QRS Fact Sheet No: P1

How QRS reduces pain

Revised 21 July 2000

QRS fact sheets are issued to explain the general application of QRS technology. It is envisaged that they will be supported by more detailed advice provided by QRS Consultants

QRS is able to significantly reduce or remove pain caused by a wide range of health problems.

The Principle
Pulsed magnetic field therapy has been shown to bring about a reduction of pain, which is due to action at the cellular level. The following explanation is taken from a paper by D.C. Laycock

Chemical Synapse Action Potential in a Neuron
NERVE
IMPULSE +30……..
Pre-Synaptic Depolarisation
Neuron Synaptic Na^4, Ca^2 inflow Repolarisation
Vesicle 0……..……...….. K^4 outflow…..…..

Membrane
Transmitter -55……
-70…….....……..
Synaptic Cleft

Post Synaptic -90……..…….
Receptor Neuron Membrane
Sites Potential mV Hyperpolarisation
(2a) (2b)

Nerve Synapses Cell Potentials
Fig. 2

Pain is transmitted as an electric signal that encounters gaps at intervals along its path (see Fig 2a). The signal is transferred in the form of a chemical signal across the synaptic gap and this is detected by receptors on the post-synaptic membrane. A charge of about -70mV exists across the inner and outer membranes, but when a pain signal arrives it raises this to +30mV (see Fig 2b). This action causes channels to open in the membrane, triggering the release of a chemical transmitter and allowing ions to flow into the synaptic gap. The cell then re-polarises to its previous resting level.

Research suggests that PMFT affects the quiescent potential of the membrane, lowering it to a hyper-polarised level of -90mV. Transmission is effectively blocked since the pain signal is unable to raise the potential to the level required to trigger the release of the chemical transmitter. Again, the frequency of the applied magnetic field is important, as the most effective frequency to produce this effect was found to be a base frequency of 200Hz pulsed at between 5 and 25 pulses per second.

Clinical Applications
The value of pulsed magnetic field therapy has been shown to cover a wide range of conditions, with well documented trials carried out by hospitals, rheumatologists and physiotherapists. For example, the department of rheumatology at Addenbrookes Hospital[1] (1984), carried out investigations into the use of PMFT for the treatment of persistent rotator cuff tendinitis. The treatment was applied to patients who had symptoms refractory to steroid injection and other conventional treatments. At the end of the trial, 65% of these were symptom free, with 18% of the remainder being greatly improved.

Lau[2] (School of Medicine, Loma University, USA) reported on the application of PMFT to the problems of diabetic retinopathy. Patients were treated over a 6 week period. 76% of the patients had a reduction in the level of numbness and tingling. All patients had a reduction of pain, with 66% reporting that they were totally pain-free.

Many research studies, including Lau[3], reported on the application of PMFT for conditions such as sports injuries and for patients with joint and spinal problems. Although these are too numerous to mention individually, in almost every instance there was a reduction, if not complete resolution of symptoms. Soft tissue injuries and joint pains tended to be resolved within 5 days of treatment. Patients with cervical problems and low back pain were also successfully treated, whereas previous treatment with ice, traction and other therapies had been unsuccessful. In yet another trial, the effect of applying PMFT to sufferers of Multiple Sclerosis was investigated (Geseo A.[4] 1987). 70% of sufferers had a reduction of weakness, pain and spasticity, with 50% reporting improvement of their bladder incontinence.

QRS Application

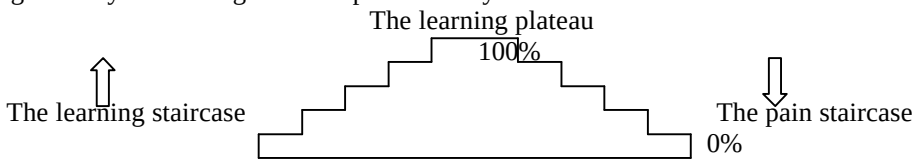
The scientists who invented QRS bundled the optimum frequencies into packets (0.1Hz to 1,000Hz) and applied them to the body by means of the Mat applicator and the Pillow applicator. The settings 1 to 10 on the control panel only change the intensity of the field (average 1.5mT to 15mT).

Most chronic and degenerative pain can be controlled by applying the Mat applicator only. This has the benefit of providing the optimum therapy to the body as a whole. Every cell is treated and so all cell dysfunctions (not only pain) receive a beneficial effect. The applications should generally be up to three times per day for eight minutes each application. Settings most appropriate for the control of pain are in the range 4 to 8 however a person with an active sympathetic nervous system should use a lower setting (see Information Sheet Q2).

In some cases (eg. Injuries to a part of the body), it is appropriate to treat the injured or painful part with the pillow applicator. This is seen as supplementary and can be as often as every four hours. Page 16 of the User's Manual shows the appropriate setting to correspond to the part of the body treated. Do not wrap the Pillow applicator around the body part – place it flat under or above the body part.

The pain memory

The pain memory learning process works in steps, up and down. After every improvement a slight pain can start again, until the pain level is brought down to 0%. The longer the pain has been experienced, the longer it may take to negotiate the pain memory staircase



QRS is suitable for use with all other modalities. As pain reduces, it will normally be possible to reduce the level of medication prescribed in consultation with the person's health professional.

QRS Result

With the optimum application of QRS, it is possible to maintain a significantly lower level of pain or to be pain free.

References:
1. Binder A., Parr G., Hasleman B., Department of Rheumatology, Addenbrookes Hospital. *"Pulsed Electro Magnetic Field Therapy of Persistent Rotator Cuff Tendinitis"*, Lancet, March 1984.
2,3 Lau B., School of Medicine, Lomo Linda, USA. *"Effect of Low Intensity Electromagnetic Fields on Diabetic Retinopathy"*.
4. Guseo A., Department of Neurology, Szekesfeheruar, Hungary. *"Pulsing Electro-Magnetic Field Therapy of Multiple Sclerosis"*, Journal of Bioelectricity 6 (1), 1987
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