

# Oncology physiotherapy, a new specialty within a proven treatment discipline

## Epidemiology

Cancer has played an increasingly important role in disease and death among the population in recent years. In the Netherlands, the country where I work for many years now, it is the number one cause of death and has thus overtaken cardiovascular disease. There are 17 million inhabitants in our country and more than 110,000 new cases of cancer occur every year. Almost 50,000 people die each year from the effects of cancer (31% of deaths). More than 40,000 people (25%) die from the consequences of cardiovascular disease. The chances of survival in cancer are increasing and luckily there are now 560,000 people in the Netherlands with or after cancer, the survivors. More about that later. In Iceland, 1510 new cancer cases were registered in 2018, 662 cancer deaths and 4674 survivors (five-year survival). Breast cancer, lung cancer and prostate cancer were the most commonly reported in Iceland. The CONCORD-2 study, published on November 26, 2014 in The Lancet, describes the 5-year survival of 25.7 million adult cancer patients diagnosed for the ten most common forms of cancer. The patient data are from the 1995 to 2009 period and were collected using individual patient data from 279 cancer registries in 67 countries. Even after correcting for differences between countries and regions, risk of death from other causes, age, gender, race and time course, the researchers found very large differences between the various countries in terms of chances of survival for various types of cancer. The highest survival rates for breast cancer and colon cancer were reported in Israel and Ecuador (68% or higher for colon cancer); Qatar, Cyprus and Iceland (70% or more for rectal cancer); and in Australia, Brazil, Canada, Cyprus, Israel, Japan, USA and a number of European countries, including the Netherlands (85% or more for breast cancer). The same study also shows that patients with liver or lung cancer have the worst prognosis of the ten types of cancer studied. The 5-year survival rate was less than 20% in both developed and developing countries.

## Causes

Why do so many people get cancer? To answer this question it is good to go back to the beginning, to cell division. Cancer is unregulated growth. This can be caused by mutation, amplification and absence of tumor suppression genes. Regarding mutation there is a change in the genetic material of the cell, the DNA. Concerning amplification, the cell is copied more than twice, creating additional growth. In the absence of the tumor sup-



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pression gene, the natural inhibition on controlled cell growth has disappeared. In all cases, unrestrained and abnormal cell growth occurs. We use a characterization based on histology. A carcinoma starts from the epithelial tissue, a sarcoma from connective-, muscle-, nerve-, cartilage- or bone tissue. A melanoma originates from skin pigment cells and a lymphoma from the lymph nodes. In addition, there are leukemia and multiple myeloma, both based on the bone marrow. The staging of cancer is internationally classified with a TNM methodology: T for the size or extension of the primary tumor, N for the presence of lymph node metastases and M for the interpretation of hematogenic metastases. Why do these abnormal cell changes happen? Heredity is responsible for 5% of cases. Lifestyle, smoking and drinking, together for about 35%. But also think about sun rays. Nutrition plays a clear role,

both the composition and the quantity, therefore obesity is an important risk factor. Sometimes a virus damages the genetic material e.g. cervical cancer. Ionizing radiation can also cause damage to the cell, but in other cases it is often not clear at all. Coincidence or bad luck?

Maarten van de Weijden, a well-known Dutch sportsman (Olympic gold in the 10 km swimming in open water, Beijing 2008) developed lymphatic leukemia in 2001. He healed and then devoted his life to cancer research and fundraising. He says about this: "having cancer is stupid, stupid bad luck! Healing is not winning and dying not just losing". This year he swam a canal tour of 195 km passing by all the cities in our province of Friesland, a famous tour that has traditionally been held as a skating competition. He raised more than 6 million euros for cancer research.

## Treatment options

Cancer treatment has changed considerably in recent years. We have two treatment goals. These are: curative, focused on healing, and palliative, focused on improving, or : maintaining quality of life and sometimes on extending it if healing is no longer possible. In curative treatment design surgery, radiation, chemotherapy and anti-hormonal therapy are the most common. The tumor is removed with surgery. Radiation destroys cancer cells. Chemotherapy is aimed at disrupting DNA or the protein systems and thereby inhibiting the growth or multiplication of cancer cells. Anti-hormonal therapy focuses on hormones as a growth accelerating factor. Recently, new treatment methods have been developed that intervene in the growth factors of the cancer cells or in

strengthening the body's immune system. Fortunately, the search for new treatment options continues despite the high costs. The same options can be used in the palliative treatment design, but the trade-off between effectiveness, the contribution to quality of life and the unavoidable side effects must always be made. This consideration will also change over the course of life, as goals will shift.

### Side effects

In addition to all the intended effects, the medical treatment options also give side effects. These are very diverse in nature, but often affect the physical functioning of the patient. Surgery can damage parts of the musculoskeletal system. Think of muscles and tendons, nerve tissue or blood and lymph vessels. Tissue repair does not always lead to functional recovery. Radiotherapy can lead to fatigue, skin reactions, nausea and diarrhea. It also shows changes in the connective tissue only after several years. That can lead to fibrosing of involved tissues and movement limitations. Chemotherapy and anti-hormonal therapies have many different side effects because they interfere with cell processes. Regarding the various chemotherapeutics these side effects are carefully described and can be found in the pharmacotherapeutic reference works. Many of the side effects described here include fatigue and a strong decrease in physical condition and muscle strength. Incidentally, also decrease of mental resilience and meaning in life.

### And what role is there for the physical therapist

The physiotherapist knows from his expertise the importance of exercise and the need to pay attention to this. If the patient is unable to do this himself, or with any advice or general support, a referral to the physical therapist is appropriate. With these interventions, the physical therapist supports and promotes "the ability

to adept" for the cancer patient. Maintaining or restoring physical condition and strength appear to be important in recent years not only after medical treatment, but also during treatment. With sufficient fitness, the applied chemotherapy can be better endured and the doctor does not have to reduce the optimal dosage due to unacceptable side effects. If there are physical movement restrictions, treatment can be offered by the physical therapist. Experience figures in the Netherlands show that around 25% of patients require targeted specialist oncology-physiotherapy care, approximately 5% requires specialist multidisciplinary rehabilitation care and that the majority can be guided with advice or general physiotherapy. This specialist physiotherapy is an expertise that has increased in recent years. In previous years, the physiotherapist in some treatment centers was involved in the clinical care of these patients and also often in treating lymphatic problems after cancer treatment (see the article by colleague Mireille Lauret). With improving survival rates, cancer patients became more and more survivors, with more discomfort from all side effects that adversely affected their quality of life. Therefore, the call for this aftercare became ever greater. That is why the role of the physical therapist in supporting, improving and restoring physical possibilities has grown and they fulfill an important task in care and after-care. From patient to new person, with its own role in family, work and social society. A nuance is appropriate here, because by no means all cancer patients can be treated curatively. The 5-year survival rates have improved in recent decades from 25 to 65% over-all, for breast cancer even to 88%, unfortunately for lung cancer only to 19%.

### Then why the specialty of Oncology Physiotherapy?

As described above, the role of the physiotherapist in cancer care has grown considerably in recent years. There is an increasing demand for expert treatment of patients suffering the effects of



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this disease, the unwanted but unavoidable side effects of these often invasive treatments that leave their mark on all dimensions of human life. Being able to function physically in the greatest possible degree of independence is an important goal of every cancer patient. The limitations that arise can often be influenced by physiotherapy interventions. That is why it is important to know the background of the disease and its treatment options thoroughly. The first requirement for an oncology physiotherapist is knowledge! To have knowledge of the tumor types, their behaviors, the treatment options, the damage that this causes to the musculoskeletal system, the consequences of surgery, radiotherapy, chemotherapy, immunotherapy and so on. Intersection of connective tissue structures, muscles and nerves leads to loss of function and limitations in independent functioning. And further changing tissue properties such as hardening of connective tissue as a result of radiotherapy, altered functioning of nerve pathways through chemotherapy, decreased heart function, a disturbed gastrointestinal system, insufficient lymph drainage, inexplicable fatigue. Just some known consequences, each with their own influence on being able to function safely, independently and effectively. Secondly, it is important for an oncology physiotherapist to also know the non-physical changes. What are the consequences in daily life if these basic skills are no longer possible? If you are too tired to perform your daily activities, if you lack the strength and energy with every effort, if you are nauseated by chemo, the pillow is full of dropped hair, in short if you can no longer live your life the way you used to. How do relationships change during such a radical process, how do you hold on with so many life questions? Uncertainties and doubts that are very understandable and that can be demotivating and inhibiting in the physiotherapeutic process of building strength and condition where possible, in the recovery of physical functioning both in the use of your limbs and in daily life. Quite a difficult competence for the oncology physiotherapist. As a third skill, knowing other forms of care and aftercare is important in order to be able to provide specific advice or referral to the patient in treatment requests outside the physiotherapeutic context. Multidisciplinary care is necessary here.

Finally, the oncology physiotherapist also fulfills the role of colleague consultant and advisor in questions from general physiotherapists who provide care to the large group of patients with single problems after or during cancer.

### **Oncology physiotherapy, how do you do that?**

What options does the oncology physiotherapist have for performing these tasks and assignments? First of all the general competences of every physical therapist. In addition, a great deal of knowledge about cancer, the occurrence of various forms, the course to be expected, the chances of survival and the medical treatment options. Knowledge of all the consequences of these medical treatment options is also important to understand the consequences for physical functioning and to be able to intervene in it. In addition, knowledge and skills to guide patients in the other aspects of processing mentioned and experienced barriers to come to an active role in their own recovery. Patients benefit from their own active attitude to practice skills and mobility, to train in maintaining or improving physical condition and to work towards

the best possible new situation in which control over their own lives can be regained as much as possible. In addition to supporting and treating cancer patients who are recovering from cancer disease and its treatment, there is still a large group of approximately 35% who cannot be treated curatively. They live with this disease for a short or longer period of time. They often have increasingly symptoms of the disease and treatment. First in functional limitations, later in basic physical functions. This group of palliative patients require appropriate, sometimes period-wise treatment and counseling up to and including the terminal phase in which anxiety, pain and fatigue play an increasing and limiting role. A very important task has been set aside for the experienced physiotherapist. Oncology physiotherapy, how do we continue?

Within physiotherapy there is an increasing demand for expert care for cancer patients and survivors. In medical care, the contribution of physiotherapy during and after primary treatment is more and more known, acknowledged and supported by scientific research. The contribution of the physiotherapist is highly appreciated in palliative and terminal care. The dissemination of this role is greatly enhanced by the patients, who share their experiences with their doctors and family. Physiotherapists themselves improve the possibilities of care through targeted training and through the worldwide distribution of knowledge in this area.

At the Geneva congress 2019 of the World Confederation for Physiotherapy - WCPT – the board officially recognized the subgroup "International Physiotherapists for HIV / AIDS, Oncology, Hospice and Palliative care", IPT-HOPE. This subgroup strives for worldwide dissemination of knowledge and skills of cancer related physiotherapy. On 14 and 15 May 2020, the second International Conference on Physical Therapy in Oncology (ICPTO-2020) will be organized at Copenhagen (Denmark) by the Dutch Institute of Allied Health Care (NPi), the Association of Danish Physiotherapists (DFys) and the Danish Society of Oncological and Palliative Physiotherapy (DOPF).

See: [www.npi.nl/ICPTO2020](http://www.npi.nl/ICPTO2020)

### **Conclusion**

The conclusion of the rise and growth of this new area within physiotherapy may therefore be: "Oncology physiotherapy is specialized physiotherapy for an exceptional target group in a special context.". In addition to the highly specialized medical care that primarily focuses on combating degenerated tissue, the malignant tumor, it is expert care from a holistic view of humanity, to get back to life! I hope you can develop this expertise in Iceland.

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