**By Study Key parameters:**

What: Prospective randomized placebo controlled **Double blind** study

Where: Neurological department of the Hospital Sigmund Freud in Graz, Austria

 Study carried out by Medical University of Graz, Austria, Dr. Schaberl.

 Landeskrankenhaus Sigmund Freud in Graz, Austria

<http://www.lsf-graz.at/>

 Public government hospital specialised in neurological disorders.

 Medical University of Graz

(<http://en.wikipedia.org/wiki/Medical_University_of_Graz>)

Who: Barbara Schaberl carried out 2 studies with QRS:

* *The working of low intensity pulsed electro magnetic fields on patients suffering from stroke (2004)* = 52 persons
	+ „die Wirkung von Niederfrequent pulsierenden Magnetfeldern auf die schlaganfallbedingte Hamiparese. Diplomarbeit an der Karl-Franzes-Universität Graz (2004)
* *Dissertation „Use of QRS magnetic stimulation as complementary treatment in the rehabilitation of patients who suffered a stroke – Randomized double blind study“ (2008)* = 100 persons out of which 50 received QRS
	+ Dissertation „Adjuvante Behandlung mit einem Magnetfeldtherapiesystem in der Rehabilitation von Schlaganfallpatienten – Ergebisse einer randomisierten Doppelblindstudie (2008)

Object: Patients after stroke with Hemiparesis

 (Hemiparesis = weakness/ partial loss of voluntary movement of one arm

and one leg on either side of the body)

QRS: QRS used as complementary treatment

 Patients thus received QRS treatment in addition to the existing treatments:

* Medication
* Physio and ergotherapy

QRS used for 28 days, 2 times per day for 15 minutes each.

Intensity of the magnetic field 1.7 to 3.4 microtesla

Population: 100 patients:

* 50 in the QRS treatment group
* 50 in the control group

Measurements at 6 points in time:

* 1 measurement at the beginning
* 2 measurements during the treatment
* 1 measurement at the end of the treatment
* 2 follow-up measurements

Measurements:

* Key target parameter of the study: Daily skills were measured by the Barthel Index
* Case history
* Blood values
	+ Platelets (thrombocytes)
	+ Erythrocytes (red blood cells)
	+ Hematocrit
	+ Fibrinogen
	+ Glucose levels
	+ Cholesterol levels
	+ Triglycerid levels
	+ Low density lipoproteine cholesterol levels
	+ High density lipoproteine cholesterol levels
	+ Uric acid levels
	+ Homocystein levels
	+ Sodium ion levels in the blood
	+ Potassium levels
	+ Systolic and diastolic blood pressure
* Blood pressure
* General wellbeing
* Subjective sensation
* 4 standard pain scales:
	+ Numeric Analogue Pain scale (NAS)
	+ Visual Analoge Pain scale (VAS)
	+ Sensoric Verbal Pain scale (SVS)
	+ Affective Verbal Pain scale (AVS)
* Movement of patients
* Muscle tone (Range of Motion scale and Ashworth scale)
* Muscle strength

Key findings of the study:

Various parameters were significantly better in the „verum“ group as compared to Placebo:

* Daily skills as measured by the Barthel Index was very significantly („höchstsignifikant“) improved with QRS
* All 4 painscales showed a significant improvement with QRS
* General well-being showed a significant improvement with QRS.

Conclusion: QRS in relation to Hemiparesis after stroke:

* QRS as complementary treatment leads to a faster rehabilitation of the neurological deficit symptoms (neurorehabilitation). Increase of the range of motion of the patients.
* QRS as complementary treatment leads to reduction of the pain (triggered by spastic reactions).
* **Page 101/ 102: The results of this study demonstrate clearly and without doubt that QRS does have a positive effect as a complementary treatment with patients with Hemiparesis after stroke**
	+ *„...Diese Erkenntnisse sprechen eindeutig für eine diesbezügliche Zusatztherapie mit niederfrequent pulsierenden Magnetfeldern in der Apoplexrehabilitation…..”*