder, urinary incontinence, fecal incontinence, persistent pelvic pain.

o Expertise: Urinary incontinence, pudendal neuralgia, constipation, urinary retention.

- *in neurological disorders, especially in the following conditions:*

o Evidence: neuropathic pain, stroke, multiple sclerosis, neurogenic bowel dysfunction after spinal cord injury.

o Expertise: neurogenic bladder dysfunction after central and peripheral nervous system injuries.

3. Extracorporeal shock wave therapy (radial and focal) is safe in the adult population

- *in musculoskeletal disorders, especially in the following conditions:*

o Evidence: soft tissue disorders of the lower limbs, knee tendinopathy, Achilles tendinopathy, osteoarthritis, plantar fasciitis, rotator cuff disease, shoulder tendinopathy and

calcifications, acute fracture, orthopedic disorders, consolidation delays, other soft tissue disorders.

o Expertise: enthesopathies of the upper and lower limbs, calcifications, epicondylitis, epitrocleitis, muscle injuries, muscle contractures, and trigger points.

- in neurological disorders, especially in the following conditions:

o Evidence: post-stroke lower limb spasticity, multiple sclerosis spasticity.

o Expertise: spasticity following head trauma, spasticity following spinal cord injury.

- in pelvis-perineal disorders, especially in the following conditions:

o Evidence: chronic prostatitis/chronic pelvic pain syndrome.

o Expertise: persistent female pelvic pain, Peronye's disease.

Patients should be informed of the potential undesirable effects following the application of extracorporeal shock wave therapy. Indeed, a recent literature review showed some expected mild adverse events, such as pain and erythema, at the application site.(5)

4. Laser therapy (e.g., low-level laser therapy (LLLT), high-level laser therapy (HLLT)) is safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

o Evidence: low back pain, Achilles tendinopathy, rotator cuff disease, capsulitis adhesive, lower extremity soft tissue disorders, frozen shoulder, carpal tunnel syndrome, knee osteoarthritis, neck pain, whiplash associated disorders.

- o Expertise: upper and lower limb tendinopathy, acute arthropathy, acute muscle and tendon injuries, acute musculoskeletal pain. Upper and lower limb tendinopathy, acute arthropathy, acute muscle and tendon injury, and acute musculoskeletal pain.

- *in pelvis-perineal disorders (extracavitary LLLT only), especially in the following conditions:*

- o Evidence: Urinary incontinence and pelvic organ prolapse, persistent pelvic pain.
- o Expertise: healing (episiotomies, laparotomies, lacerations, etc.), inflammatory pelvic pain, edema or perineal hematomas.

- *in lymphatic disorders (LLLT only), especially in the following conditions:*

- o Evidence: secondary lymphoedema (e.g., breast cancer-related lymphedema).
- o Expertise: lymphoedema

- *in neurological disorders (LLLT only), especially in the following conditions:*

- o Evidence: Bell's palsy
- o Expertise: stroke, multiple sclerosis, spinal cord injury, head trauma, peripheral nerve injury.

5. Electromagnetic therapy (e.g., Pulsed ElectroMagnetic Field Therapy (PEMFT), repetitive Peripheral Magnetic Stimulation (rPMS)) is safe in the adult population

- *in musculoskeletal disorders, especially in the following conditions:*

- o Evidence: neck pain, fractures, consolidation delays.
- o Expertise: osteoporosis, bone edema, algodystrophy, arthrosis.

- in pelvis-perineal disorders, especially in the following conditions:

- o Evidence: persistent pelvic pain and urinary incontinence.
- o Expertise: fecal incontinence, prolapse, descending perineum syndrome, perineal hypotonia, vesico-sphincteric or anorectal dyssynergia, pudendal neuralgia, pelvic pain acute, erectile dysfunction, premature ejaculation, diastasis recti.

6. Diathermy (e.g., Short Wave Tecar Therapy) is safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

- o Evidence: rotator cuff disease, knee osteoarthritis.
- o Expertise: sub-acute/persistent muscle injuries, DOMS/DOMER, arthropathies (non-acute), osteoarthritis, muscle contractures, trigger points.

- in pelvis-perineal disorders, especially in the following conditions:

- o Evidence: inflammatory pelvic pain, persistent pelvic pain, sexual dysfunction (Peronye's disease).
- o Expertise: prolapse, stress urinary incontinence, scarring (episiotomies, laparotomies, lacerations, etc.), perineal edema or hematoma, vulvovaginal dystrophy and dryness, abdominal diastasis.

7. Hot thermal agent modalities (e.g., drug-free heat wrap) are safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

- o Evidence: groin pain, low back pain.

- o Expertise: sub-acute/persistent muscle injuries, DOMS/DOMER, arthropathies (non-acute), osteoarthritis

8. Cryotherapy (e.g., ice or liquid nitrogen) is safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

- o Evidence: arthroscopy, reconstruction of the anterior cruciate ligament, post-surgery.
- o Expertise: Delayed Onset Muscle Soreness (DOMS)/Delayed Onset Muscle Soreness (DOMER), post-surgery, post-trauma (48h).

9. Therapeutic Ultrasound is safe in the adult population

- in musculoskeletal disorders, especially in the following conditions:

- o Evidence: back pain, neck pain, carpal tunnel, rotator cuff disorder, lower limb soft-tissue disorder, knee osteoarthritis, fracture, acute fracture, ankle fracture, ankle and knee sprains,
- o Expertise: hand and foot osteoarthritis, calcifications, enthesitis.

General notes and considerations related to subgroups:

Following a confirmed clinical prescription, applying the above PAMs is safe in the adult population (>18 years) under the supervision of an expert operator. For precautionary reasons, these statements are not extended to other subgroups of patients (e.g., children, adolescents, frail population, etc.) since insufficient literature is available.