Get down to the causes

Disaccord between strain and capacity

Pains in the cervical spine, the neck and the pectoral girdle as well as headaches associated with those pains are complex and frequent symptoms in physiotherapy. Those functional irritations are caused by imbalances between strain and capacity of the cervical spine and the active and passive structures connected with it.

Triggering physical problems are functional strains or overstress like a bad posture in everyday life while slouching in front of a computer or elsewhere as well as ergonomically inconvenient work places. Using a PC mouse causes a further unidirectional lifting of the pectoral girdle. Stress, worries and anxiety lead to a more intense muscular tension as such and load even more.\(^1\)\(^2\)\(^3\) Likewise growing demands in everyday working life, shorter breaks for relaxation and lesser possibilities for targeted preventive exercises intensify strains of the active and passive loco motor system.\(^4\)

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Functional findings

But if a balanced training with targeted stretching exercises is lacking, a bad posture will be fixed as the neck muscles shorten. In those cases, physiotherapists diagnose a cause and effect chain according to classic patterns with recurring functional findings.\(^5\) The thoracic spine drops into an intensified hunchback (kyphosis) so that the upper back appears curved with rounded shoulders. In addition, the shoulder blades are positioned further away from the spine and rotate outward.\(^6\)\(^7\) Such a hunchback leads to a compensating hyperlordosis of the cervical spine with a so-called “forward head position”: the chin pokes forwards rather than being tucked in. Now the deep, autochthonous muscles of the back and the nuchal ligament need to primarily accomplish the necessary stabilisation in order to avoid falling.

Results

That is why, the dorsal extensors of the forearm, the muscles of the pectoral girdle (pectoralis major and minor), the trapezius muscle, the scalene muscle group and the short, deep-seated neck muscles along the cervical spine abbreviate. This cranio-cervical reclination enhances a reactive increase of tension within the supra- and infrahyoid muscles. That results in an augmented strain of the occlusive acting jaw muscles and may induce cranio-mandibular dysfunctions.\(^8\)

Myofascial overload

At a neurophysiological level an inadequate muscle function is evoked by an insufficient innervation and vascularisation of the loco motor system.\(^9\) Experts assume that the ultimately pain inducing processes have their origin in myofascial overloads which finally result in muscular microlesions due to a disturbed microcirculation in the muscle.\(^10\) That automatically produces diverse patterns of complaints such as so-called “overuse syndromes”.

Significance of age

Additionally, the physiologic structural changes of an increasing age reduce the functional efficiency of the

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\(^{8}\) See Zepa I. et al. (2000), page 22.


loco motor system even more. Just think of degenerative changes in affected vertebral segments like intervertebral discs, vertebra and vertebral joints. The physiologic loss of muscle mass which starts from the age of 40 onwards and affects 10% of a person’s muscle mass per decade are to be taken into account in the context. Another important aspect which is related to that fact is the decreasing width of accommodation in terms of presbyopia. In brief: the primary functional disorders are combined and supplemented by structural changes.

Get back to balance

Basic physiotherapist treatment:

Established and proved physiotherapist treatments of those patterns of complaints are manual therapy methods in order to mobilise and drag several segments (traction) or manual lymph drainage. Over that, the patient is shown active and passive exercises to stretch his or her musculature, breathing exercises, and exercises for a segmental stabilisation, and for a muscular strengthening. Every therapy method, however, has to consider the complex cause-and-consequence chains such as a temporomandibular joint disorder.  


As daily lifestyle and job-related strains of many patients cannot be fundamentally changed, it is crucial to aim at lasting treatment concepts with as much autonomy and self-reliance as possible. That means that a patient not only has to understand the underlying causes inducing pain but that he also has to accept that he himself needs to do something. It is beyond dispute that the patient should be included in his or her own treatment concept. This is the only way to secure a treatment with a constant success.
Lasting success

Such a lasting success with a therapy calls for an implementation and maintenance of the therapeutic steps mentioned above beyond the physiotherapeutic treatment. Patients need to mobilise their spine by themselves as well as consult a physiotherapist regularly. Without great difficulties patients are able to perform muscular strength exercises. But this is not enough in most cases as the detonising and decontracting component is missing.

Effective stretching exercises within the cervical spine, however, are very difficult to achieve on one’s own and without the help of an expert as guided movements are needed. Over that, many exercises are too complex and they overburden the coordinative requirements as well as the necessary body awareness. That is why, we would like to introduce a new and supplemental therapy concept that we have successfully integrated into the work of our outpatient rehabilitation centre.

Case Study:

Patient, 56 years, female, secretary

Physical discomforts: for years relapsing tensions within the neck and shoulder girdle, pains while head rotation towards both sides, right hand side worse. When sitting for a longer time paresthesia in both arms. A sense of falling asleep of the right arm, following dermatome C6. Carpal tunnel syndrome and radicular lesions excluded by a neurologist.

Radiological findings:

Cervical spine 3E: signs of osteochondrosis C 4/5, progressed osteochondrosis C 5/6 and C 6/7, spondylarthrosis of the middle and lower cervical spine. Osteal foramina C 5/6 in terms of an uncovertebral arthrosis. Bone structure and their bone mineral density are regular.

MRT recordings of cervical spine: osteochondrosis of high degree with spondylosis C 5/6, C 6/7 and TH 2/3
with structural malfunctions and deformity in terms of C 5/6 and a limited spinal canal contraction. Unaltered spondylosis with an unchanged, but clear recess contraction on the right C 5/6, less in terms of C 6/7 and discretely C 4/5.

Functional findings:

The range of movement during a halting and painful left-right rotation of the cervical spine is 50° - 0° - 45°; left-right tilt 15° - 0° - 20°; space between chin and jugulum 4/17 cm; extension of the cervical spine is restricted due to pain. In addition, a distinct pressure pain on both sides, paravertebral between C3 and C7, is caused by that. The tone of the neck extensor muscle is elevated; the edge of the trapezius muscle is interspersed with painful myogelosis.

Functional, and to some extent even painful muscle shortenings with corresponding palpatory pains can be diagnosed affecting the following muscle strands: subscapularis muscle, pectoralis minor muscle and the scalene muscles. During the functional examination the de Kleijn test turns out to be negative. Likewise, the hypermobility test does not indicate any abnormalities concerning either the atlanto-occipital joint or the atlanto-axial joint. The upper limb tension tests for the median nerve, the radial nerve and for the ulnar nerve are all negative, too.

Aim of therapy

A therapy aims at a tension relief for neck, shoulder and arm muscles. Along with that, a therapy should focus on exercises which support extension and traction for an overall cervical tone reduction.

Supporting tools

In addition to individual manual therapy treatments a specially formed polyurethane foam cushion serves as a technical tool. By means of that cushion, the middle and lower cervical spine is flexed due to its special ergonomic design. At the same time, the cushion causes an inclination and extension of the upper cervical spine. This relieves the facet joints via traction and causes a palpable muscular relaxation. Over that, circulation and venous and lymphatic drainage are improved as the intervertebral foramina are spread and opened. The significant extension of the intervertebral foramina in every cervical segment has been proved via MRT diagnostics.

We have already incorporated this activity cushion in early stages of a treatment. In most cases, we apply it towards the end of a treatment unit in order to make sure that the patient's rest is backed up by an extension and traction. At the same time, we are able to check the individual patient's tolerance in terms of the activity cushion from the therapist's point of view. We advise patients to employ the activity cushion 15 to 20 minutes per day and to combine its use with isometric stabilising exercises. This approach ensures a lasting therapeutic effect.

Further exercises carried out at home

Autogenic training, exercises for a progressive muscle relaxation and similar approaches to achieve a deep relaxation can be combined easily with the whole treatment concept. For example, the patient of our case
study applies simple exercises of autogenic training in order to achieve a lasting deep relaxation.

By incorporating the activity cushion in the treatment, the patient not only learns its usage, but also experiences the effect of these extending exercises at an early stage. That is why he or she can continue with those exercises far beyond the immediate treatment unit.

Limitations of the method

Prerequisites

It could be a problem to apply this activity cushion concerning hyper-mobile types of body condition with a segmental above-average mobility. In some cases we observed that lying on the cushion is experienced as being inconvenient and awkward. However, it never turned out that the discomfort lasted. In principle, the patient’s subjectively pleasant, comfortable feeling should be the main prerequisite for applying activity cushion during the treatment. If necessary, a pillow or a folded blanket may be positioned under the patient’s shoulder girdle in order to reduce the extension of the cervical spine. As soon as the patient feels a subjective discomfort the use of the activity cushion should be terminated.

Contraindications

The Yellow-Head Method should not be applied:

- if the neck is injured,
- condition after an acute distortion of the cervical spine,
• in cases of (acute) herniated/slipped discs and acute nerve root inflammation of the neck vertebrae,

• in cases of a segmental instability of the cervical spine (innate, degenerative or post traumatic),

• in cases of meningitis, irritations of the meninges, after a stroke/apoplexy,

• condition after an intervertebral disc prosthesis of the cervical spine,

• condition of meningitis in terms of Parkinson's Disease,

• in cases of a cervical spine deformity,

• in cases of spasmodic torticollis,

• in cases of neurological illnesses or distortions, tumours or growths in the area of the neck vertebrae, as well as,

• condition after a drainage concerning the hydrocephalus.

**Completion of an individual therapy**

The usage of this activity cushion is not meant to replace either the professional consultation, nor the differentiated treatment or diagnosis by a doctor or other therapist. The usage aims much more at conserving the effects of the treatment and at enabling and supporting the transition to one's own initiative for a better well-being.

The presented method combines easily well-known, established and proved treatment concepts such as traction, extension and muscle relaxation with relaxing exercises which have their roots in autogenic training. The acceptance by patients probably results from the fact that only passive measures – just lying on the cushion – are sufficient to cause a lasting and soothing, but 'active' effect. With the activity cushion patients are integrated in their own treatment concept by continuing their therapy of extension, traction and relaxation at home.
Further Reading


