Biofeedback in medicine with a focus on cancer rehabilitation

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The method of biofeedback is known to be an effective instrumental psychophysiological method with the power to enhance self-competence in healthy people but also in patients suffering from different diseases. For some medical indications it has been shown to be an effective additive tool within state of the art treatment. By using a biofeedback apparatus and with the help of a so-called biofeedback therapist clients and patients are able to gain self-competence, the principle effective is self-efficacy. Such a biofeedback system is able to transform (disturbed) bodily functions into electrical signals and so-called parameters and by giving feedback of these biological signals to help the patient to get an insight into his/her body and to gain awareness about these disturbed bodily functions. Typical parameters used are skin conductance level and response, peripheral temperature, heart rate and different pulse qualities, heart rate variability, electromyography, electroencephalography, and hem-encephalography. With the feedback of these biosignals and by using skills given by the biofeedback therapist, the patient becomes able to change deficits in bodily functions according to a treatment goal [1–3].

Typical indications for biofeedback are stress management and hypertension, dependencies, anxiety disorders, attention deficit disorder, depression, burnout syndrome, school problems and sport psychological interventions (such as peak performance training). Further indications are female and male incontinence and pain syndromes (migraine, tension type headache, cervical syndrome, back pain and

sciatica, temporomandibular disorder, bruxism, abdominal pain and pelvic pain). For some indications, biofeedback has been reported to be able to reduce the use of medications. Nevertheless, biofeedback should only be seen as an effective additive part of scientific and evidence-based state of the art treatment regimens. Therefore, for medical purposes biofeedback should be performed only after prescription by a physician. Furthermore, it could be demonstrated that the knowledge about effective medical indications for the method of biofeedback seems to show a strong dependency on expertise, which is depending on medical knowledge, and knowledge about the biofeedback method itself [1–3].

Biofeedback has been shown to have many benefits for cancer patients as it can help to improve functional health, activities and participation of patients. Stress and anxiety management and depression are typical indications for the use of biofeedback in cancer patients. Especially in cases of cancer entities which typically affect the skeleton, biofeedback and biofeedback-assisted exercise can be used in musculoskeletal pain syndromes, such as cervical syndrome, back pain and sciatica. Such a so-called myo-feedback by using surface EMG feedback helps the patient to acquire an insight into his/her body and to gain self-competence when performing exercises. Biofeedback can also be used as an additive prehabilitation tool to learn breathing exercises better before thoracic surgery or pelvic floor exercises before necessary prostate or gynecological surgery due to cancer [4]. Female and male incontinence and pelvic pain are often seen in cancer patients. The use of biofeedback is an excellent additive tool in rehabilitation of these patients. In dying patients suffering from terminal cancer, who are not able to communicate due to somnolence, heart rate variability has been shown to be useful to find the right dosage of pain medication.

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Very severe pain (the so-called breakthrough pain) is an enormous stress for these patients, which leads to a decrease of heart rate variability. Due to this feedback, physicians are able to optimize pain medication. Besides their cancer symptoms and side effects of necessary cancer treatment, cancer patients can also suffer from other quite “normal” diseases and symptoms, such as headache (migraine, tension type headache), where biofeedback can reduce pain and, due an enhancement of self-competence, help to reduce medication and therefore further side effects [1–3].

This short editorial describes some interesting and effective opportunities for the use of biofeedback in medicine. Nevertheless, for medical purposes biofeedback should be only used after thorough history taking and clinical examination leading to medical diagnosis, within state of the art treatment regimens and only after prescription by a physician [1–3].

This issue “Biofeedback in Medicine” gives an interesting insight into this instrumental psychophysiological method with the power to enhance self-competence in patients suffering from different diseases. Selected topics are presented from the field of psychosomatic medicine, pediatrics, internal medicine, prevention and rehabilitation in a very comprehensive way. The review about the concept of psychosomatic competence is of high interest for all of us dealing with patients suffering from psychosomatic disorders [5]. A survey about the effects of biofeedback interventions in patients with pelvic pain, focusses on this very relevant but often forgotten clinical syndrome [6]. Virtual reality as a modern basis for treatment of stress, especially in children and adolescents, is described by Kothgassner et al. [7]. The application of neurofeedback in patients suffering from autism is shown in an interesting paper concerning children and adolescents suffering from this disorder [8]. Another short review concerning biofeedback for smoking cessation focusses on a relevant topic in prevention and rehabilitation of cardiovascular diseases and cancer, where the method of biofeedback could play a role as an additive tool within established treatment regimens [9].

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Conflict of interest R. Crevenna declares that he has no competing interests.

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