



BRIGHT SPARKS ARE TURNING ON THE POWER OF BIOELECTRICAL MEDICINE

Modern bioelectrical medicine is an **inexpensive and uncomplicated** way to reduce the human and business costs of Musculoskeletal Disorders

“Early diagnosis and intervention can help sufferers of MSDs to stay fit and stay in work longer, which will have not only a positive impact on them but on the business’ economy in general”



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What's the issue?

Chronic diseases, such as rheumatoid arthritis and lower back pain, are keeping thousands of people off work across Europe.

MusculoSkeletal Disorder (MSD) is a Pan-European Epidemic. the problem & costs to the wider economy, employers and employees are direct, indirect and intangible . MSDs account for 50% of all absences from work lasting 3 days or longer and for 60% of permanent work incapacity

The impact of MSDs goes beyond the immediate physical symptoms; the diseases also have an impact on a sufferer's self-esteem, family life, and financial situation.

The prevalence rates for back disorders are statistically significantly higher in the Transport and Storage sectors compared with the average across all industries.

What do we know ?

Early diagnosis and intervention can help sufferers of MSDs to stay fit and stay in work longer, which will have not only a positive impact on them but on the business economy in general.

Past studies have show proactive traditional physical therapies mitigate MSD issues and accelerate return to work, Return on Investment can deliver average savings of £2- £3, and in some cases £8-10 for every £1.00 spent.

Recent breakthrough advances in bioelectrical medicine now harness the body peripheral nervous system to block pain, activate the neuro-muscular systems to stimulate repair and promote healthy body system function and mimics body micro current to effect healing .

The growing body of evidence is that bio-electrical medicine (or electroceuticals as they have become known), an industry thats market forecast to be worth \$22 billion in the next decade, are proving effective in resolving conditions untouched or underserved by pharmaceuticals and traditional therapies, something which just 10 years ago, would have been thought absurd.

What do we want to do?

While traditional physical therapies been shown effective in resolving some of the MSD issues , modern advances in bioelectrical medicine and the emergence of ultra wearable technologies, now offer employers personal pain management and therapeutic tools , which not only enhance and improve resolution rates , but tools that empower employees with the means of MSD self management and prevention.

NuroKor next generation wearable biomedical technologies are are shown to improve conditions like rheumatoid arthritis, back pain and other muscular skeletal issues.

These technologies can replace pharmaceutical painkillers and by improving prevention rates, augmenting, and in some cases replacing traditional physical therapies, they improve ROI and lead the way in best employer practice.

These devices are inexpensive, simple-to-use tech which will reduce the human and business costs of MSD's.



After stress, chronic back pain is the leading reason for time off work. Although the causes are varied, driving is a major factor



Chronic diseases, such as rheumatoid arthritis and lower back pain, are responsible for **keeping thousands of people off work across Europe.**

MusculoSkeletal Disorder. A Pan-European Epidemic.

The European Commission estimates that MSDs account for **50% of all absences from work lasting 3 days or longer and for 60% of permanent work incapacity (EC, 2007)**

UK TUC Safety Reps Survey cited MSD as a **major workplace hazard (UNISON, 2016)**

The impact to employers of Musculoskeletal disorders

Musculoskeletal disorders (MSDs) is an umbrella term covering over 200 conditions that affect the muscles, joints, tendons, ligaments, peripheral nerves and supporting blood vessels, causing pain and functional impairment to sufferers. (PUNNETT et al, 2004) range of injuries including Back Pain, problems with joints and Repetitive Strain Injuries (RSI).

The impact of MSDs goes beyond the immediate physical symptoms; the diseases also have an impact on a sufferer's self-esteem, family life, and financial situation.

Early diagnosis and intervention can help sufferers of MSDs to stay fit and stay in work longer, which will have not only a positive impact on them, but also on Europe's economy and society in general.

- Up to 80% of the adult population will be affected by an MSD at some time in their life (WHO 2003)
- Up to 40% of sufferers are out of work at some time in their life. (BEVAN et al, 2007)

- Total cost associated with MSDs are estimated in many billion Euros and include direct, indirect and tangible costs:

Direct costs include the cost of prevention, detection, treatment, rehabilitation and long term care

Indirect costs include lost work output attributable to a reduced capacity for activity, lost productivity, lost earnings, lost opportunities for family members and lost tax revenue

Intangible costs include psychosocial burden resulting in reduced quality of life, such as job stress, economic stress, family stress and suffering

80% of us will be affected by MSD and 40% of sufferers will be out of work at some point.



According to the HSE **41% of all workplace illnesses** in 2015-16 were musculoskeletal disorders, which include back pain.

That's **8.8 million working days** lost due to musculoskeletal problems.

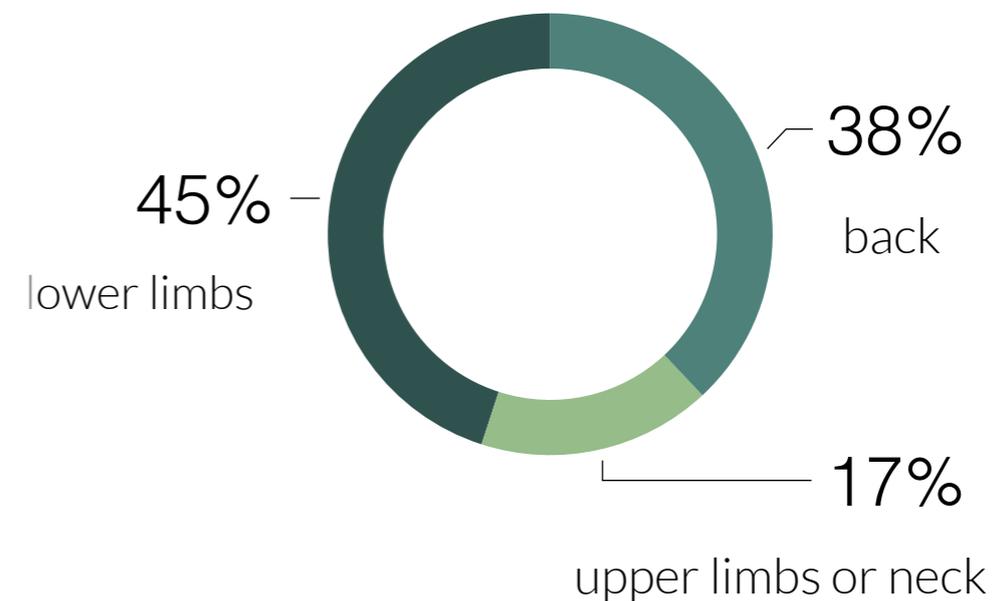
Some of the most **common health problems** reported by drivers are lower back pain

The prevalence rates for back disorders are statistically significantly higher in the Transport & Storage sectors

507,000 workers suffering from work-related musculoskeletal disorders

Back pain cost UK employers between **£590 million and £624 million per year** – after stress, chronic back pain is the leading reason for time off work.

Although the causes are varied, **driving is a major factor**



The MSD problem in Transport and Storage

Back pain cost UK employers between £590 million and £624 million per year – after stress, chronic back pain is the leading reason for time off work. Although the causes are varied, driving is a major factor

High-mileage drivers have often been associated with high prevalence of musculoskeletal pain (e.g. Gyi and Porter 1998, Porter and Gyi 2002, Porter et al. 1992);

Poor postures in some types of truck have been linked with neck and trunk pain (Massaccesi et al. 2003);

Drivers are exposed to whole-body vibration for extended periods of time, and this has been associated with low-back pain (e.g. Seidel and Heide 1986, Hulshof and van Zanten 1997, Bovenzi and Hulshof 1999, Mansfield, 2005).

Sitting leads to the expulsion of fluids from the inter-vertebral discs and reduces their ability to cushion the spine (Pope et al. 1998)

Truck drivers are exposed to further occupational stressors: routinely required to complete strenuous physical work: loading heavy goods, decoupling trailers, strapping down tarpaulins and jumping up and down from cabs and trailers.

These mechanically demanding activities are often carried out following long periods of inactivity, and a lack of preparedness is thought to be especially strenuous for the ligaments and muscles of the low back (Phillips 2003).

Problems by numbers

Of 160 truck drivers interviewed throughout Europe in a 2012 study by Volvo Trucks, 50% reported problems with back, shoulder and neck pain.

According to a 2011 Occupational safety and health in the transport sector study by OSHA,

- 54% of women and 37% of men in the in Europe transport sector have musculoskeletal problems. With truck drivers, often concentrated in the back, shoulders and neck.

- 43% of transportation workers in Germany reported a sore lower back
- 90% of work-related injuries among Spanish transport workers were muscular or skeletal

Several studies demonstrate the detrimental consequences of sustained sitting and being exposed to whole body vibration: exposure to vibrations may lead to back disorders. Back problems are the most common occupational injury among transport workers in Belgium. (often linked to mechanical vibration)

In a 2011 study (Robb & Mansfield) of 192 professional truck drivers self-reporting musculoskeletal problems

- 81% reported musculoskeletal problems (“ache, pain,discomfort”) in the past 12 months,
- 60% reported back pain, with high numbers reporting shoulder, knee and neck trouble (39%, 35% and 34%)
- 33% reported prevention of normal work due to musculoskeletal problems
- 70% experienced low back trouble at some point during their life

Car Drivers

Those who drive cars as part of their job, are also at particular risk. The risk increases for those who drive for 20 hours per week or more (Porter and Gyi, 2002).

Drivers covering more than 25,000 miles per year were 6x more likely than average to be off sick with back complaints, (Gyi et al., 2003).

- 65% reported low back trouble,
- 43% neck trouble
- 40% shoulder trouble



Early intervention is crucial to individual recovery and self-management; it may contribute to reduced number of working days lost and reduced productivity caused by MSDs (European Commission, 2007)

Interventions are most effective when they are tailored to the particular needs of an organisation or occupational group

“Employers have a duty to be proactive in ensuring they look after employees”

“In short, operators must assess all activities and see whether the driver could suffer harm if something went wrong – the operator must then take all reasonably practicable steps to ensure that does not happen”

Integrated Strategy

Research has shown that interventions designed to prevent and mitigate MSDs are most effective when they are tailored to the particular needs of an organisation or occupational group (Whysall et al., 2005).

Policy-makers need to recognise the economic and social benefits of early intervention and make provision within their healthcare systems

Employers should be aware of the symptoms, such as periodic 'flares' of inflammation and severe pain so they can adopt a helpful approach to return to work and can play an active role in helping workers to stay at work by offering rehabilitation and return to work services

Patients need guidance to learn practical self-management to help deal with symptoms, rather than only relieve symptoms with medicine

Healthcare providers can offer support to help sufferers live with the conditions and consequences

Companies must by law have in place risk assessments and company policies relating to any work-related activities that carry an element of risk. Developing strategy for resolving and/or preventing musculoskeletal disorders, the starting point (as in so many other areas) should be a risk assessment - and not just those who have suffered an injury

Effective Measures - Physical Therapy

The costs of MSDs to employers is significant, with the most substantial cost component being lost time from work. A HSE (2006) study looked to business for evidence that cost effective case management and rehabilitation principles could help those with MSDs stay in work, or return to work. Many individuals received physical therapy paid for by the organisation and there was a wide belief among most employees that the organisation should provide therapy or treatment.

Of the 30 business that participated:

71% had on-site OH function and provided physical therapy

48% had programme for MSDs management

66% said physical therapy was provided for employees

Companies using some form of physical therapy to deal with MSD issues reported that for every £1 pound spent they saved; £2 Royal Mail £ 2.44 Utilities £7.20 Ambulance Trust . On average saving £2-3 for every £1 .

- A major Pharmaceutical company estimated that for every £1 spent on the programme there was a saving of £10.99.
- Ethicon, manufacturing company - 30 of 68 staff could continue their normal job without restriction, 26 of 38 placed on restricted duties could return to normal job . The programme was thought to have prevented people taking sick leave.
- South West Trains. FastTrack physical therapy is perceived to be cost-effective when compared to waiting for NHS treatment
- HBOS, In one year 19 MSD cases were fast tracked to physical therapy. Estimated NHS waiting time 2540 days. Days off during physical therapy 573 saving 1967 days. Estimated savings for every £1 pound spent on physical therapy a saving of £8.12
- NHS trust, MSD related absence fell from 10,049 working days to 5,839 estimated for every £1 spent on physical therapy saving of £4.76

Enhanced Measures - Bio Electrical Therapy

While traditional physical therapies been shown effective in resolving some of the MSD issues, modern advances in bioelectrical medicine and the emergence of ultra wearable technologies, now offer employers personal pain management and therapeutic tools, which not only enhance and improve resolution rates, but tools that empower employees with the means of MSD self management and prevention. Incorporating bioelectrical medicine strategy into occupational health and safety policies can lead to fewer back problems and other injuries, which, in turn, are likely to result in less time off work.



Modern bioelectrical medicine is an **inexpensive and uncomplicated** way to deliver injury management and augment physical therapy treatment.

Early diagnosis and electro-therapeutic interventions can help sufferers to stay fit and stay in work longer. All of which, in turn, are likely to **reduce days lost** from work

Enhanced prevention and quicker resolution.

Bright sparks are turning on the power of bioelectrical medicine

the primary reason for provision

to avoid chronic risk & associated long-term absence

to reduce costs & reap financial benefits

to ensure duty of care

the benefits that would arise

improvement of the individual's functional ability

quicker return to play

reduce total absence costs

enhances management commitment & worker involvement.

power and control in the individual's hands

risk assessment and risk control measures

self efficacy and motivation

makes a good business case

culture and shared goals

good policies and procedures

evaluation and benchmarking



Biotech Innovators

Easy to use, easy to understand and medically evidence based, NuroKor are world leaders, representing the latest in a string of successes in the bio electrical medicine field.

Revolutionary advances in understanding of bioelectrical medicine have opened the way for all of us, at any age, to precisely block almost all types of body pain and help to resolve many of its causes.

Approved medical devices, NuroKor ultra wearable medical technology delivers bioelectrical frequency sets and formulations that have been proven to block pain, warm up and improve muscle performance, speed healing and hasten recovery from injury.

Kind to the body, providing the benefits of all in one, analgesic painkiller, muscle relaxant and anti-inflammatory - with zero side effects

Non invasive, easy to use and pharmaceutical - free, they are in everyday use by medical and clinical professionals, professional sport and are fast growing in the wider world for personal use at all ages; from families to diabetics to construction workers, drivers, the military, pilots and beyond.

They mitigate discomfort, alleviate aches, pains and strains as a result of playing sport and associated tasks , resolving many types of resultant MSD. In the majority of cases bioelectrical medicine can help augment and in some cases replace physical therapy .

Used regularly in prevention or early intervention, NuroKor devices will help the driver, office or warehouse worker pre, during and post work activity.

****Replacing drugs with devices .** *Medical experts are increasingly alarmed by the rising levels of opiate addiction and the side effects of pain killing drugs. A fresh study recently published in the British Medical Journal suggests there may be a link between taking high doses of common anti-inflammatory painkillers - such as ibuprofen - and heart attacks.*

NuroKor ultrawearables are safe, effective painkillers

the devices are effective on most types of chronic and acute pains. By blocking pain signals to the brain through the peripheral nerve system, (ENS) the bioelectrical medicine formulations in NuroKor devices precisely target the same mechanisms as pharmaceuticals but without the side effects**

NuroKor devices are proven physical therapy devices

the devices activate Neuro Muscular Electrical Stimulation (NMES) of muscles and body systems, increasing circulation and stimulating the body systems to produce the peptides and proteins essential for recovery from injury, muscle growth and healthy body systems.

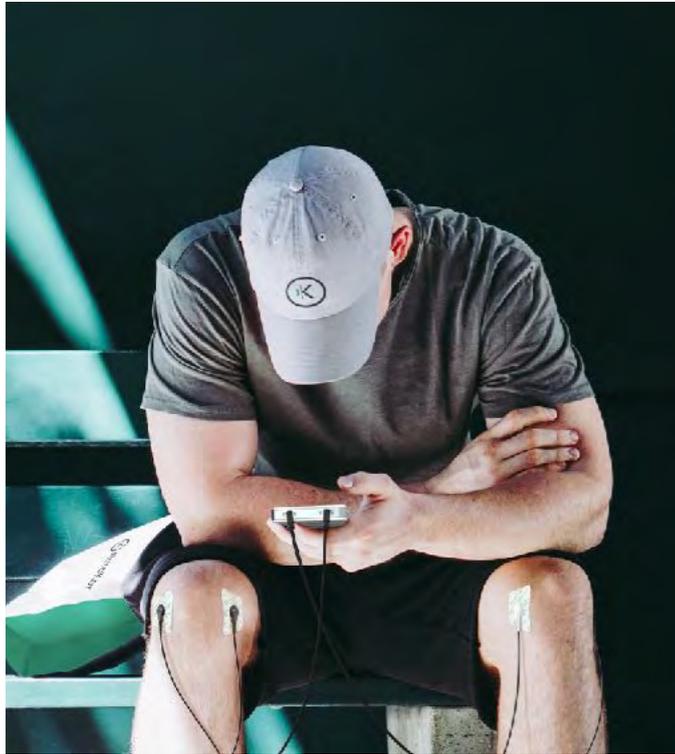
NuroKor devices reduce the incidence of injury by warming up muscles 'ready to go

- In exactly the same way as an athlete warm up, the effect is to stimulate the muscular system pre activity. targeting muscles groups needed for play.

NuroKor are healing and recovery tools

that help quicken recovery from aches, sprains, injuries and MSD.

- As a Pain Killer
- As a physical therapy device: NMES eases muscles, promotes healthy body system and accelerates recovery
- As a healing device; body-natural Microcurrent (MES) mimics the body electric, promoting cellular regeneration and healing at or near the site of injury or inflammation,



Revolutionary advances in bio-electrical medicine

Over the last 10 years there's been growing research evidence for the increasing efficacy of refined electrotherapy formulations and their potential to treat a wide range of diseases that are currently underserved by oral or injected drugs.

In developing NuroKor treatment formulations we comprehensively and constantly review the medical literature, cataloguing the available evidence-base for the use of our electrotherapeutic technologies: Nerve Electrical Stimulation, Neuro Muscular Electrical Stimulation and Microcurrent Electrical Stimulation. Research and reviews focus on recent, high-quality evidence from Cochrane reviews, systematic reviews and randomised controlled trials. Over 1100 academic peer-reviewed publications in the past decade have been identified from the literature searches conducted. From this large base of evidence, the full range of uses for bio electrical medicine and electrotherapy is distilled into key, evidence-based applications and the specific proprietary frequency and waveform treatment formulations developed.

Non Invasive NuroKor propriety frequency formulations have been shown to successfully effect positive outcomes, kill pain, improve performance and accelerate healing and recovery.

NuroKor® Peripheral Nerve Stimulation

Blocks pain & manages condition

Stimulates Endorphin release

NuroKor® Neuro Muscular Stimulation

Speeds recovery

Stimulates Myokine production

Helping to maintain healthy bodily function - brings about body's tissue regeneration & repair.

Respiratory Stem Cells, HSC's

Mitigation of muscle atrophy

Strength gains & performance enhancement

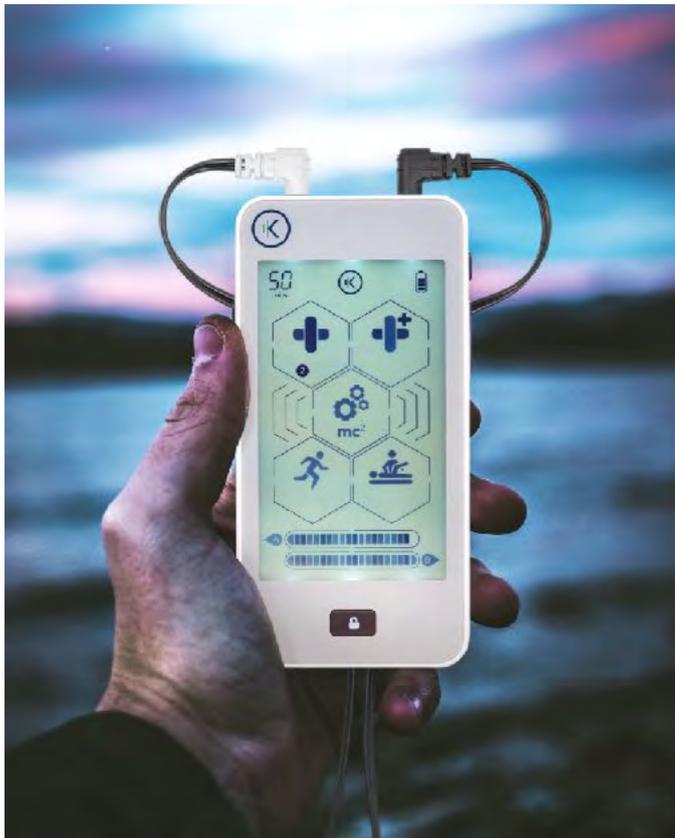
Improves condition management

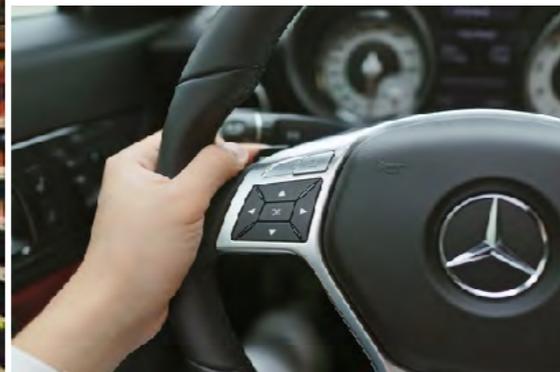
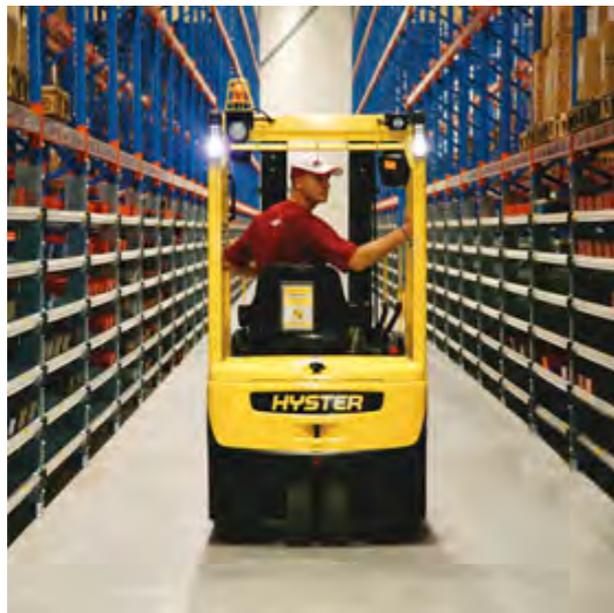
NuroKor® MicroCurrent Stimulation

By mimicking the body's natural electrical frequencies:

Stimulates Adenosine Triphosphate (ATP) production
The energy currency of life, the high-energy molecule that stores the energy we need to do just about everything we do.

Stimulates intracellular signals involved in Protein Synthesis.
From wound healing and injury repair to performance enhancement and condition management....from Athletic Performance to Diabetes to Arthritis, MSD to MS to Stroke.





Provision rationale

- avoid chronic risk & associated long-term absence
- reduce costs & reap financial benefits
- ensure duty of care

Benefits that arise

- prevention & improvement of individual's functional ability
- quicker return to work
- reduce sickness absence costs

Management commitment & worker involvement.

- power and control in the users hands
- risk control measures
- self efficacy & motivation

A good business case

- culture and shared goals
- good policies and procedures
- evaluation and benchmarking

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