

## **Matrix-Rhythm-Therapy in the Peri-operative Application to Knee Surgery**

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The objective was to reduce further postoperative functional restrictions following open or endoscopic knee surgical procedures, as for example TEP implantation by robotic surgery or other ligamentous reconstruction and revisions.

Although every one of our patients had undergone intensive PT and the applicable rehab program as in- and outpatients, they exhibited occasional residual pain and deficits in ROM. Consequently, the question arose if the matrix rhythm therapy (MaRhyThe) was suitable for pre- and postoperative (perioperative) application to further improve and optimize patient treatment.

### **Material and method:**

The MaRhyThe was originally developed in our department particularly to optimize the inherent rhythmicity of the musculo-skeletal system. Optimizing thereby primarily the lymphatic and venous return from the terminal capillaries, secondarily without obstructing the arterial flow, thus eliminating and avoiding tissue acidosis of the extra cellular matrix.

A known cell biological fact is that low partial oxygen pressure promotes acidosis and fibrosis. These processes should be preventively inhibited, by improved functional conditioning as provided by MaRhyThe. The muscular system of the lower extremities, in particular the synovial capsule and the juxta-articular ligaments including the patella of 10 patients with ACL reconstruction, 7 patients with tibial head fractures and 6 patients with total endoskeletal prostheses were already mobilized one day prior to surgery. The intention being to circumvent possible post-operative joint adhesions, as well as muscular hypertonicity, myofibroses and myoscleroses.

### **Results:**

The preoperative mobilization showed a considerable improvement in the ROM of flexion and extension. The internal knee pressure had diminished in individual cases.

The first "micro mobilization" was already applied on the first postoperative day with the lower extremity of the recumbent patient still wrapped in a surgical splint.

- definitive reduction of the postoperative pain level
- significantly less swellings following drainage removal
- earlier attainment of terminal ROM
- reduction of patellar adhesions
- improved overall mobility
- more expedient development of muscle forces (isometric and isotonic)
- security of gait recovery by earlier attainment of proprioceptive feedback

### **Discussion:**

The application of the MaRhyThe produces absolutely no adverse side effects. The more competently the personnel (usually physiotherapists) had been instructed into the handling of the applicator, the more effectively influenced were the results. In particular, the accelerated pain and edema reduction permitted an earlier and more intensive onset of the muscular exercise program. In consequence to the overall positive results obtained with the MaRhyThe as applied by our trained physiotherapists in the past 9 months in our clinic, the above procedure was effectively integrated into the present "new standard" by our department of physiotherapy.