



Bioptron in Sports Medicine

**(prepared by Dr. Claudia Leitner,
Medical Director)
e-mail: leitner@bioptron.com**

Light therapy – the energy of life

- Bioptron light therapy:

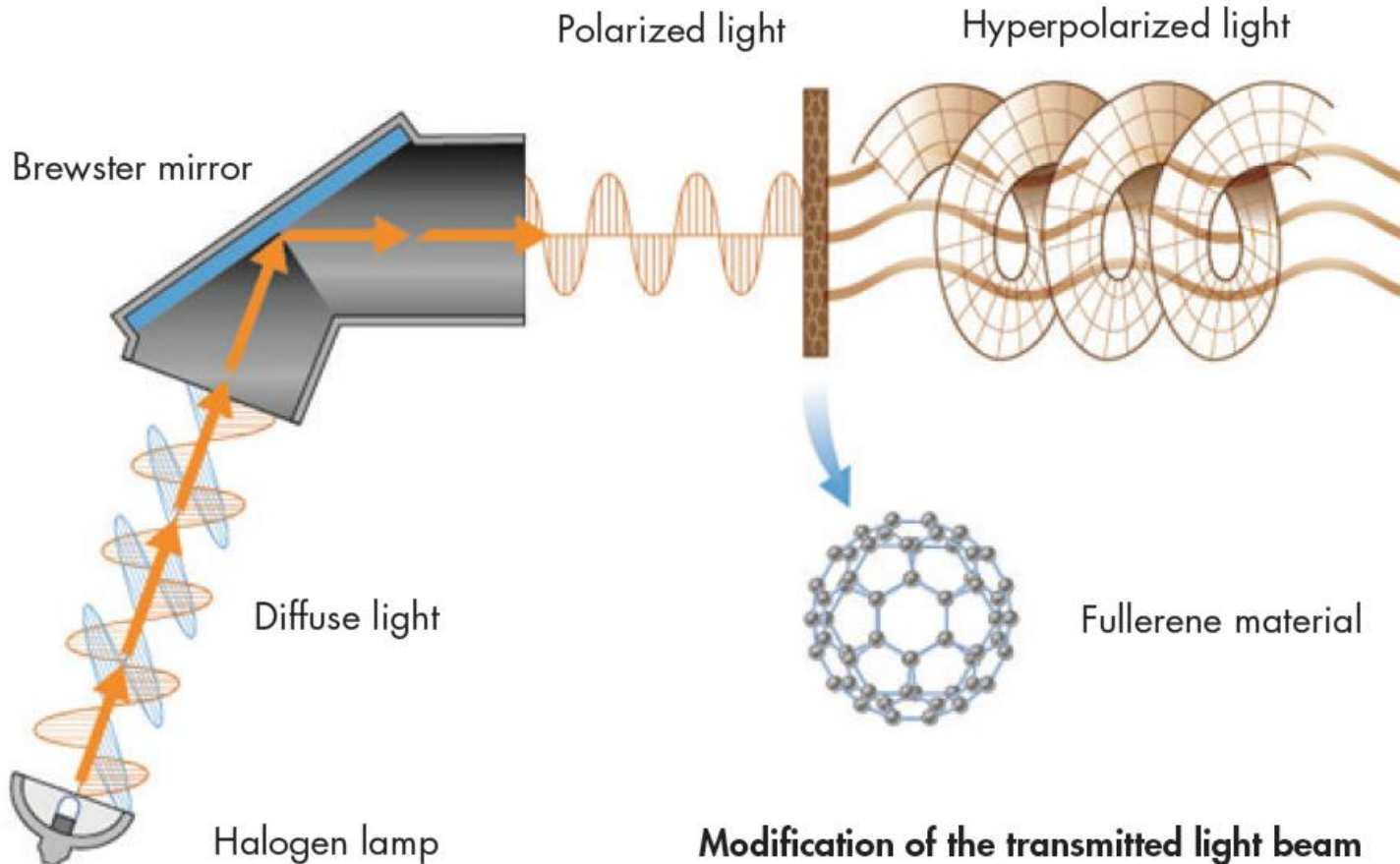
1. Polarized
2. Polychromatic
3. Incoherent
4. Low energy

- **Biostimulation of tissues and cells**

- Significantly reduced healing period
- Medically proven effectiveness
- Unique successes, confirmed by clinical studies

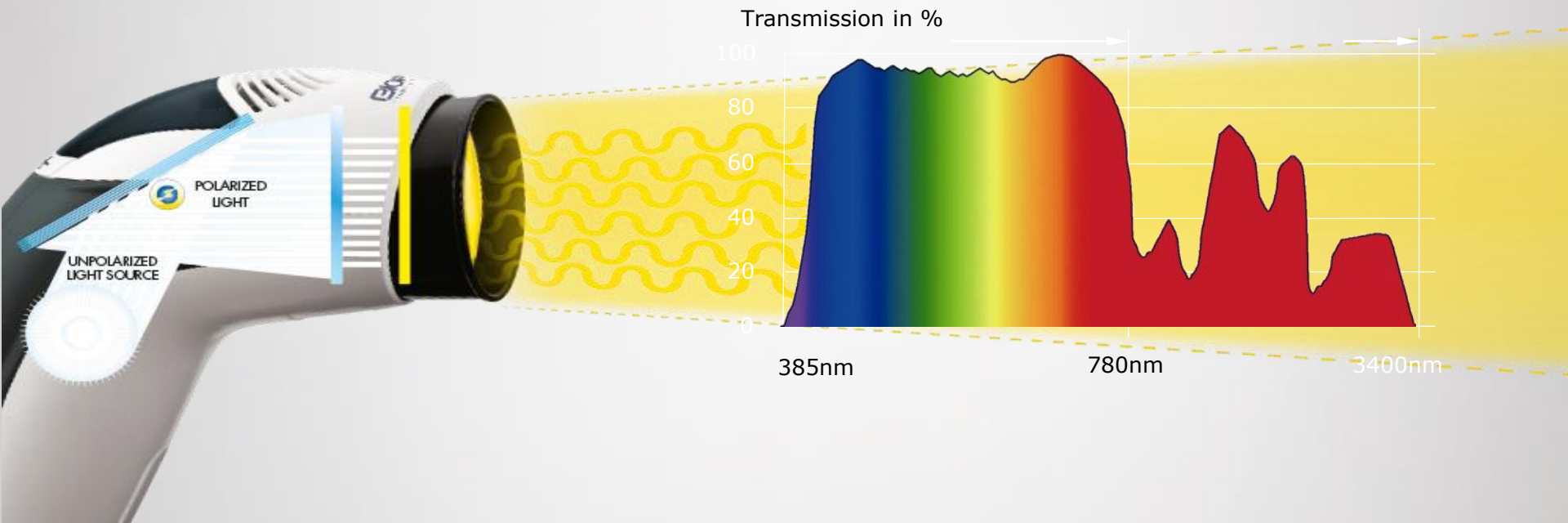


THE NEW PATENTED TECHNOLOGY HYPERPOLARIZED LIGHT THERAPY



Hyperpolarized light opens up unlimited possibilities in treatment and prophylaxis. This is an exciting new field for Bioptron.

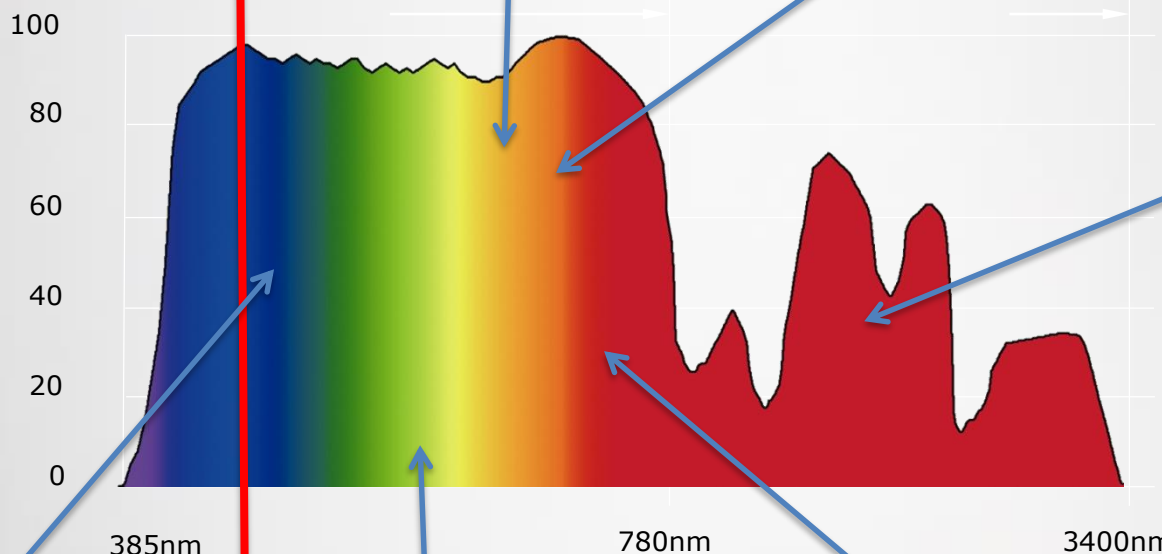
Biostimulatory Effects of BIOPTRON Light: Result of Synergy of Different Mechanisms of Action



480 - 780nm :
**Growth Factors &
Immunomodulation**

480 - 780nm :
Local Microcirculation

Transmission in %



780 - 3400 nm :
**Systemic
Microcirculation**

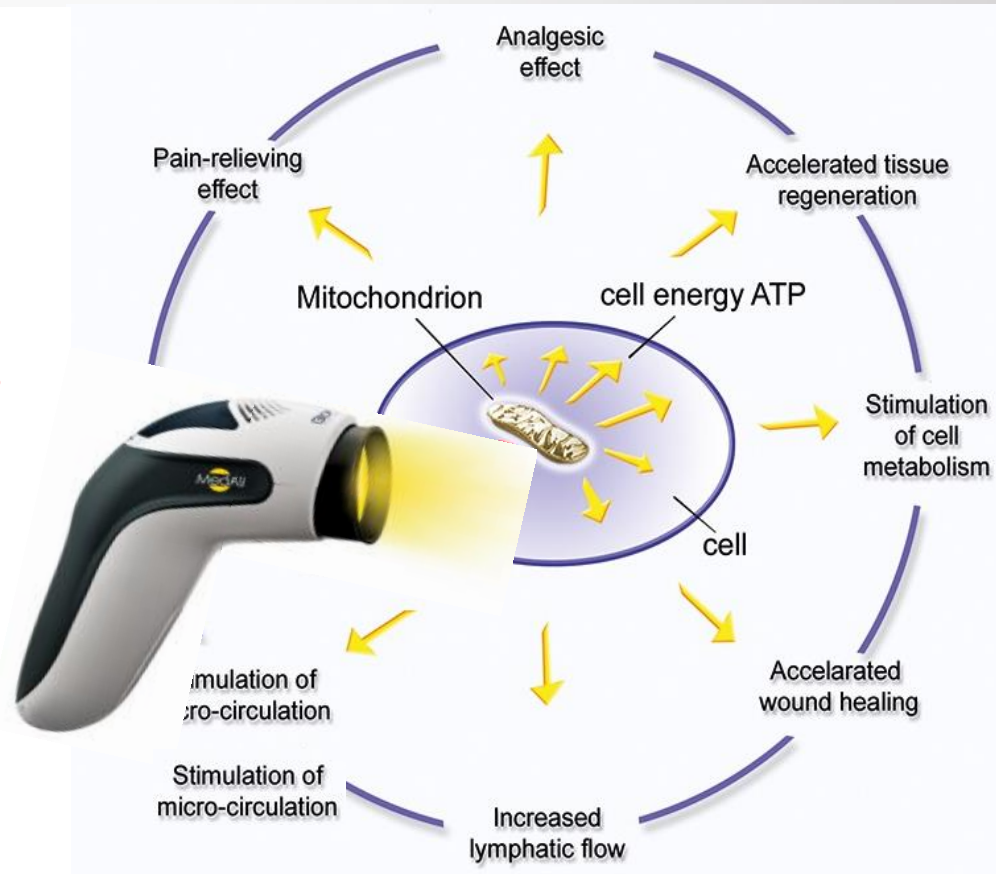
400 - 500nm :
Antibacterial effect

400 - 780nm :
Hormonal Balance

480 - 750nm :
Anti-Inflammatory effect

Biostimulative effects of Biopton light are the result of synergy between different mechanisms of action:

- **Improves microcirculation**
(vasodilatation through production of nitric oxide)
- **Improves cell metabolism**
(activation of ATP production in mitochondria and oxygen consumption)
- **Reinforces the human defence system**
(humoral and cell mediated immunity)
- **Stimulates regenerative and repairing processes of the entire body**
(increases macrophage and fibroblast activity, increases release of growth factors, increases cellular proliferation....)
- **Promotes wound healing**
(increased protein synthesis - production of elastin and collagen)
- **Relieves pain or decreases its intensity**
(analgesic, anti-inflammatory and anti-edematous effect)



Benefits of BIOPTRON:

- a. Anti-inflammatory effects
- b. Anti-microbial effects
- c. Anti-edematous effect
- d. Analgesic effects
- e. Increased circulation
- f. Accelerated healing through the generation of new and healthy cells and tissues
- g. Regenerative effect on the skin leading to faster and better quality and tensile strength of tissue repair/wound healing with minimal scarring



- No pain
- No irritation
- Non-mutagenic/Non-ionizing

- Non-thermal
- No overdose
- No side-effects



BIOPTRON medical light is a safe, medically tested and clinically approved technology in the management of various Sports Medical Injuries including:

- Tennis elbow
- Golfers elbow
- Shoulder rotator cuff strain
- Tendonitis
- Calf and Hamstring injuries
- Groin Strain
- Back pain
- Swelling
- Spasms and knots
- Neck pain
- Pre & Post training stiffness
- Plantar fasciitis
- Many more...



BIOPTRON Medical Indications

Sports medicine

- Soft tissue injuries of muscles, tendons and ligaments:
- Muscle spasm, sprains, strains, contusions, tendonitis,
- Epicondylitis (tennis elbow)
- Carpal tunnel syndrome

Wound healing

- Wound healing after trauma (injuries)
- Burns
- Grafting
- Wound healing after operations
- Venous leg ulcers (stasis ulcers)
- Decubitus (pressure ulcers)

Pain treatment

Rheumatology

- osteoarthritis
- rheumatoid arthritis (chronic)

Physiotherapy

- low back pain
- shoulder and neck pain

Dermatological disorders and skin problems

- Atopic dermatitis
- Psoriasis
- Herpes simplex & zoster
- Superficial bacterial infections
- Acne (rosacea)
- Mucosal lesions

In pediatrics

- Pediatric dermal affections
- Endogenous eczema
- Upper respiratory tract infections
- Allergic respiratory diseases
- Pediatric musculoskeletal disorders and neurological disorders and deficits

In newborns

- Dermal problems (e.g. phlebitis, decubitus, intertrigo)

Seasonal affective disorders (SAD)



BIOPTRON Studies and Professional Testimonials for Sports Medicine



October, 2015

Dr M.T. McNamara

- Prevents sports injuries for amateur and professional athletes
- Treated a wide variety of acute and chronic musculoskeletal injuries and pain with Bioptron

<https://www.youtube.com/watch?v=k6HIF7h4gP0>

Stated Benefits:

- Reduced discomfort of pain and inflammation while promoting blood flow and the body's own tissue repair mechanisms
- Increased tensile strength of the healed tissue
- Accelerated healing rate

Ankle Sprains

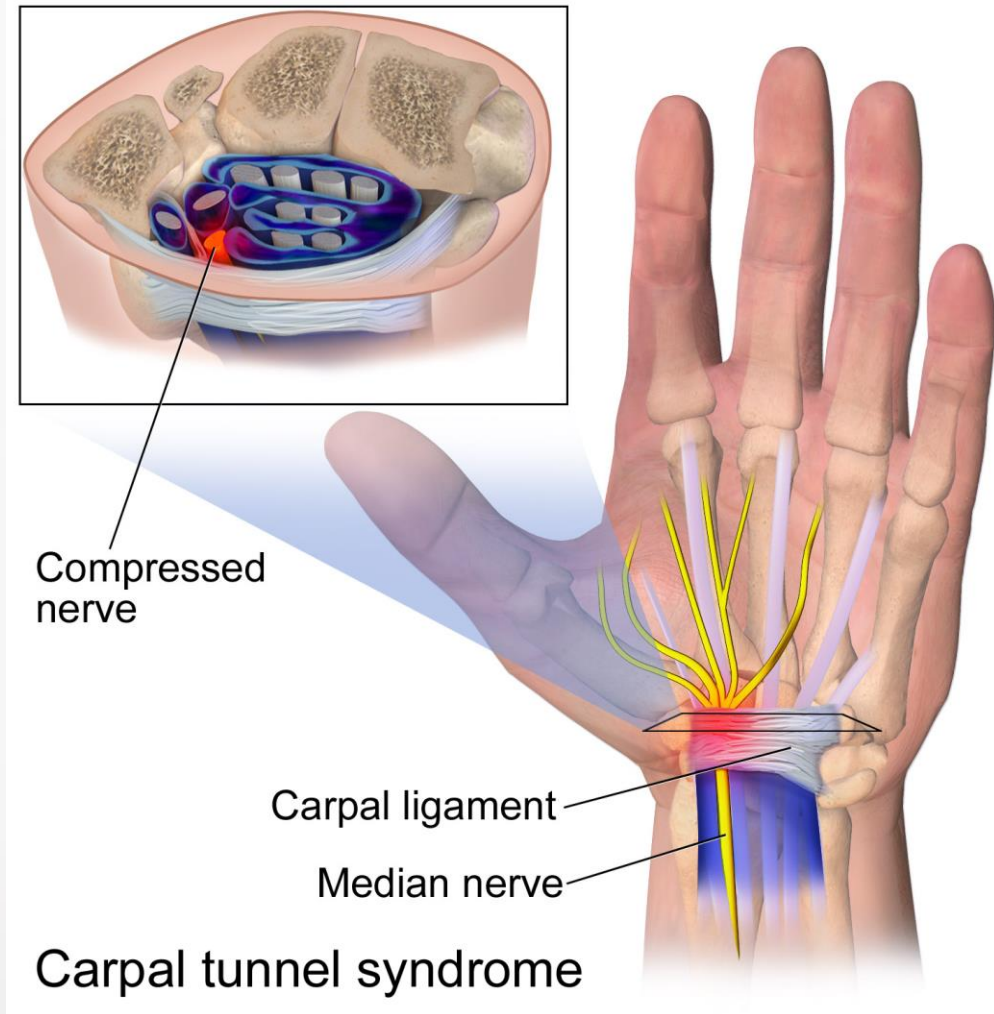
Stasinopoulos et al, 2017

- Randomized Controlled Trial with Grade II ankle sprains
- Method:
 - Control (n=25): Cryotherapy (20 min ice treatment every couple of hours for 5 days)
 - Treatment Group (n=25): Cryotherapy plus Bioptron (10 min daily for 5 days)
- Results:
 - Bioptron treatment accelerated pain relief, edema reduction and enhanced ankle range of motion (dorsiflexion/plantarflexion) compared to standard treatment alone



Carpal Tunnel Syndrome

- Swelling of tendons in the wrist & changes in sensation to the hand (tingling, numbness)
- Compression of nerve (median nerve)- risk of impairment of hand function



Carpal Tunnel Syndrome

Prior to studies: No satisfactory conservative treatment was available

Stasinopoulos et al (2005)

- Patients (n=25) with Carpal Tunnel Syndrome lasting >3 months received Bioptron light 3x per week (6 min sessions) for 4 weeks.
- Bioptron treatment significantly decreased nocturnal pain and paresthesia (tingling & numbness) after 4 weeks of treatment.
- Long lasting effect of Bioptron: symptoms still decreased at 6 months

TABLE 2. PATIENTS' VERBAL JUDGMENT OF PROGRESS IN NOCTURNAL PAIN

	<i>End of treatment</i> (%)	<i>6-Month follow-up</i> (%)
Worse	0	0
No change	2 (8%)	0
Slightly better	6 (24%)	3 (12%)
Much better	12 (48%)	13 (52%)
No pain	5 (20%)	9 (36%)

TABLE 3. PATIENTS' VERBAL JUDGMENT OF PROGRESS IN PARAESTHESIA

	<i>End of treatment</i> (%)	<i>6-Month follow-up</i> (%)
Worse	0	0
No change	4 (16%)	2 (8%)
Slightly better	5 (20%)	2 (8%)
Much better	13 (52%)	14 (56%)
No paraesthesia	3 (12%)	7 (28%)

Carpal Tunnel Syndrome in Pregnancy

Stasinopoulos et al, 2017

- 3rd Trimester pregnant women (n=25) with CTS
- Prevalence of CTS in pregnancy is around 60%
- Prior to study: No conservative treatment option available

Method:

Treatment with Bioptron for 6 min;
10 sessions per week (5x 2
sessions/day for 2 weeks)

Bioptron decreased pain and
paresthesia, and increased finger
pinch strength after 2 weeks of
treatment and effects were
maintained after 1 month after the
treatment

Bioptron is safe, reliable and
effective for the treatment of CST
during pregnancy

Table 2: Pain and paresthesia

	Pre-treatment	Post-treatment	pa	First month	pB	P*
VAS Pain	8.71±1.64	5.834±2.37	.000	3.47±2.45	.000	.000
VAS Paresthesia	8.66±1.55	5.536±2.28	.000	3.27±2.21	.000	.000

pa pre-treatment-post-treatment p value, pB pre-treatment-first month p value,
p* post-treatment-first month p values, VAS visual analogue scale

Table 3: Finger pinch strength

	Pre-treatment	Post-treatment	pa	First month	pB	P*
Finger pinch strength	4.22 ± 1.11	7.56 ± 1.39	.000	9.23 ± 1.34	.000	.000

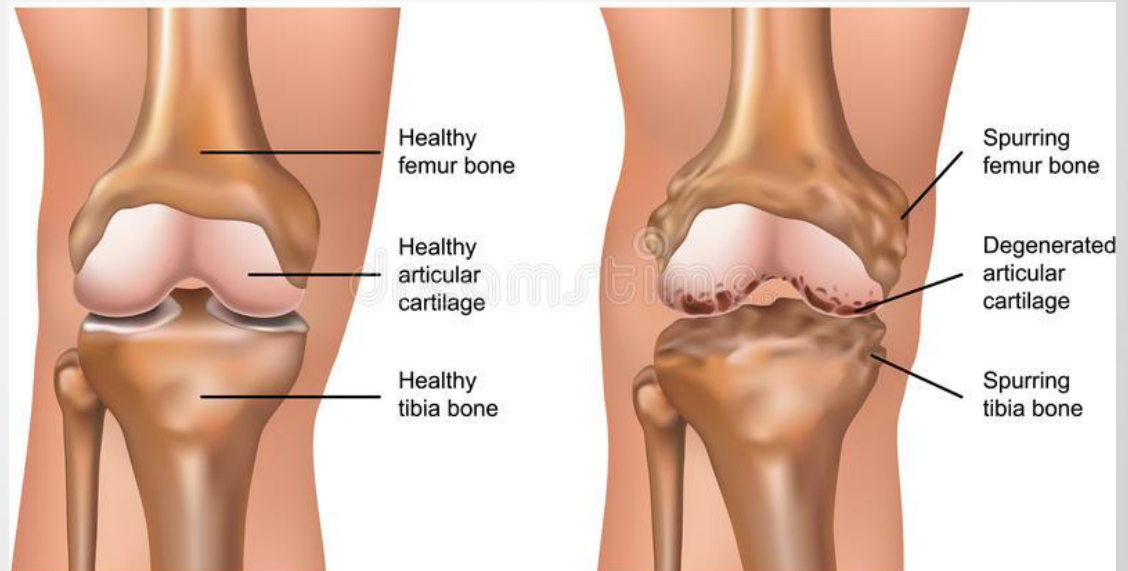
pa pre-treatment-post-treatment p value, pB pre-treatment-first month p value,
p* post-treatment-first month p values

Warning: Out of precaution, Bioptron light therapy is not recommended during the first trimester of pregnancy.

Gonarthrosis (Osteoarthritis) of the Knee

Gheorghe & Ochisor (2004, internal report, Bucharest, Romania)

- N=54 patients with gonarthrosis
- Conservative treatment with Bioptron of various durations
- Bioptron light therapy slowed the progression of the disease compared to regular physiotherapy in the following parameters:
 - Local clinical examination, pain intensity, knee flexion amplitude (through articular balance exam, with goniometer measurements), the quality of walking, climbing and walking down steps



Lateral Elbow Tendinopathy (LET, tennis elbow)

- Patients suffering LET (not considered a self-limiting disease)
- **Stasinopoulos (2005)** found Bioptron reduces pain and increases function and strength in patients with LET (pilot study, n=25), treatment of 2 points on elbow for 6 min each, 3x per week for 4 weeks)
- **Stasinopoulos et al (2009)** Patients previously unsuccessfully with pharmacological intervention, physiotherapy and injections
- Method:
 - Comparison of treatment regimes for LET
 - Treatment applied for 4 weeks
 - Control (n=25), standard treatment: Exercise program with Low Level Laser Therapy (LLLT)
 - Treatment group (n=25): Exercise program with Bioptron
 - Bioptron: 3 points on the elbow at 6 min each
- Results: Bioptron decreased pain and improved functionality after 4 weeks and 16 weeks to the same effect as LLLT, but Bioptron is much easier and safer to use

Tennis Elbow

- **Stasinopoulos & Stasinopoulos, 2006**

- **Method:**

- Comparing Cryiix physiotherapy (n=25), supervised exercise program (n=25) and Bioptron alone to treat LET
- Cryiix physiotherapy (deep friction and manipulation) and supervised exercise program requires trained specialised therapists
- Bioptron for 6 min at 3 points on the elbow (3x per week for 4 weeks)

- **Results:**

- All 3 treatment improved pain relief, function and strength with long lasting effects
- While supervised exercise program was the superior method to reduce symptoms of LET, Bioptron was equally effective as physiotherapy and is the more economical option

Table 2 Pain, function and pain-free grip strength

	week 0	week 4	week 8	week 16	week 28
Pain					
Cyriax physiotherapy	6.9 (6.6–7.3)	2.8 (2.5–3.1)	2.6 (2.3–2.8)	2.4 (2.1–2.6)	1.9 (1.6–2.3)
Supervised exercise programme	6.9 (6.5–7.2)	2.2 (1.9–2.4)	1.7 (1.4–2)	1.1 (0.8–1.3)	0.9 (0.6–1.2)
Bioptron light	7 (6.6–7.3)	3.3 (3.–3.6)	3.0 (2.8–3.2)	2.8 (2.6–3.0)	2.6 (2.4–2.8)
Function					
Cyriax physiotherapy	3.9 (3.4–4.3)	7.1 (6.6–7.5)	7.3 (6.9–7.3)	7.6 (7.4–7.9)	7.8 (7.4–8.1)
Supervised exercise programme	3.9 (3.6–4.2)	7.8 (7.5–8)	8.2 (7.8–8.5)	8.3 (8.1–8.6)	8.4 (8.2–8.7)
Bioptron light	3.9 (3.6–4.2)	6.7 (6.4–7)	7 (6.7–7.2)	7.2 (6.9–7.4)	7.3 (7.1–7.5)
Pain-free strength (lb)					
Cyriax physiotherapy	25.8 (23.7–27.8)	66.5 (60.6–72.3)	67.4 (61.9–73)	68 (62.2–73.8)	69 (63.3–74.7)
Supervised exercise programme	25.9 (24.1–27)	73.7 (68.9–78.5)	75.6 (70.7–80.4)	76.6 (72.3–81)	77.4 (73.1–81.6)
Bioptron light	26 (24.8–27.2)	63.1 (60.6–65.6)	64.3 (61.9–66.7)	65.4 (63.4–67.5)	65.4 (63.4–67.3)

Biopton in Physiotherapy- Humoscapular Periarthritis

Antonic (1990)- RCT

- Control (n=30): short wave diathermy
- Treatment Group (n=30): Biopton (6 min each)
- Biopton decreased pain and improved mobility of the joint

(various other case studies mentioned: reporting decrease in pain and improved muscle function for neuralgia, myofibrosis, trochanteritis etc.)



Biopton in Sports Injury Recovery

Pavlik, Dr Somogyi, Department of Health Sciences and Sports Medicine, University of Physical Education, Budapest

- **Aim:** Study to investigate the efficiency of Biopton in the treatment of sports-related injuries
- **Method:** A total of 80 (55 young athletes, 25 older patients) were treated with regular physiotherapy and Biopton light therapy (daily 10 min sessions). The results were tracked based on interviews with patients after each treatment session. Pain was graded on a scale of 0-10.
- **Conclusion:** BIOPTRON light-therapy can be recommended as an independent or an additive treatment of movement system injuries, because of its efficiency, ease of use and side effects free nature.

Results: Patients recovered completely or nearly completely at a faster rate than observed in the general praxis:



Recovery rate of our older subjects was slightly lower in the knee-joint, markedly lower in the shoulder joint than in young athletes.

Summary

- Wide range of applications in sports medicine and beyond
- Innovative new technology with clinically proven efficacy and visible results that encourage patient compliance
- Short treatment times
- Cost-effective:
 - Shortening of hospitalization and rehabilitation periods
 - Reduced overall health-care costs
- No known side effects
- Easy to use
- Used in clinical setting and in the patient's home
- Continuation approach (rental/home care)

Repairing Injuries Faster For Sports Related Injuries & Pain



Professional and amateur athletes from
around the world trust BIOPTRON.

Thank you from Bioptron!

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