

Research-examination outline and medical-technical questions regarding the new King's Tensor method

The subject of biomechanical lab examination (outline)

Key phrases: spine problems, lumbar spine, conservative therapy, innovative therapeutic exercise device, excentric weighted vest, user's manual, supplementary active spinal therapy, complex effects, vertebral disc protection, fundamentally new development, biomechanics, special therapeutic strain, physiotherapy, prevention, rehabilitation, posture improvement, normal sinus curv, J-shaped spinal coloumn, scoliosis, kypho-lordotic malformations, mild cases of Scheuermann's disease, disc herniation (discus hernia), charter, humbled to help.

1. Terms, requirements

- the professional-moral support of an orthopedic surgeon (spine specialist), his/her participation in the project;
- innovation management, business partners, business plan;
- setting up an accurate research plan and financial background, finding investors, ensuring financial background;
- setting up a controll group of minimum 50 patients (25 healthy individuals, 25 patients with a certain type of moderate statical spinal disorder);
- acquiring TUCEB permissions for the studies;
- conducting and evaluating the studies.

2. Specific questions regarding the method, its effects and the device

(these are the questions of the inventor-developer, to which he would like to add the technically rephrased and rethought questions and further questions of the orthopedic surgeon and lab leader)

- Precisely how many centimeters higher does the excentric weighted vest place the centre of gravity of the upright human spine with males and females?
- What are the effects of this change in one's centre of gravity (meaning that the excess weight administered from above does not strain the spine directly, but still places the centre of gravity higher)?
 - Other points to this question:
 - the distance increases between our centre of gravity and our leaning point (feet)
 - our centre of gravity gets farther from our legs but closer to our arms and head
 - our centre of gravity gets closer to our heart
 - the vestibular informations become momentarily altered („trunk to head” adjustment - forward annexed movement controll, labyrinthine reflexes)
 - By how many percent does the average basic muscle tone of the trunk increase with performing the physiotherapy for 5 minutes 6 days straight? Is this beneficial?
 - Which types of therapy, which concrete exercises (stretching etc.) should be simultaneously performed (combined with) in order to achieve optimal effect in different spine conditions?
 - In cases of scoliosis, how exactly should we strenghten the musculature of the convex side more intensely?

- What type of active-passive stretching (relaxation) exercise helps mobilize the spinal joints the most (e.g. in cases of scoliosis, both sides but concentrating on the joints and muscles of the concave side)?
- What is the optimal duration of physiotherapy in different cases (minutes/days/weeks)?
- How, in what way does it help inverse spinal malformations? – Namely, our valid assumption is that the same exercise is beneficial in conditions like hyperlordosis (swayback, saddleback) and flat back syndrome (loss of lumbar lordosis). What is the main principle?
- Effects on the nervous system: how does it influence the vestibular system (sense of balance) and the postural reflexes?
- How is it possible, that despite putting pressure downwards on the spine, the excentric weighted vest causes decompression of the intervertebral discs
- In other words – „static of support”
 - How does decompression stress form between two vertebrae that affects the intervertebral disc?
 - How can the spine be freed from the extreme value of the so called „tightened/stiff range”(where the stiffness of the waist is the highest)?
 - How can we avoid the so called snapping over stability loss of the spine?
- In what way does the exercise alter the static forces of the spine in different malformations?
- Does the exercise indeed strenghten every layer of spine stabilizing musculature in a complex way? In what way does it affect m.rotatores and m.multifidus?
- After the subsidence of inflammation in cases of stiff back, when can we begin regular exercise with the excentric weighted vest?
- Can this revolutionary, new therapy help patients with partial paralysis due to different diseases involving muscle atrophy?
- In light of the fact that cardial and spinal musculature stem from the same germinal origin in the embryo, can the stimulation of spine stabilizing muscles have an effect in cases of muscle atrophy?
- What is the *EI bending stiffness* of the spine? (Euler, Lagrange) What is the importance of this number?
- How should the device be further developed? Ergonomy, safety, efficiency?

3. High level of professional application – orthopedics, neurosurgery, rehabilitation, physiotherapy (the first step of the scientific-statistical verification is observing data and changes in the controll group of 50 patients followed by the observation of results with years of further study)

- active spine correction (supplements corsets, braces, orthosis – but offers much shorter therapy time)
- 20-45 days before planned major surgery (if the patient is able to walk, strenghtening, correcting the spine can be beneficial – King’s Tensor is safe, carries minimal risk, is gentle but effective, is useful in such cases)
- faster-fuller postoperative recuperation, rehabilitation
- inoperable cases: form of physiotherapy
- physiotherapy at home – after widespread propagation: for treatment of spine conditions
- physiotherapy in cases of spinal disc herniation both surgically treated and non-surgical

- correctly established contraindications
- instruction manual for the use of the excentric weighted vest, safety criteria

In order to carry out the study, measurements and statistical analysis, I need the support of specialists, resources, financial means, tender allowance.

As a therapy developer I aim to take part in the medical professional team work of *King's Tensor Team* and to focus our attention on scientific R+D projects. I aim to have the effects of the method evaluated with biomechanical tests, have it accredited as a legitimate medical device in Switzerland, the European Union and Hungary. To spread wider knowledge of the method. These goals also contain innovation management, finding investors and business partners. I also offer my new method as subject of research for university labs, facilities, spine rehabilitation institutions. And finally, if I can, with the guidance and assistance of their physicians, I would like to help young patients with severe *scoliosis* and patients with other moderate spine conditions.

Hungary, 2017-11-13

Yours faithfully,

Norbert Király, certified civil engineer
inventor, developer



***The device of the
King's Tensor-Method***