

# **TRANSFORMATIVE PHYSICAL EDUCATION AND LIFESTYLES IN CANCER PATIENTS: EFFECTIVE MOTOR LEARNING AND PROMOTION OF NEW LIFESTYLES**

## **EDUCAZIONE FISICA TRASFORMATIVA E STILI DI VITA IN SOGGETTI AFFETTI DA CANCRO: EFFICACI APPRENDIMENTI MOTORI E PROMOZIONE DI NUOVI STILI DI VITA**

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### **Abstract**

Numerous scientific studies have demonstrated the positive effects of movement education and sports activity in cancer patients (Courneya, Friedenreich, 2011). The aims of this study is to document the effectiveness of a motor educational intervention carried out mainly on the transformative corporeity, on the well-being and lifestyles of cancer patients. The hypothesis considered Motor Education as an agent of change on psycho-physical and relational variables, usually inhibited by the disease, and limiting the personal exposure of self-effectiveness and transformative empowerment during and at the end of the therapeutic-clinical path. This is why a group of subjects has been subjected to a longitudinal programme of motor education observing its effects on the variables considered: positive emotions, perceived self-effectiveness, perception of fatigue. The results have shown that a structured mobility education programme can make an important contribution to improving not only physical functionality but also emotional variables behavioral, creating the conditions for a positive change in one's own personal life, perception of oneself and autonomous management of one's own life.

Numerosi studi scientifici hanno dimostrato gli effetti positivi dell'educazione al movimento e dell'attività sportiva nei pazienti affetti da cancro (Courneya, Friedenreich, 2011). Obiettivo di questo studio è di documentare l'efficacia di un intervento educativo motorio svolto principalmente sulla corporeità in ottica trasformativa, sul benessere e stili di vita di pazienti affetti da cancro. L'ipotesi considerava l'Educazione Motoria come agente di cambiamento su variabili psicofisiche e relazionali, solitamente inibite dalla malattia, e limitanti il vissuto personale di autoefficacia e di empowerment trasformativo durante e al termine del percorso terapeutico-clinico. Per questo si è sottoposto un gruppo di soggetti ad un programma longitudinale di educazione motoria osservandone gli effetti sulle variabili considerate: emozioni positive, autoefficacia percepita, percezione della fatica. I risultati hanno dimostrato che un programma strutturato di educazione al movimento può contribuire in misura importante a migliorare, oltre che la

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1 Developed and edited the background of manuscript and research, formulated the hypothesis and research plan, administered the intervention and supervised the final manuscript.

2 Administered the program and the questionnaires, collected the data and formulated the analysis of the data.

3 Supervised the research and the final manuscript, contributed to the analysis of the data and conclusions.

funzionalità fisica, anche variabili emotivo-comportamentali, creando le condizioni per un cambiamento in positivo del proprio vissuto corporeo, della percezione di sé e della gestione autonoma della propria vita.

## **Keywords**

Fatigue, positive emotions, exercise, well-being, self-efficacy, motor skills

Stanchezza, emozioni positive, esercizio fisico, benessere, auto-efficacia, capacità motorie

## **Introduction**

Scientific values on the positive effects of moderate physical activity during and after oncology therapy are now well known. Many studies show that moderate physical activity can be considered an effective intervention to raise the quality of life (Quality Of Life) improve the immune response and lifestyles in patients and former cancer patients (Ando M., Morita T. et al., 2009).

Research on the possible role of a physical education understood as “permanent and transformative education” in which the “body” is considered as a place of emotional experiences and cognitive elaboration (embodied cognition) in patients and former oncological patients, is recent compared to research that merely examines physical activity in cancer prevention. The subject was considered in the mid-1990s when several research groups in North America and Europe began study programmes. This interest in the search initially produced several reviews (Frieden-reich C. M., Courneya K. S., 1996) and was further increased in the most recent years (Courneya K. S., Mackey J.R., Jones L. W. 2000). The recommendations of “rest” during and after treatment are now obsolete concepts.

Observational studies suggest that regular physical activity during and after cancer treatment can be associated with lower risk of cancer-specific mortality and reduced recurrence. A number of studies carried out examining different lifestyles show that the habit learned of a regular exercise reduces the risk of recurrence of the disease, increasing the state of health and the quality of life of cancer survivors (Brown et al., 2012; Christensen et al., 2014), As for cancer treatment subjects, the prescription of moderate intensity physical exercises, can have numerous benefits, improve psychological health, maintain physical performance, reduce fat increase, reduce bone and muscle loss, reduce experience of symptoms, manage side-effects of radiation and chemotherapy. Multiple scientific studies have shown that regular moderate physical activity increases survival by 50-60% with increased current evidence for breast and colon cancer. In people with prostate cancer, it has been shown that moderate exercise can limit or even reverse some of the adverse effects of androgenic deprivation therapy by increasing muscle mass, functional performance and cardiorespiratory fitness, without increasing testosterone levels.

Hormonal therapies for breast and prostate cancer can cause an alarming increase in the risk of cardiovascular disease, obesity, type 2 diabetes, osteoporosis and sarcopenia. Sometimes the risk of mortality from other chronic diseases begins to overcome the initial diagnosis of cancer.

To remain on a strictly health level, many research shows the effectiveness of adequate physical activity to prevent and manage many secondary diseases such as lymphedema. Exercise is a critical adjuvant therapy in the management of many cancers, greatly improves the therapeutic effects of radiation and traditional pharmaceutical treatments by increasing tolerance, reducing side effects and reducing the risk of chronic diseases even those not aggravated by cancer treatment.

But it is at the mental level that the correct and appropriate routine practice of motor activity expresses the best result. The body, in this psycho-physical perspective, can be considered a space of liberation of the mind, a place and a process that can generate dynamic actions and transactions with high pedagogical and social value, based on the organization of educational

practices enhancing motor, emotional, sensory and expressive potential. They improve positive humoral states, thanks to the increase of eustress and neuropeptides of psychophysical well-being (serotonin, dopamine, endorphin). The disease often leads the patient to live in states of anxiety, depression, social isolation, reduced interaction with the natural, physical and social environment, which lead him to a counterproductive rest strategy. A well-designed, assimilated and accepted physical education programme conducted by educational personnel trained in the field of motor science can reduce both physical and mental distress (Valenti M., 2008). Motor education of these subjects helps to reduce some of the side effects of conventional cancer treatment:

- Causes positive adaptations and improves self-effectiveness;
- Reduces fatigue by improving energy levels;
- Improves management of stress, anxiety, mood and depression;
- Improves social and environmental interactions;
- Improves bone density;
- Improves muscle strength, relieves pain and improves joint ex-cursion;
- Improves the quality of sleep; -Improves the appetite;
- It prevents constipation; -Improves weight- shape;
- Improves the health of the heart.

A Swedish study (Optimal Training With Breast Cancer) observed for 5 years the effect of moderate physical activity on women with breast cancer undergoing cytostatic therapy. The study also addressed the effect of various training programmes on psychophysical well-being, on systemic inflammation mechanisms in the blood, during and after chemotherapy and hormonal therapy. At the end of the trial, the positive effects of moderate intensity physical activity were demonstrated: better quality of life, fewer side effects of therapy, more muscular strength, better quality of life, ability to return to work, reduction of social costs. This research has demonstrated the importance of introducing moderate physical activity into the integrated treatment of women with breast cancer (Wengstrom Y., Bolam K. A., Mijwel S. et alt., 2017).

A large number of other studies have assessed the various improvements in the oncology patient induced by moderate motor activity during treatment. Studies have analysed the effects of cancer treatment of different types of cancer: breast cancer, cancer, non-hodgkin lymphoma, and multiple myeloma. Some studies have used observational methods, other interventions and specific methodologies. Subjects were subjected to moderate aerobic activity such as bike, walking, and free-body motor activity from 6 to 26 weeks. All studies have shown an improvement both physically and mentally: quality of life functional capacity, physical fitness, natural self-destruction activity of cytotoxic cells, neutrope-Nia, thrombocytopenia, reduction of diarrhea, pain, need for platelet transfusion, hospitalization duration, anxiety, depression, vitality, irritability, fatigue/energy states, physical well-being, functional well-being, emotional well-being, social well-being and life satisfaction, minor states of anxiety and depression, minor side effects (nausea, fatigue, sleep disorders, and physical discontent). The activity also showed positive effects in terms of physical capacity, body weight, fitness, flexibility, fatigue, nausea, physical well-being, functional well-being, satisfaction of one's own life (Courneya & Friedenreich, 1997; Cunningham et Ali.,1998; Courneya et Ali., 1999; Authors et ali., 2019).

We could summarize the objectives of a PE in these three areas:

- psychological goals reduction of fears related to movement, strengthening of self-confidence, development of a positive relationship with one's body, improvement of self-esteem;
- social objectives: better participation in social life «Exit from isolation», promotion of communication together with a better exchange of experiences and information.

- pedagogical objectives: information on the beneficial mechanisms of sport on health, promotion of individual responsibility and self-determination, development of a realistic assessment of one's physical abilities (Baumann et al., 2008).

An important educational-transformative task, carried out by specialists in motor sciences, is to transmit to the oncological patient the meaning and effectiveness of physical activity, so that the latter, through a new awareness of themselves, learning/knowledge of movement, of one's own well-being, moves to a more active lifestyle, expressed also in the form of a constant and continuous motivation ("continuing education" and "long life learning") to practice sport (Wil-deGröber, 2004).

Other results of studies on cancer and physical activity have shown improvements in the state of health in the strict sense based also on the biological results of a moderate intensity aerobic training program in terms of: physical capacity, number of monocytes, cytotoxic cell abatement activity, depression, anxiety, mood, self-esteem, physical well-being, life satisfaction and QOL in general, hemoglobin concentration, muscle strength (Porock D., 2000; Segar M. L., 1998; Steeland K., 1995; Young- Mccaughan S, 1991; Durak E. P., 1998; Dimeo F. C., 1997).

Researchers at the Australian Cancer Council have stated that research on physical activity has been developed over the past 10 years, demonstrating how exercise should be associated with regular cancer treatment, especially for people with cancer, breast and prostate. People with cancer who perform moderate exercise by changing their lifestyle, have higher survival rates and better quality of life. A good acceptance of educational/motor programs has proven to be helpful in relieving fatigue, a common side effect of cancer treatment (Pritchard C., 2017). Both during and after the oncological treatment, it is appropriate to insert a path with regular physical activity also based on the use of pedagogical means - psychological, which inevitably lead to a physical well-being aimed at restoring or strengthening the functional efficiency of the movement as a program cancer rehabilitation. It will be useful to start specific courses of aerobic and mind-body type sports such as yoga, pilates, nordic walking, rowing.

Those in charge of motor activity are often graduates in motor sciences that belong to associations and bodies dealing with physical education. In particular, today three-year graduates in monetary sciences have the opportunity to train in the teaching of sports adapted in specific Master's Degree Programmes.

## **1. Corporality education in people at risk or suffering from cancer**

Numerous scientific research worldwide has shown the same positive effects, both physical and mental, of a corporeal education based on meditation and psychophysical relaxation, in patients and former cancer patients: reduction of anxiety, depression, Fatigue, improved immune system response and better quality of life (Kim Y.H, 2013; Authors et al., 2020).

As noted in the previous chapters, there is an important relationship between chronic stress and cancer incidence. In this sense an important study on a group of 6284 subjects, showed an increased incidence for lymphatic cancers, haematopoietic and respiratory, in parents with strong psychological distress due to the death of a son (Levav I., 2000). This is because stress, or rather distress, over time suppresses immune function including natural killer (NK) fundamental anticancer cells (Reiche E.M, 2004). It has been scientifically proven that meditation techniques, physicality awareness techniques and psychophysic relaxation techniques influence the immune system even in diseased individuals.

The results of pioneering research (Simonton O.C. et al., 1981) had been advanced and demonstrated some hypotheses according to which, following the application of bodily practices of gestural education, meditation and psychophysical relaxation, one can observe: improvement of psychological responses to the state of illness, in particular a decrease of anxiety and depression, reduction of stress, improvement of the quality of life and problems related to sleep.

## **2. Motor Education during and after oncology therapy**

Research carried out on women with recent diagnoses of breast cancer showed the positive effect of meditation on autoefficacy, coping ability, plasma cortisol reduction and restoration of Natural Killer levels (Witek-Janusek et al., 2008).

In Italy, too, the educational/motor areas in which gestural education, meditation and psycho-physical relaxation techniques for oncological patients are introduced into the hospitals. Reality engaged for years with meditation, psycho-physical awareness and physical activity at low intensity as qi gong and yoga, included within a specific work protocol, which combines inter-winds of health information with holistic practices. This program work is applied to oncological and cardiopathic patients. The program is based on holistic mind-body principles in the Mind-Body union and is aimed at groups of women suffering from breast cancer, with medical and health treatments in progress. The numerous researches carried out by the doctors and specialists of the Institute, have shown psychophysical improvements of the patients on the management of stress and on the affective states, after only four sessions of meditation. There have been, also in some studies conducted by us (Autori et al., 2019; Autori et al., 2019) observed also evident benefits on mood and quality of life, reduction of anxiety, reduction of depression, better quality of sleep, Better response of the oncological patient to treatment.

Through the combination of mind-body and moderate intensity aerobic motor activity, it was the basis of the didactic and methodological approach. The working hypothesis consisted in evaluating the positive effects of motor activities based on mind-body methods on psycho-physical awareness utilizing techniques based on postural gymnastics, pilates, relaxation with breathing techniques, meditation. The work, of aerobic type to low-moderate intensity (walking p.es), acts on the improvement of the perceived self-efficacy (positive and negative emotions) and on the improvement of the motor abilities (balance, flexibility of the column and strength of the lower limbs, demonstrate the increase of eustress through positive interactions between body and mind.

## **3. The action research: motor education experience and achieved results**

The activities were carried out on a group of adults at the IRCCS Cancer Institute of Bari “John Paul II”, who joined the health education and lifestyle program initiated by the Institute and gave consent to the participation of the promotor education program. The experimental design, of longitudinal type, foresaw the frequency of a training for 2 times to week for the weekly duration of 150 minutes. Two pre and post evaluations (initial T0 and final T1) were carried out at distances of 8 weeks.

## **4. The methodology of the program based on “physical motor activity”**

### **4.1 Participants**

15 sedentary subjects, aged between 20 and 60 years, 11 women and 4 males, with different pathology of cancer (true polycythemia, colon cancer, non-Hodgkin lymphoma, Hodgkin lymphoma, multiple myeloma, breast cancer), 11 subjects in therapy and 4 post-therapy subjects. The patients were recruited within the IRCCS Istituto Tumori of City, Italy, “Giovanni Paolo II”, with informed consent. The working protocol, approved by the Ethics Committee of the Institute, was carried out in 8 weeks and was submitted to all patients in stable clinical conditions, attending counseling surgery and food education and lifestyles throughout the research period. For ethical reasons it was decided not to create a control group, thus avoiding the exclusion of patients from the well-being of the Motor Education protocol. The activities were walking, postural gymnastics of psychophysical perception and pilates, 2 days a week for 150 minutes

total. An analytical method has been adopted in the phase of acquisition of motor learning and there has been room for creativity, according to a more global approach, of guided discovery, in the advanced phases of motor learning and of strengthening of the expected awareness. The evaluations were carried out in two pre- and post (initial T0 and final T1) times in which physical motor tests and psychological questionnaires were administered.

#### 4.2 Test

Research test for emotional psychophysical evaluation administered in pre and post: the Perceived Self-efficacy Scale in the Management of Negative Emotions “AP\_EN” and the Perceived Self-efficacy Scale in the Management of Positive Emotions “AP\_EP” (Caprara, 2001).

The “AP\_EN” measures the convictions relative to own perception in the expression of negative emotions in determined situations, through 7 evaluating item on Likert scale to 5 levels: 1= not at all capable; 2= little capable; 3= average capable; 4= very capable 5=quite capable. The items that make up the Scala, have been selected by a larger group of items, related to different situations in which the subjects experience discomfort, impatience and irritation.

The “AP\_EP” evaluates, on the other hand, the convictions related to its own conception in the expression of positive emotions in certain situations, through 7 items evaluated on the same Likert scale at 5 levels of the “AP\_EN”. The 7 items that make up the scale relate to various situations in which the subjects experience enthusiasm, joy and personal satisfaction.

The research tools used for the evaluation of the motor coordination and conditional abilities administered in pre and post: 30” CHAIR STAND (Rikli, R. & Jones, J. 1999); test for the right and oblique muscles of the trunk (Sannicandro, 2004); test of the stork (Arnot & Gaines, 1984).

The motor evaluation was based on the measurement of selected co-ordination and conditional capacities according to the following instruments. Through the Stork Test, the static equilibrium was evaluated and the subject was invited to maintain the equilibrium remaining stationary as long as possible in monopodal support, evaluating first one limb and then the other. Subject stands with his hands on his hips. Lift one leg by placing the toes of the foot against the knee of the other leg (stork position) and keep the position as long as possible. The time recorded is compared with the following reference table:

SEX	EXCELLENT	GOOD	MEADDLE	LOW	INSUFF
Man	50 < sec.	50 < 41 sec.	40 < 31 sec.	30 < 20 sec	< 20 sec.
Woman	30 < sec.	30 < 23 sec.	22 < 16 sec.	15 < 10 sec	< 10 sec.

Table 1. Values (Arnot e Gaines, *Sport Talent*, 1984)

Through the “Test for flexibility” the flexibility of the right and oblique muscles of the trunk was measured: The subject must flex laterally the torso. The aim is to assess the flexibility of the rectangle and oblique muscles of the abdominals, as well as the flexibility of the vertebral column. There is the difference in centimeters between the part touched by the fingers at the start, on the athlete’s own leg, and the point touched with the performance of the bend (Sannicandro, 2004).

Resistance was measured through the “Test 30” Chair Stand”. The aim was to test the strength of the lower limbs and the perception of fatigue, through the maximum number of times the subject reaches the upright sitting position, in 30 seconds. This test is one of the most important functional assessment tests because it measures the strength of the lower body and relates it to the most demanding daily activities (e.g., climbing stairs, getting out of a chair or bathtub or getting up from a horizontal position). It is also in the business of assessing functional fitness levels and fatigue effect caused by the number of sitt-stand repetitions. It consists of getting up and sitting down from a chair as often as possible (n) within 30 seconds. A standard chair was used (with a seat height of 40 cm) without backrests but with armrests. Initially, the patients were sitting in the chair with their back in the vertical position. They were asked to look straight forward and to stand up after the “1, 2, 3, go” command at their preferred speed with their arms crossed over the chest. All tests were carried out using the same chair and under similar environmental conditions. The recorded repetitions are compared with the following parameters:

SCORE		
AGE	MAN	WOMAN
60 - 64	< 14	<12
65 - 69	<12	<11
70 -74	<12	<10
75-79	<11	<10
80 - 84	<10	<9
85 - 89	<8	<8
90 - 94	<7	<4

Table 2 (Rikli, R. & Jones, J. 1999)

## 5. Results

The collected data were exported and added together through an excel file. Through a statistical analysis with Test t Student for dependent groups, was analyzed the pre- post intervention statistical difference of the equilibrium test DX and SX, 30-second chair stand test for resistance and af-fatigue ability, DX column flexibility test and SX Perceived Self-effectiveness test in Negative and Positive Emotions.

The pre- post comparison in the Perceived Self-effectiveness test in the management of Negative Emotions and in the Management of Positive Emotions, was carried out between the sum of the scores obtained at 7 tomorrow.

As shown in the graphs, the subjects for all the measured tooth variables showed significant differences after 8 treatment weeks ( $p < 0.05$ ). This shows that the inter-wind protocol has been effective.

As for the correlations analyzed between the pre-post differences of each dependent variable, there were no significant correlations ( $p > 0,05$ ) between all the quantitative variables (equilibrium, sit & chair, etc...) and the perceived self-effectiveness.

Instead, significant correlations were found (measured with the standardized  $\beta$ , i.e.,  $r$  of Pearson) between the fatigue index and:

BALANCE DX & SN,  $p = 0,0438$ ,  $r = -0,53$ .

SIT & CHAIR,  $p = 0,0411$ ,  $r = -0,53$ .

FLEX DX,  $p = 0,0150$ ,  $r = 0,61$ .

FLEX SN,  $p = 0,0358$ ,  $r = 0,54$ .

The 8-week intervention protocol was effective with regard to variations in engine tests, fatigue index and perceived self-efficiency.

There is a significant correlation between fatigue index and some physical performance variables. The equilibrium test and the Sit and Chair test had a clear negative relationship.

As regards the results of the Sn and Dx flexibility tests, they show a decrease in performance and a positive relationship with the fatigue index.

## 6. Discussion

This study demonstrated the motor, psychic progress and the improvement of the “approach to life” of cancer patients in therapy and post therapy through the practice of holistic mind-body activity (relaxation and awareness techniques, postural gymnastics, pilates) and aerobic (walking) techniques, demonstrating the union and positive interaction between body and mind through these activities. As we have seen, the results of this study have confirmed the improvements to the motor tests of equilibrium limb DX and SX, tests of the strength of the lower limbs and especially to the questionnaires of the Autoefficacy in the Perception of the Negative and Positive Emotions. As far as perceived fatigue tests and column bending tests are concerned, performance has decreased. These results may be due to the poor co-location of some subjects and the very small number of subjects examined. The improvement results agree with similar psycho-physical studies carried out on patients in therapy and post-oncology therapy that confirm the improvement of positive humoral states (Valenti M., 2008, Kim Y.H., 2013, Witek-Janusek et al., 2008) and improvement of motor functions (Courneya K. S., and C. M. Friedenreich, 1997; Cunningham A. J., Edmonds C. V., Jenkins G.P., Pollack H., Lock-wood G. A, Warr. D., 1998; Courneya K. S., Friedenreich C. M., Ar-thur K., Bonick T.M.,1999; Dimeo F. C., 1997). It is important to state how, both for healthy subjects and for patients in oncology therapy and post therapy, physical activity combined with psychophysical relaxation and meditation techniques, carried out for 150 minutes per week (WHO, 2010), brings improvements



both in the immune system, metabolic, endocrine, musculo-skeletal (coordinating and conditional abilities), both in the brain systems for the management of positive and negative emotions, thanks to the stimulation of neuropeptides of pleasure (dopamine, serotonin, endorfina) (Pokorná A., Střeščíková R., 2016), This demonstrates the continuing influence of stress psychophysical between mind and body, and importance in leading an active and healthy lifestyle in the patient in oncology therapy and post therapy.

According to the Australian Clinical Oncology Society, physical exercise should become part of the standard cancer treatment, as it is useful to counteract many of the adverse effects such as fatigue, depression and body weight problems. All people with cancer should avoid inactivity and prevent normal daily activities by maintaining a healthy and physically active lifestyle. Physical activity improves both aerobic ability and muscle tone, counteracts disease-related distress, improves the quality of life of cancer patients. The type of exercise should be commensurate with the specific conditions of the individual and the type of tumor, following a customized motor program and managed by experts and graduates in motor activity. The Australian Clinical Oncology Society therefore invites all health professionals involved in the care of people with cancer to promote these recommendations (Cormie P., 2018).

## Conclusions

The aim of this research is to raise the awareness of educators, doctors, health professionals, health professionals, families, institutions, policies, cancer treatment and post-treatment projects, motor science graduates, promoting and recommending aerobic and mind-body physical activity in the prevention and treatment of cancerous diseases. It also aims to raise awareness among policy makers of scientific oncology research, which provides for motor and body education plans to promote the positive effects of moderate physical activities, so as to deepen and support the validity of such methods for cancer treatment and prevention. Preventing the spread of metastases and preventing relapse is one of the fundamental problems in the treatment of cancer disease, but it is also important to restore a good quality of life through motor education in order to reclaim lifestyles geared to bio-psychosocial well-being. The main relapse of this educational approach is precisely on the immune system, which as we have seen, is influenced by numerous behavioural factors, by severe emotional stress, which in the long run can lead to a diagnosis of cancer, and immunosuppressive effects of surgical and pharmacological therapy of oncology treatment. Helping the immune system, by learning to manage its own body, the degree of autonomy and movement, acts as a modulator of psychophysical distress, increasing eustress through enjoyment as a behavioral transformation strategy and simple, effective health improvement without “side effects”. It is very important to spread the role of these moderate-intensity motor activities of psychophysical awareness, and the benefits at both psychological and physiological level. The comune basis of mind-body activities is psychophysical awareness that flows from ancient oriental cultures. Despite its roots in Buddhism, awareness is not intrinsically religious and is often taught independently of religion. Awareness leads to mental presence, to the perception of the movement of a musculo-skeletal district, muscle contraction and elongation combined with slow and deep breathing. Awareness is at the base of the respiration, of the correct postural movement, of the psycho-physical relaxation, it is the door that connects the physical world to the mental world, a globality of interactions that the Orientals define “energies”. For the Orientals an imbalance in the flow of these energies, they cause “blockages” (distress), which if they are not brought into balance through awareness activities (yoga, tai chi, meditation), lead to in-arising pathologies. The techniques of postural gymnastics, gentle gymnastics, pilates, are inspired by these oriental techniques (Ives, Sosnoff, 200). Awareness is the key component that unites these mind-body disciplines: awareness of one’s own internal environment; awareness of one’s own thoughts and emotions; awareness of one’s own body in relation to space; Awareness of slow and controlled movements combined with stretching of

muscle chains and breathing; awareness of breath and psycho-physical relaxation; awareness of here and now in meditation.

We can conclude by saying that motor function cannot be separated from psychological, educational and relational processes. A correct lifestyle in which in addition to proper nutrition, these coping strategies are integrated, reduces the incidence and mortality for cancer. In many parts of the world, such as Australia, Sweden, Switzerland, the United States, patients and former cancer patients, are directed towards this type of activity. For these countries “rest for the sick” is a highly outdated concept. In Italy this concept is spreading, but with longer times, that is why it is important to communicate these scientific discoveries in our country. Especially in southern Italy, only in recent times is spreading the importance of physical activity, not as a hobby, but as a strategy of change and reappropriation of personal and social life also in the prevention and treatment of cancer diseases at all ages.

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