# ONCOLOGY GAMES

## TRAINING FOR COACHES

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# SESSION 1: PRESENTATION OF THE ONCOLOGY GAMES PROJECT AND ICE-BREAKING GAMES

## 1. ICE-BREAKING GAMES

The purposes of an ice-breaker are:

- to encourage all participants in breaking down and discarding status, prestige, authority, structured attitudes and behaviour habitually employed in day-to-day activities ("ice" here is slang for rigid formality);
- to encourage all participants to relax and enjoy themselves and each other as persons (not limited to roles or status holders) in preparation to becoming more open and open-minded towards the substantive training to follow;
- to encourage participants to interact with each other and get to know each other in non-orthodox and untraditional contexts;
- to soften up participants before they face the core material of the training; and
- to improve the training process of the overall training workshop by preparing the participants as above[1]

### ICE BREAKING GAMES – EXAMPLE N.1 FIND SOMEONE WHO… [2]

**DESCRIPTION**
Participants use a checklist as they walk around the room trying to find a person who has a certain characteristic.
When students find "someone who drives a truck" or "someone who was born at home," they write that person's name on their checklist of paper and move on to the next person with the hope that that person meets one of the other characteristics on the master list.
The goal is to meet and talk to as many people as possible within the time limit in order to put one name by each of the characteristics.
**Indicative duration:** 15 minutes.

**MATERIALS**
1. A piece of paper listing 15 to 20 characteristics.
2. A copy of the paper for each student.

**PREPARATION**
Prepare 15 to 20 characteristics. Try to vary the questions so that it will be easy to find a person for some characteristics but not so easy for others.

Easy questions that most people can answer yes to include "find someone who has more than one brother," "find someone who watches TV at night," or "find someone who likes to eat fish." It is usually harder to find the one or two people who can answer yes to "find someone who is an only child," "find someone who was born in December," or "find someone who usually reads the newspaper every morning." Mix up the easy and difficult characteristics on your sheet.

**IN CLASS**

1. Announce that the class is going to do a brief activity in which each participant will ask people a question to find out if they do a certain activity. The goal is to ask everyone in class until participants find someone who does that activity or has that characteristic.
2. Hold up a copy of the checklist of characteristics. When students find someone who says yes to one of their questions, they should write that person's name on their checklist sheet and go on to the next question with another person.
3. Important: A student can write a person's name only once. Thus, if Maria reads the paper every day and she is an only child, no student can write Maria's name twice on the checklist.
4. Pass out the papers. Ask everyone to stand up. Begin the activity. You, as the teacher, should participate as well.

## ICE BREAKING GAMES – EXAMPLE N.2 I INTRODUCE TO YOU...

**DESCRIPTION**

Each participant is called to draw, with a pencil on a paper, something that could represent her/himself. Then the participants, in pairs, talk about him/herself making reference to the drawing. Then the participants introduce the other person to the rest of the class.

**Indicative duration:** 20 minutes.

**MATERIALS**

Paper and pencils for making a drawing.

**PREPARATION**

This icebreaker doesn't request any preparation.

**IN CLASS**

1. Give to each participant a piece of paper and a pencil and ask him/her to make a drawing representing him/herself. It could be figurative or abstract.
2. After five minutes, divide the class into pairs and ask each participants to explain the drawing to the other, and to talk about what the drawing expresses of his/her main characteristics and interests.

3. After five minutes, ask each participant introduce the others to the rest of the class.
4. Pass out the papers. Ask everyone to stand up. Begin the activity. You, as the teacher, should participate as well.

### ICE BREAKING GAMES – EXAMPLE N.3 TWO TRUTHS AND A LIE [3]

**DESCRIPTION**
Students are asked to come up with 3 statements about themselves, two that are true and one that is false. People have to guess which one is false.
**Indicative duration:** 20 minutes.

**MATERIALS**
Paper and pens for each students to write the 3 statements about themselves.

**PREPARATION**
This icebreaker doesn't request any preparation.

**IN CLASS**
1. Ask to each participant to think of three statements about themselves, and to write down them on a paper. Two must be true statements, and one must be false.
2. Each participants shares the three statements to the group, in any order he/she preferes.
3. The group votes on which one they feel is a lie, and at the end of each round, the person reveals which one was the lie.

## 2. BACKGROUND AND OBJECTIVES OF THE ONCOLOGY GAMES

### PROJECT GENERAL INFORMATION

**Oncology Games** project has been inspired by the experience of Leonardo Cenci, President of the Italian Association *Avanti Tutta*, is managed by TUCEP and has been co-financed by the European Commission under the Erasmus+ Programme.

The project will implement the European Union's strategies for improving public health and social inclusion, by promoting the application of European Physical Activity Guidelines in sport activities for oncology patients.

Project main objective is to demonstrate that sport helps to deal with oncological disease in a positive way and it could help improve patients' quality of life. Moreover, with this initiative, the partnership also intends to raise awareness about sport and health issues at European level.

The project activities will last 18 months and will be realized in Italy, United Kingdom, Spain, Greece, Poland and Bulgaria.

## PROJECT PARTNERSHIP

TUCEP - Tiber Umbria Comett Education Programme (Coordinator) – Italy www.tucep.org
CONI - Italian National Olympic Committee – Italy www.coni.it
CENTRE 4 EDUCATION – Spain www.centre4education.com
COMMUNITY TEACHSPORT – United Kingdom www.communityteachsport.org
ASSOCIATION FOOTURA – Bulgaria http://footura.com
EILD - European Institute for Local Development – Greece www.eurolocaldevelopment.org
WSBINOZ - Wyższa Szkoła Biznesu i Nauk o Zdrowiu – Poland http://www.medyk.edu.pl
AVANTI TUTTA ASSOCIATION (associate partner) – Italy www.avantitutta.org

## PROJECT RATIONALE

- The aim of this Sport's unique and universal power to attract, motivate and inspire makes it a **highly effective tool for engaging and empowering individuals**, communities and even countries to take action to improve their health.


- Sport can also be a **powerful means of mobilizing more resources in the global fight against disease**, this potential is only just beginning to be realized.
- It's very important for the cancer patient to be supported in order to not feel "sick", to be encouraged to look at him/herself as a person who can fight the cancer living his/her own life, actively. Sport can help to **feel better both at psychological and physical level** and so to be positive and strong in fighting and dealing with cancer.

## PROJECT AIMS

- Developing, supporting and disseminating **effective strategies and multi-sectoral approaches in the promotion of health-enhancing physical activity**.
- By promoting sport for cancer patients, the project intends to **foster the preservation and creation of social and physical environments** as well as **values and lifestyles supportive of health-enhancing physical activity**.

## PROJECT OBJECTIVES

- Spread of the themes of sport and health at European level, implementing and **encouraging participation in sport and physical activity in healthy and even in unhealthy people**.
- Raising awareness on the **value of sport and physical activity for the growth in relation to personal, social and professional of individuals** also in critical situation.
- Exchanging at transnational level the good practices to support the **design and implementation of physical activity guidelines even in critical situations**.
- **Showing that sport is really for everyone**, without barriers and limitations by organizing a sport events created by and for athletes cancer patients along with healthy athletes.

## PROJECT ACTIVITIES

The project provides several informative and preparatory action that will end, in summer 2018, with the active involvement of oncological patients in the ONCOLOGY GAMES:

- **training for coaches, organizers, medical staff** involved in the implementation of sport activities - transnational training sessions are planned to share skills, approaches and intervention models at European level, so to ensure participants safety and effectiveness of scheduled activities;
- **training for athletes** - national training sessions are provided to explain the project objectives and to prepare participants for sport activities to be carried out during the games;
- **promotion and information on project topics** through conferences, seminars and exhibitions that will be designed and implemented with the support of medical and sports experts from partners' countries;

- **Implementation of social and healthcare guidelines** for the promotion of sports activities among oncological patients.

## 3. SPORTS DEMONSTRATION AND OTHER SIDE ACTIVITIES

ONCOLOGY GAMES will run in Perugia - Italy for 3 days and will involve from 3 to 5 sportspeople delegations coming from each of the partner countries.

Sport demonstration won't be competitive but will be in line with the aims of the ***White Paper on Sport***[4] and with those of the ***Communication from The European Commission "Developing the European Dimension in Sport"***[5]. So the games will be aimed at promoting physical activity and participation in sport in oncological patients.

Part of the following sports that have been identified by the Medical Equip, and that will be redefined after the sportspeople selection, will be performed:

- *Athletics (60mt – 100mt – 200mt -400mt –800mt-1500mt on track or on route)*
- *Shot put at stand still*
- *Relay race*
- *Marathon*

### ONCOLOGY GAMES SIDE ACTIVITIES

ONCOLOGY GAMES side activities will provide:

- 4 **seminars** on *Nutrition and diseases, Prevention of cancer disease, Improving physical activities, Forthcoming medicaments and supplements* which will be organised during the International Sport competition.

- 1 **exhibition** titled *FIT-NUTRI-ONCOL-FUN* which will be planned and organised where the keys concepts of Fitness, Nutrition, Oncology and Fun will be presented through animations and entertainments activities for the whole audience of the the International Sport competition.

The side activities will complement the sport competitions with informative opportunities making people aware and spreading the message of the importance of issues as in preventing and/or managing diseases

PHYSICAL ACTIVITIES

WELL-BEING

HEALTHY LIFESTYLES

ADVANCES OF MEDICAL RESEARCH

At the same time this activities intend to promote the good governance, the social inclusion and the concept of physical activity needed for health.

REFERENCES

[1] © Copyright 1967, 1987, 2007 Phil Bartle

[2] © Copyright University of Michigan

[3] © icebreakers.ws

[4] White Paper - White Paper on Sport {SEC (2007) 932} {SEC (2007) 934} {SEC (2007) 935} {SEC (2007) 936}/* COM/2007/0391 final */

[5] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Developing the European Dimension in Sport - COM(2011) 12 final

## SESSION 2: PROMOTING SPORT AND ENHANCING HEALTH IN EUROPEAN UNION

*Sport promotion plays a very important role in supporting the achievement of the recommended levels of physical activity in the European population.*

**What is physical activity?** - Any bodily movement produced by skeletal muscles that results in energy expenditure above resting level.

**What is health-enhancing physical activity?** - Activity that, when added to baseline activity, produces health benefits. Brisk walking, jumping rope, dancing, playing tennis or soccer, lifting weights, climbing on playground equipment at recess, and doing yoga are all examples of health-enhancing physical activity.

**What is sport?** - All forms of physical activity which, through casual or organized participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels.

**What is sport for all?** - Refers to the systematic provision of physical activities which are accessible for everybody.

### 1. SPORTS POLICIES AT THE EUROPEAN UNION

EU Commission, as stated on its white paper on sport COM (2007 391 final): *"actively supports actions promoting social inclusion through sport"* and sport could be seen as *"an inspiring celebration of human prowess and grace that is inclusive, generous-hearted and fundamentally multicultural"*

EU Work Plan for Sport (2014-2017) (9131/14) in one of the priority areas - Sport and Society - acknowledges that *"there is a long way to go and a lot more to be done for reaching the potential of sport as a promoter of equality through Participation".*

European Parliament in a resolution of 8 May 2008 on the White Paper on Sport *"stresses the importance of promoting sports, guaranteeing access to sport for all and equal opportunities and investing in training for sports instructors and coaches".*

**The European Sports Charter** was adopted by the Committee of Ministers of the Council of Europe in 1992 and it was revised in 2001. The Charter defines principles for sport on a number of different areas and provides guidance for policy development in Europe.

Member States of the WHO European Region adopted the **European Charter on Counteracting Obesity** at the Ministerial Conference on Counteracting Obesity in Istanbul in 2006. In signing the Charter, Member States committed

themselves to undertake action against obesity and place physical activity and healthy diets high on the political agenda.

**The EU White Paper on Sport** was adopted by the European Commission in 2007. The White Paper is a strategy paper setting out policy guidelines in the field of sport. It is accompanied by the Pierre de Coubertin Action Plan, with 53 proposed actions to be implemented or supported by the Commission. Three actions focus specifically on public health and physical activity.

**The EU Physical Activity Guidelines** were approved in 2008. They serve mainly as "inspiration for the formulation and adoption of action-oriented national Physical Activity Guidelines" for policy-makers in the EU Member States. The Guidelines state that, from a physical activity perspective, the overall aim of sports policy should be to increase participation in quality sports by the whole population.

**The Lisbon Treaty** entered into force in 2009 and gave the EU competence in sports policy for the first time (Article 165) (26). The article gave the Commission a mandate to develop a specific EU sports programme, which can be supported by a budget. Furthermore, the sports ministers of the EU Member States now discuss sport in official Sports Council meetings.

**The European Commission's Communication on sport i**n 2011, the European Commission published Developing the European dimension in sport, which proposed action at EU level in the thematic areas of the societal role, the economic dimension and the organization of sport, which earlier had also provided the structure for the White Paper on Sport. The communication recognizes physical activity as one of the most important health determinants and emphasizes the fundamental role of sport in physical activity promotion.

## WHAT IS THE DIRECTORATE GENERAL FOR EDUCATION AND CULTURE?

The Directorate General for Education and Culture, or DG EAC, is the branch of the European Commission charged with Education, Training, Youth, Sport, and Culture.

The activities of DG EAC in the field of sport are outlined by:

- ✓ The European Union Work Plan for Sport (2014-2017)
- ✓ The White Paper for Sport
- ✓ The Communication on Developing the European Dimension in Sport.

## WHAT DOES IT DO?

EAC is responsible for the development of evidence based policy in the field of sport, as well as fostering cooperation, and managing initiatives in support of physical activity and sport across Europe, notably through the Erasmus+

programme. As the executive arm of the European Union, the European Commission is held accountable to the European Parliament, namely, in the case of DG EAC, the Education and Culture Committee.

### WHAT ARE ITS RESPONSIBILITIES?

DG EAC has three main areas of activity in the field of sport:

1. The societal role of sport covers issues that directly affect the citizens,
2. The economic dimension, covering issues that affect the economy of sport,
3. The organisation of sport, dealing with the political and legal framework for the sport sector.

### WHAT ARE THE NEXT STEPS?

In addition to the Erasmus+ programme, which provides a variety of activities to promote the role of sport in society, DG EAC will be managing other initiatives to increase the role of sport in society.

Find out more - The European Union Work Plan for Sport (2011-2014)

## 2. EUROPEAN COMMISSION INITIATIVES

*The European Commission initiatives aim to encourage people to get involved in sport and to support the work of sport organisations around Europe.*

### European Week of Sport

A Europe-wide event with millions of participants, the European Week of Sport aims to promote sport and physical activity across Europe. It is held every September.

### EU Sport Forum

The EU Sport Forum gathers key stakeholders from the world of sport to discuss challenges for the sector in the EU.

## 3. HEALTH AND PARTICIPATION IN THE EU CONTEXT

### WHAT IS IT ABOUT?

Physical activity, including regular exercise and sporting activity, is the best way of staying physically and mentally fit, helps to tackle weight and obesity issues, and plays an important part in preventing or reducing the impact of many other health-related conditions. Apart from the individual health benefits, there is evidence on the positive direct and indirect economic effects of participation in sport and physical activity.

### WHY IS IT NEEDED?

Sport is of historical importance. It's created in a down of human society like a result of social development. Sport it is a constant companion of society because it develops and refine the quality of person and affects on its behavior. Sport has gamma of social functions - health, education, recreation, informative, culture, and professional.

An important element of health is the capacity to act. The health is a result of systems activities with physical exercises and sports. Physical exercises and sports counteracts against colds, chronic and professional illness, limited duration of illness and expression of the risk factors in everyday life.

Research shows that too many people across Europe are not physically active enough. This has a serious impact on general health, the frequency of preventable diseases, and the number of premature deaths. These, in turn, have considerable social and economic costs. While the promotion of health-enhancing physical activity (HEPA) is primarily the responsibility of EU Member States, the Commission is able to support, coordinate and complement national actions.

### WHAT HAS BEEN DONE SO FAR?

The majority of activities in the field of sport now focus on implementing the Council's Recommendation to promote health-enhancing physical activity (HEPA) in order to encourage the development of effective policies in the Member States.

A key element of this initiative is a light monitoring framework that takes into account the 2008 EU Physical Activity Guidelines and should help to improve information and data on HEPA levels and policies, as well as strengthening cooperation between stakeholders (such as the EU Member States, the World Health Organization, and civil society).

DG EAC has also been responsible for supporting projects in the field of physical activity in since 2009, and has included the promotion of HEPA as one of the priorities of the Erasmus+ programme, as well as part of the 2013-2017 European Statistical Programme for Sport.

Lastly, in order to identify trends in the EU, EAC regularly publishes a Eurobarometer on sport and physical activity.

### WHAT ARE THE NEXT STEPS?

The structures, working methods, and supporting tools for the implementation of the new Council Recommendation on HEPA are being set in place, and projects to promote HEPA will soon be launched. Under the Erasmus+ programme, support for projects, events, and measures to strengthen the evidence-base for policy and for dialogue is foreseen, with a particular focus, in 2014, on activities to support the further implementation of the EU Physical Activity Guidelines. The European Week of Sport was launched in 2015 and its second edition was held in September 2016.

Find out more

- Commission proposal for a Council Recommendation to promote health-enhancing physical activity across sectors
- Sport and Physical Activity 2010 Special Eurobarometer 334
- DG Health and Food Safety
- Directorate for Mobility and Transport, including Action Plan on urban mobility

## 4. SPORT AND THE ADOLESCENTS

There are many children and young people in a potential and real threat of worsening of mental and physical health - immobilization and obesity, various addictions, social exclusion and depression, criminal acts, lack of motivation and tolerance, racism, aggression and hyperactivity.


In most cases, young people do not have the information and the opportunity to build their own culture in a healthy environment, and when the problem has arisen, they do not have access to a suitable environment in which to share it and be reliably informed and guided.

The family, school or internet - where they spend most of their time - are often unable to build adequate social patterns of behavior and stereotypes. Different approaches are therefore needed to influence these individualities. Sport is not only a health necessity but also a social alternative for prevention and prevention of many of the risks identified in the everyday life of everyone and, above all, the most vulnerable and vulnerable social group – adolescents.

## 5. MISSION OF SPORT: SOCIAL DIMENSIONS OF SPORT

Sport activity has enormous potential of social inclusion thanks to its capacity to bring all the people together, regardless of age, gender or social origin. When sport is used as an instrument for values promotion it must be implemented in a way that is equity-driven and culturally relevant. Sport programmes must be based upon the "sport for all" model, ensuring that all groups are given the opportunity to participate, particularly those who gain additional benefits such as women, persons with disabilities and young people.

*"Sport has the power to change the world"*

President Nelson Mandela

## 6. THE ROLE OF SPORT ORGANIZATIONS AND INSTITUTIONS IN PROMOTING SPORT AND ENHANCING HEALTH

### INTERNAL OPPORTUNITIES FOR PROMOTING SPORT AND ENHANCING HEALTH

- Social dimensions of sport
- Non-formal education through sport
- Social causes through sport – charity sport, demonstrative training, open days, etc.
- Internal programs for personal development; inclusion and privelleges for disadvantaged people
- Role model and motivational approaches

### EXTERNAL OPPORTUNITIES FOR PROMOTING SPORT AND ENHANCING HEALTH

- Partnership with other clubs, organizations, institutions
- Participation in all kind of health and sport promotional campaigns (European Week of Sport, International day of sport, National day of sport etc.)
- Media dissemination and community angagement
- Business and institutional partnerships
- International cooperation, know-how exchange

REFERENCES

[1] https://ec.europa.eu/sport/policy_en

[2] (https://ec.europa.eu/sport/initiatives)

[3] https://ec.europa.eu/sport/policy/societal-role/health-participation_en)

[4] Promoting sport and enhancing health in European Union countries: A policy content analysis to support action; World Health Organization 2011

[5] "Sport for all", David Davidov, Pepa Peeva, Sofia,1995

[6] Research "Sport values in Europe", Joanna Dochevska

# SESSION 3: SPORTS FOR HEALTH AND SPORTS AS A TOOL FOR SOCIAL INCLUSION

## 1. THE ROLE OF SPORT IN SOCIETY AND AS A LIFESTYLE

### WHAT IS THE EU`S ROLE?

- The European Union believes that Sport plays a vital role, not only in individual health and fitness, but in shaping our wider European society. Supporting dialogue between policy makers and sport organisers promotes healthy living and social cohesion for young people across Europe.
- Teachsport have been teaching national curriculum physical education in the UK for over 20 years and have created lesson plans of cross curricular links in to health & well-being, giving the young people the best possible chance of adopting a lifelong healthy lifestyle blue print

**What is being done by the EU?**
Priorities in field of Sport include several important objectives:

- To **encourage physical and mental fitness** and to fight obesity through participation in regular physical activity
- To **foster a sense of social inclusion and integration** through sport, particularly for marginalised groups
- To **eliminate racism and xenophobia and to create gender equality** through sport
- To **promote greater participation in sport through physical education programmes** in schools
- To **combat doping through education and prevention** programmes
- To **ensure that young athletes receive a quality academic and professional education alongside their sports training,** reducing drop out.

**Five fields of action adopted by the EU**

- **Health and participation**
  htts://ec.Europa.eusport/policy/societal-role/health-participation_en
- **Social Inclusion**
  htts://ec.Europa.eusport/policy/societal-role/social-inclusion_en
- **Education and training**
  htts://ec.Europa.eusport/policy/societal-role/education-training_en
- **Anti-doping**
  htts://ec.Europa.eusport/policy/organisation-of-sport/doping_en
- **Dual careers**
  htts://ec.Europa.eusport/policy/societal-role/dual-careers_en

**How is this being done?**
The EU is tackling sport head-on in the Erasmus+ programme, which will promote dialogue, support and participation across all areas of sport policy. We will also strengthen our partnerships and cooperation with Member States and international bodies such as the World Health Organisation, the Council of Europe, the World Anti-Doping Agency (WADA) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

## 2. SPORTS FOR HEALTH

### WHAT'S IT ALL ABOUT?

- Physical activity, including regular exercise and sporting activity, is the best way of staying physically and mentally fit, helps to tackle weight and obesity issues, and plays an important part in preventing or reducing the impact of many other health-related conditions.
- Apart from the individual health benefits, there is evidence on the positive direct and indirect economic effects of participation in sport and physical activity.
- The role of sport in improving one's health and aiding social inclusion has never been as necessary or relevant to European society as it is now. We are in what is known as an 'obesogenic' environment, with many factors around us impacting our ability to maintain a healthy body weight.[1]

### WHY IS IT NEEDED?

- Research shows that too many people across Europe are not physically active enough. This has a serious impact on general health, the frequency of preventable diseases, and the number of premature deaths.
- These, in turn, have considerable social and economic costs. While the promotion of health-enhancing physical activity (HEPA) is primarily the responsibility of EU Member States, the Commission is able to support, coordinate and complement national actions.
- The sweeping obesity epidemic across the world has led to very alarming projections of future obesity levels, with many countries in Europe expected to have well over half of all adults above the healthy weight limit by 2030. In the UK where the obesity crisis is significantly worse, the forecast is grave. By 2030 it is estimated a third of all women will be obese and almost three-quarters of all men will be overweight.[2]
- The impact of obesity on physical and mental health is immense. Cardio-vascular diseases, stroke, diabetes, high blood pressure and cholesterol, asthma, sleep apnoea, gallstones, kidney stones, infertility and various cancers have all been directly linked to obesity. Obese individuals may also experience discrimination, relatively low income,

poor quality of life, high rates of depression and increased social isolation.

- Rising obesity levels along with the many physical and mental health related ailments associated with it has led to **The World Health Organization** labelling obesity as 'one of the most serious health concerns of this century.'
- Sedentary behaviour is also a major risk factor for many of the physical and mental health conditions caused by obesity. In fact, physical inactivity could be killing twice as many people as obesity in Europe according to a 12-year study by the **University of Cambridge**.[3]

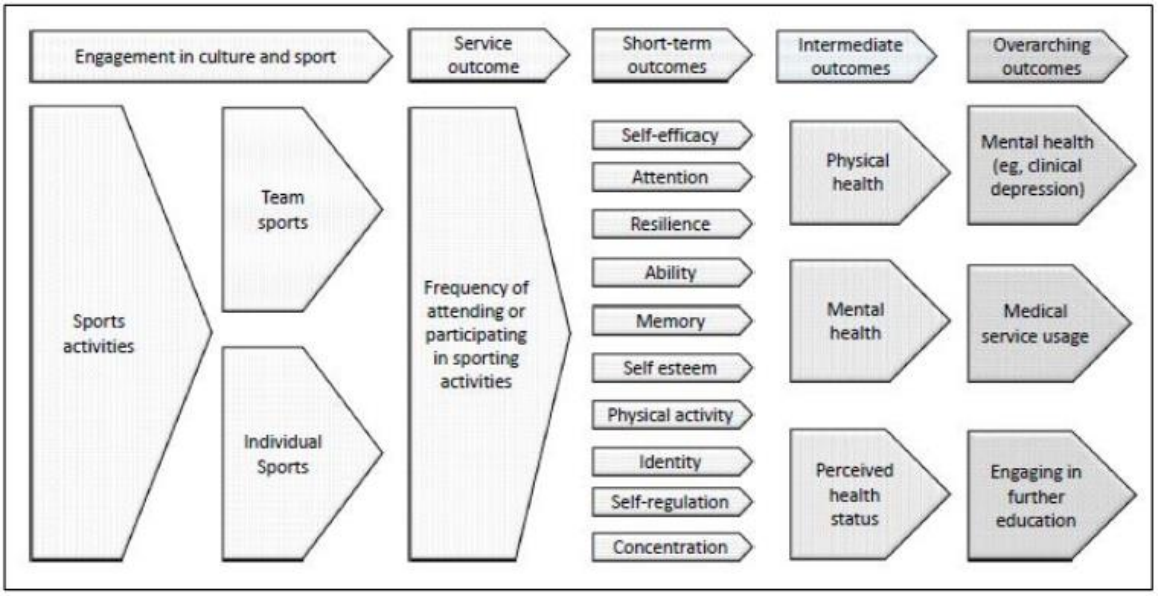
## THE WORLD VIEW

The World Health Organization's endorsed **Physical Activity Strategy for European Region 2016-2025**[4] has several recommendations to member states regarding physical activity/sport including:

- Working towards making the promotion of physical activity by health professionals the norm.
- Promoting integrated, multi-sectoral and partnership-based approaches with a focus on policies that encourage increased participation in sports.
- A broad range of policy instruments to promote physical activity for health and well-being, including well-established regulation and information approaches to help provide not only an enabling environment but also financial incentives.
- Promoting alliances between government, the media, civil society organizations and other stakeholders, including, but not limited to, public health and sports organizations, in order to promote physical activity for health across the life course.
- Using inter sectorial approaches, involving the health, sports and education sectors, to promote physical activity among students and in out of-school settings.
- Promoting physical activity in preschools and schools with a focus on competitive aspects of sport, so that all children and adolescents can enjoy physical activity, regardless of their preferences or training levels, and gain from the many health benefits.

**Logic model of the relationship between sport and health and education**

The logic model (above) was developed based on the literature review that links culture and sport to health and educational outcomes. It is a visual systematic representation of the relationship between sport on one hand and health and education on the other.




## 3. SPORTS AS A TOOL FOR SOCIAL INCLUSION

### WHAT IS IT ABOUT?

- As well as being a great benefit to participants' physical and mental health, sport and physical activity can be extremely valuable in the context of social inclusion and integration.
- Such activities provide opportunities for marginalised and underprivileged groups, such as migrants and people at risk of discrimination, disabled and vulnerable groups to interact and integrate with other social groups.
- Sport also provides those with a disability an opportunity to showcase their talents and challenge commonly-held stereotypes.
- As well as being a great benefit to participants' physical and mental health, sport and physical activity can be extremely valuable in the context of social inclusion and integration.
- Such activities provide opportunities for marginalised and underprivileged groups, such as migrants and people at risk of discrimination, disabled and vulnerable groups to interact and integrate with other social groups.
- Sport also provides those with a disability an opportunity to showcase their talents and challenge commonly-held stereotypes.

## WHY IS IT NEEDED?

- The social and societal contribution of sport does not always reach its full potential, given that the membership of sports clubs remains comparatively low amongst women and a variety of marginalised and underprivileged groups.
- Many of these groups are also under-represented amongst sporting professionals and volunteers or members of committees and governing bodies, whether at local, national, or European level.
- The social and societal contribution of sport does not always reach its full potential, given that the membership of sports clubs remains comparatively low amongst women and a variety of marginalised and underprivileged groups.
- Many of these groups are also under-represented amongst sporting professionals and volunteers or members of committees and governing bodies, whether at local, national, or European level.

## WHAT HAS BEEN DONE SO FAR IN THE EUROPEAN UNION?

- There are a number of EU actions focusing on social inclusion, particularly in relation to people with a disability, or those from minority and migrant groups.
- In 2010, the Council Conclusions on the role of sport as a source of and a driver for active social inclusion recognised the potential of sport and physical activity in contributing to social inclusion. This was supported by the publication of the 2011 Communication on Sport.
- The value of sport for people with a disability was also recognised in 2010 through the European Disability Strategy (2010-2020), and a report published by the European Agency for Fundamental Rights (FRA) pointing out that immigrants are often unable to permeate the ranks of popular national sports, even at amateur or recreational levels.
- Sport is now included in the monitoring process when implementing the Framework Decision on racism and xenophobia.

**What are the next steps for the EU?**

- The EU strategy for equality between men and women (2010-2015), has a specific focus on access to sport for immigrant women and women from ethnic minorities. As part of the effort to fight gender stereotypes and promote women's access to decision making roles in sport, the Commission is seeking to ensure that 30% of sport decision-making roles are held by women by 2020.
- **Find out more:**
  Communication on Developing the European Dimension in Sport
  White paper on using the potential of sport for social inclusions, integration and equal opportunities
  Eurostat report: Migrants in Europe

EU strategy for Equality between Women and Men (2010 – 2015)
DG Employment, Social Affairs & Inclusion
UN Convention on the Rights of Persons with Disabilities
European Disability Strategy 2010-2020

## THE CASE OF THE UK GOVERNMENT AND TEACHSPORT

- In the UK Government, **The Department for Digital, Culture, Media & Sport** recently analysed the health and educational benefits of sports and culture.[6] They found that culture and sports sectors play a key role in generating benefits for society.
- The report was able to demonstrate that engagement in sports is positively associated with increases in wellbeing, improvements in health, improved educational and economic prospects and higher levels of civic participation.
- A particularly noteworthy discovery was that engaging in sport improves higher/further educational aspirations and actual higher/future educational attendance in addition to both youth and adult educational performance.

**Teachsport and Community Teachsport**

*"Sport is the miracle cure for social and life exclusion , it doesn't have language barriers, it doesn't judge you as a human being , it adapts to society through changing generations, it allows the voice that is never heard to be heard , it embraces all human emotions , it opens doors to opportunity within sport and outside of sport."*

*"It laughs, cry's, shouts, angers, uplifts, separates, joins, changes, it feels, it loves and it hates. It may excite and disappoint all in the blink of an eye but it will never let you down and when you have sport in your life you will never feel alone as it will always be in your life."*

Ross Walker - Teachsport founder and MD

REFERENCES

[1] Sedentary Behaviour and Obesity (26 March 2010), The Sedentary Behaviour and Obesity Expert Working Group.

[2] The State of Food and Agriculture (2013), United Nations Food and Agricultural Organization.

[3] Ekelund, U et al. Activity and all-cause mortality across levels of overall and abdominal adiposity in European men and women: the European Prospective Investigation into Cancer and Nutrition Study (EPIC). American Journal of Clinical Nutrition; 14 Jan 2015

[4] Physical activity strategy for the WHO European Region 2016–2025, World Health Organization.

[5] Towards An Active Nation (Strategy 2016-2021), Sport England.

[6] Analysis of health and educational benefits of sport and culture (25 March 2015), Department for Digital, Culture, Media & Sport and Helen Grant Research.

# SESSION 4: THE ONCOLOGICAL DISEASES AND ITS PREVALENCE IN EUROPE

## 1. GENERAL OVERVIEW OF CANCER IN EUROPE

### SOME OVERALL STATISTICS FOR EUROPE FROM THE WHO (WORLD HEALTH ORGANISATION):

- Cancer causes 20% of deaths in the European Region.
- Some 3.7 million new cases are diagnosed every year in Europe.
- With 1.7 million deaths each year, cancer is the most important cause of death and morbidity in Europe after cardiovascular diseases.

### CANCER IN EUROPE - COMPARED TO THE WORLD

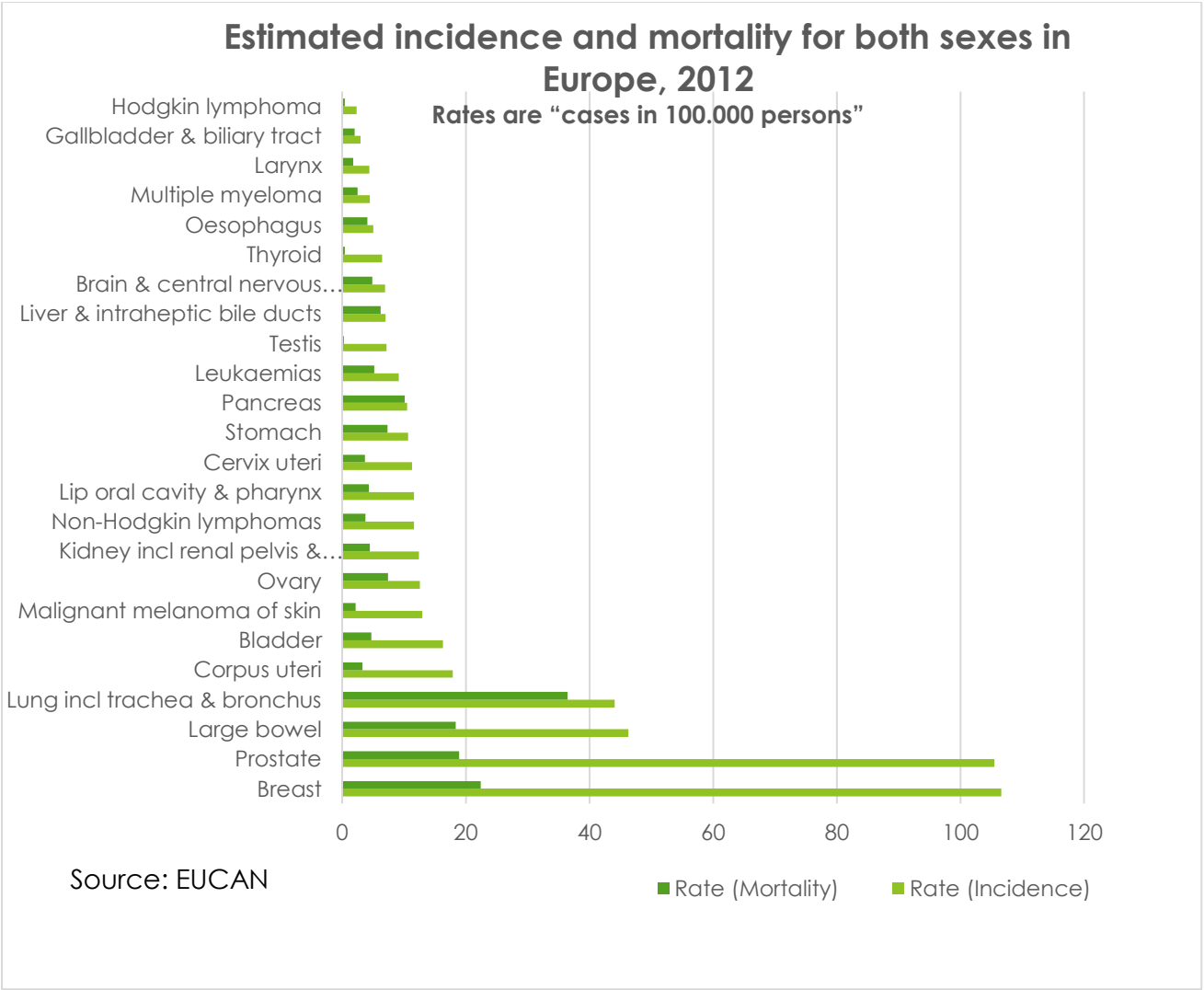
| | Europe | Worldwide |
|---|---|---|
| Population | 742 million | 7.5 billion |
| Deaths caused by cancer | 20% | 17% |
| New cases diagnosed per year | 3.7 million | 14 million |
| Death caused by cancer per year | 1.7 million | 8.8 million |

### CANCER IN EUROPE – INCIDENCE & MORTALITY RATES

- Breast cancer in women has the highest incidence rate in Europe
- Closely followed by prostate cancer in men
- The highest absolute mortality rate is found in lung cancer patients

Europe comprises only one tenth of the total world population but has around one quarter of the global total of cancer cases!

- The highest mortality rate in relation to its incidence rate is found in Pancreas cancer
- The lowest mortality rates are found in Testicular cancer, Thyroid cancer and Hodgkin lymphoma

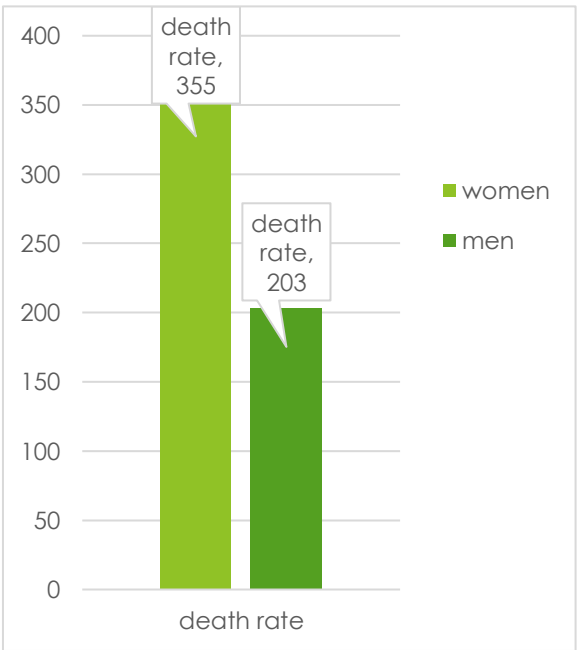



Source: EUCAN

## CANCER IN EUROPE – ANALYSIS BY GENDER AND AGE GROUPS

In standardised death rates for cancer, the rate for men was **75 % higher** than for women.

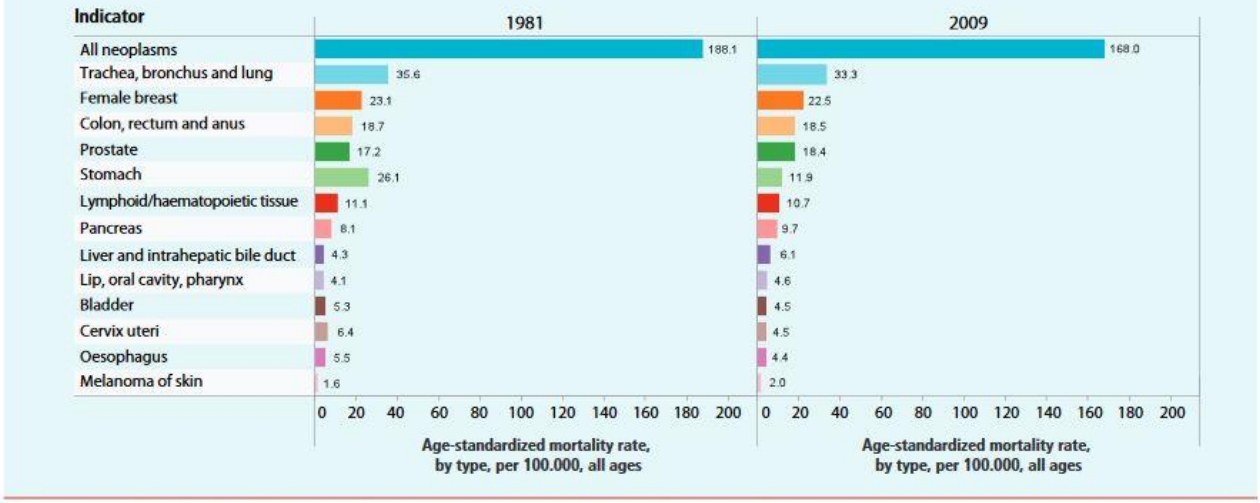
In standardised death rates for cancer, the rate for persons aged 65 and over was **almost 13 times** as high as for younger persons (less than 65 years).



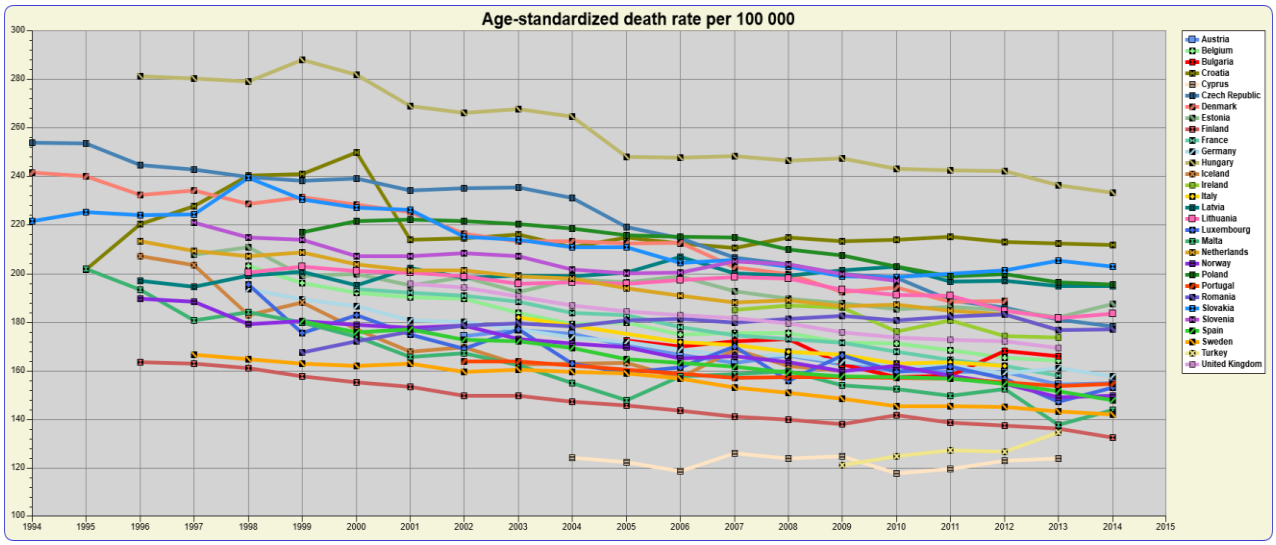
## CANCER IN EUROPE – HISTORICAL DATA

**Cancer mortality rates** have constantly fallen, compared by overall figures for all of Europe.

Fig. 2. Mortality from main types of cancer in the European Region, 1981 and 2009

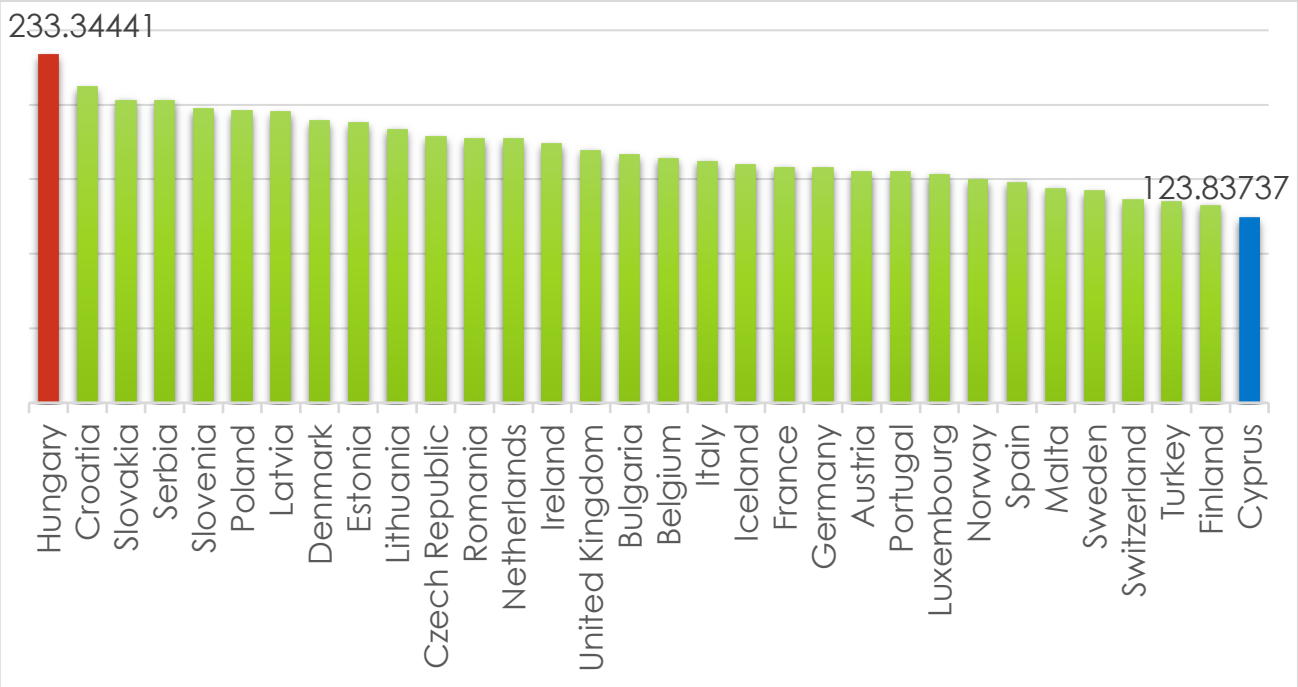



Source: European Health for All database [online database]. Copenhagen, WHO Regional Office for Europe, 2012 (http://data.euro.who.int/hfadb).

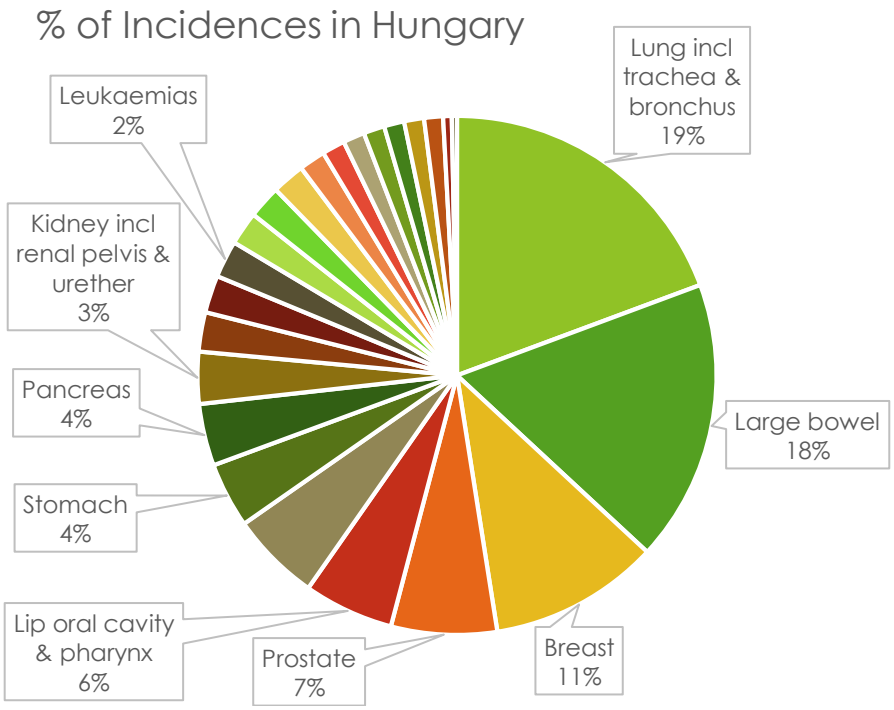


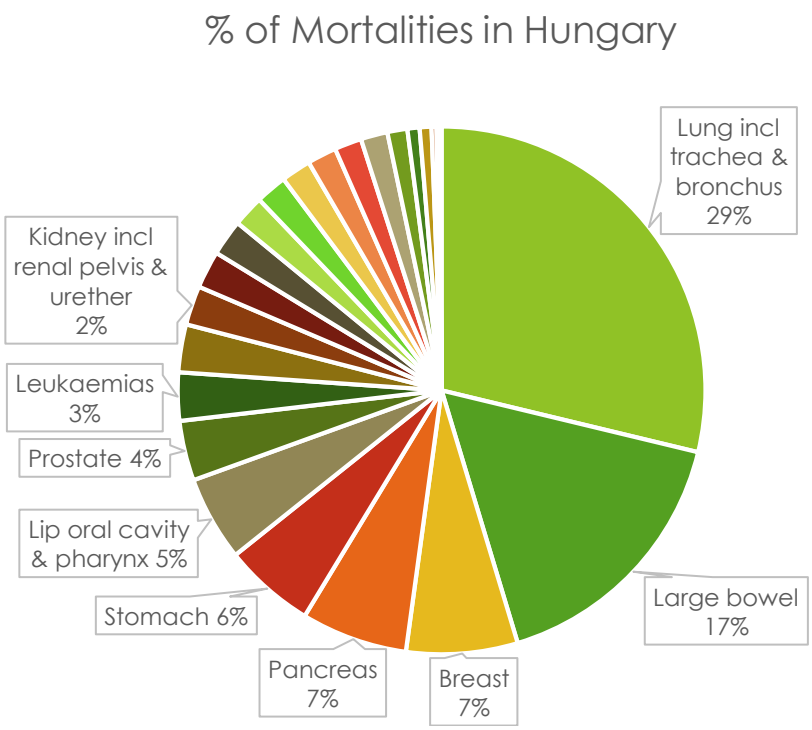
## 2. STATISTICAL TRENDS AND PARTICULARITIES

**Mortality** caused by cancer are generally higher in Eastern European Countries, with the exception of Denmark.

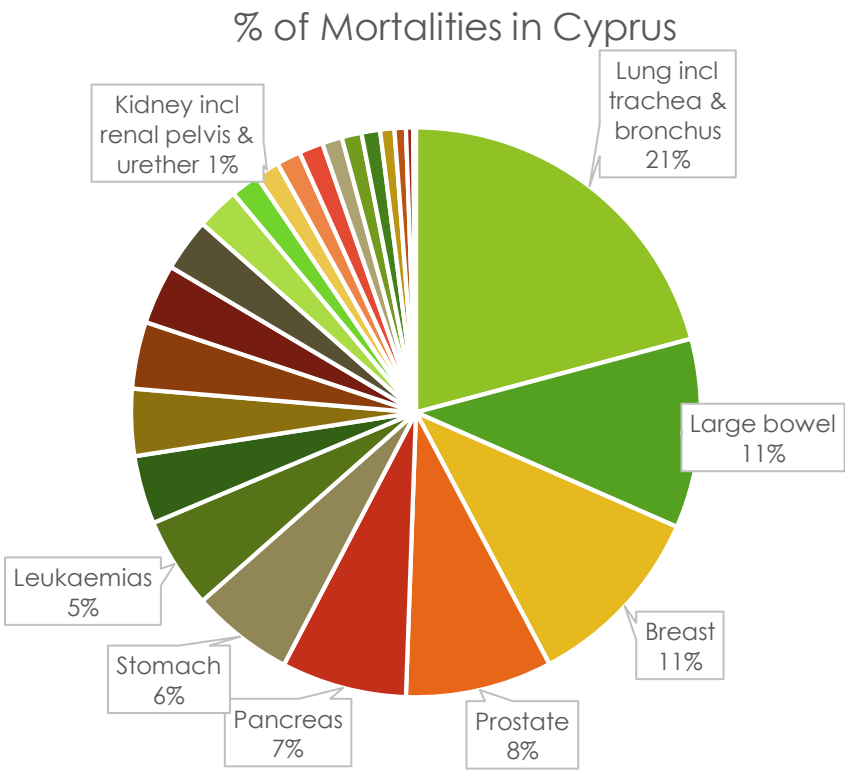



### INCIDENCE COMPARISONS BETWEEN HIGHEST HUNGARY (392.5), LOWEST CYPRUS (209.4)

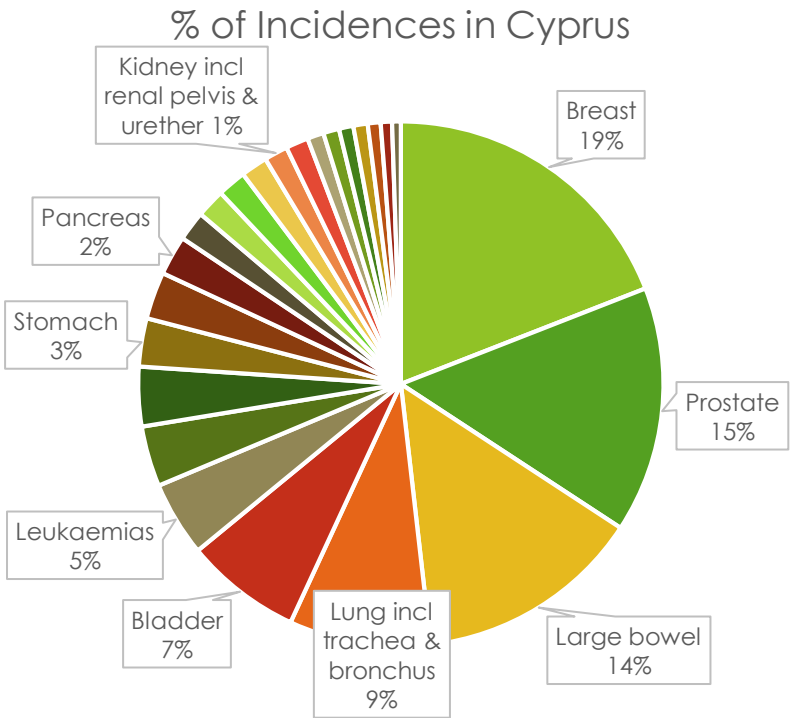




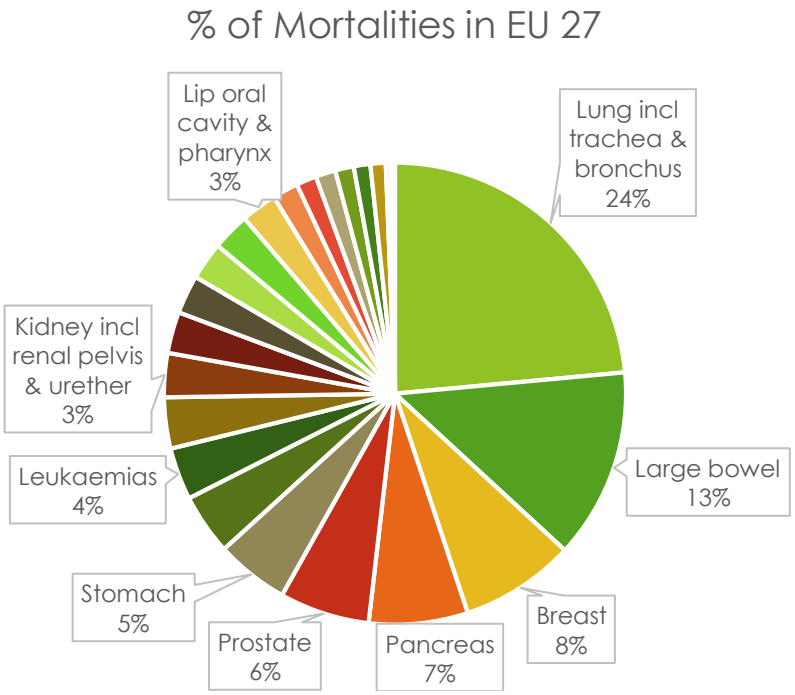

- The highest numbers of cancer incidents in Hungary are for lung cancer, large bowel cancer, breast cancer and prostate cancer.
- The highest mortality due to cancer in Hungary is found for lung cancer, large bowel cancer, breast cancer and cancer of the pancreas
- The highest numbers of cancer incidents in Cyprus are for breast cancer, prostate cancer, large bowel cancer and lung cancer.

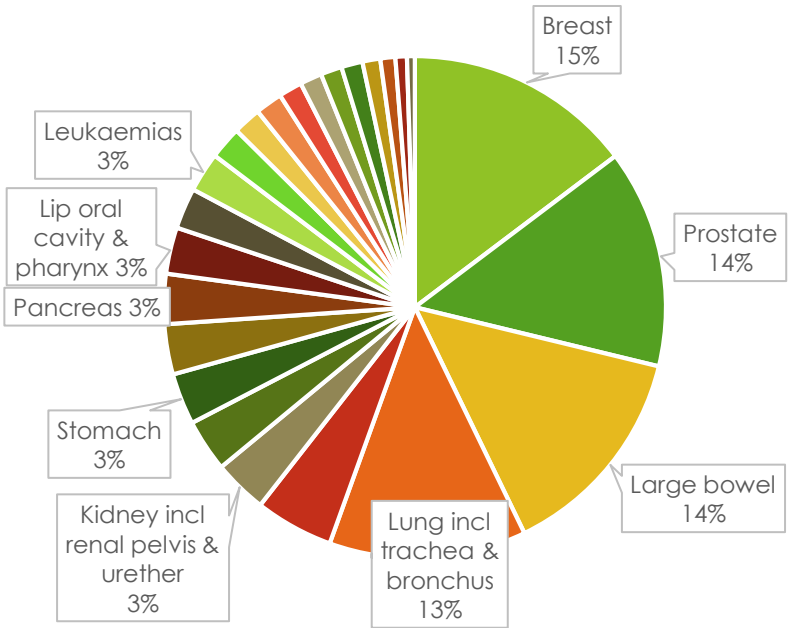


- The highest mortality due to cancer in Cyprus is found for lung cancer, large bowel cancer, breast cancer and prostate cancer.
- The highest numbers of cancer incidents in the EU 27 are for breast cancer, prostate cancer, large bowel cancer and lung cancer.




## MORTALITY AND INCIDENCE IN THE EU 27






The highest mortality due to cancer in the EU 27 is found for lung cancer, large bowel cancer, breast cancer and cancer of the pancreas

- Hungary has the highest rate of cancer Incidents & Mortalities (Incident rate 392.5, Mortality rate 221.6)
- Cyprus has the lowest rate of cancer Incidents & Mortalities (Incident rate 290.4, Mortality rate 120.1) (Age standardised rate (European) per 100,000 inhabitants)
- Whilst mortality percentages for various cancers are similar, the incidence percentages are quite different: especially lung cancer incidents show a high percentage of 19% in Hungary and only 9% in Cyprus, whereas breast cancer in Cyprus has an incidence percentage of 19% and only 11% in Hungary.
- The percentages and rankings of cancer incidents and mortality in Cyprus match very closely the pattern for the EU 27.
- Leading to the conclusion, that especially the high percentage of lung cancer and large bowel cancer in Hungary are significantly different from the average.
- This pattern is repeated in many other Eastern European countries such as Croatia, Slovakia and Poland

## 3. EUROPEAN CANCER PROGRAMMES

### The European Cancer Observatory (ECO)

European Cancer Observatory (ECO) is a project developed at the International Agency for Research on Cancer (IARC which is part of the WHO) in partnership with the European Network of Cancer Registries (ENCR) in the framework of the EUROCOURSE project supported by the European Commission. The ECO platform provides a comprehensive system of information on cancer burden in Europe across three web sites:

- EUCAN - national estimates of cancer incidence, mortality and prevalence for 24 major cancer types in 40 European countries for 2012. The standard methodology used may have produced results different from those developed by national bodies.
- EUREG - permits the exploration of geographical patterns and temporal trends of incidence, mortality and survival observed in European population-based cancer registries for 35 major cancer entities in about 100 registration areas.
- EUROCIM allows the user to define, extract and request data sets provided by the participating cancer registries.
- More info: http://eco.iarc.fr

### The WHO/ Europe office and IARC

WHO is the authority responsible for public health within the United Nations system. The WHO Regional Office for Europe (WHO/Europe) is one of WHO's six regional offices around the world.

- WHO/ Europe serves the WHO European Region, which comprises 53 countries, covering a vast geographical region from the Atlantic to the Pacific oceans.
- WHO/Europe staff are public health, scientific and technical experts, based in the main office in Copenhagen, Denmark, in 3 technical centres and in country offices in 29 Member States.
- WHO/Europe assists countries to develop national programmes for cancer control.
- The International Agency for Research on Cancer (IARC) is the WHO body that specializes in this field. It coordinates and conducts research on causes and develops scientific strategies for cancer prevention and control.
- More info: http://www.euro.who.int

**Council recommendation on cancer screening**

The recommendation from 2003 urges EU countries to implement cancer screening programmes:

- It covers factors such as registering and managing screening data, monitoring the process and training of personnel.
- The European Commission reports on the implementation of these programmes, encourages national authorities to cooperate on research and best practice and
- Develops guidelines on cancer screening.
- Screening makes it possible to detect cancers at an early stage, improving the chances of successful treatment.
- More info: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32003H0878

**European Quality Assurance Scheme for Breast Cancer Services**

The European Commission has set up:

- An expert group that advises on policy responsibility and endorsement of Guidelines and Quality Assurance Schemes,
- A sustainable/ long-term organisational framework (guidelines' lifecycle / QA scheme updating and implementation),
- A transparent, neutral and independent platform for stakeholders involvement,
- The aim is to combine guidelines with QA schemes.
- More info: http://ecibc.jrc.ec.europa.eu/quality-assurance

**EUROPEAN COMMISSION**: aims to propose voluntary requirements for breast cancer services, whenever possible based on evidence, applicable by all countries and impacting on quality of care in a reasonable timeframe

**EUROPEAN COUNTRIES**: Based on evidence and new available technologies, countries will be free to decide on which model to apply in order to fulfil those requirements

**BREAST CANCER SERVICES**: breast cancer services can adhere to the European QA scheme and thus confirm compliance to essential requirements common throughout Europe

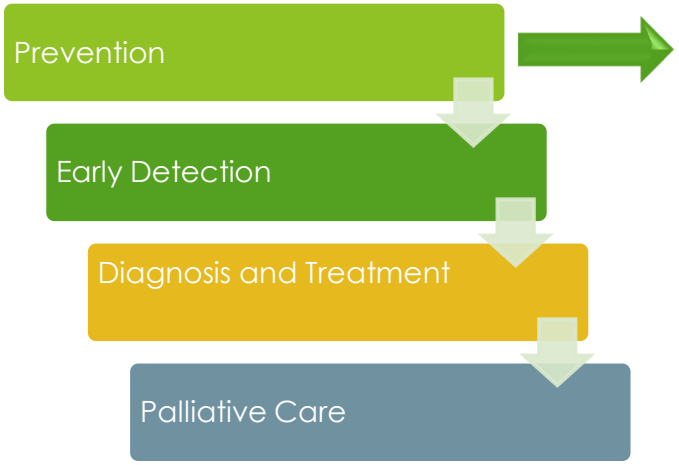
**The European Code against Cancer**

The **European Code against Cancer** is an initiative of the European Commission to inform people about actions they can take for themselves or their families to reduce their risk of cancer:

- It consists of twelve recommendations that most people can follow without any special skills or advice.
- The more recommendations people follow, the lower their risk of cancer will be.

- It has been estimated that almost half of all deaths due to cancer in Europe could be avoided if everyone followed the recommendations.
- More info: www.cancer-code-europe.iarc.fr

### Basic components of cancer control




**Prevention**, as well as treatment, is an effective measure to reduce the premature mortality from diseases of the circulatory system and cancer.

**Prevention** is the only measure to reduce the impact of diseases for which no effective treatment is yet available.

### 10 Cancer Prevention Recommendations by WCRF

**Body fatness** Keep weight low within the healthy range.

**Physical activity** Be physically active for at least 30 minutes every day, and sit less.

**Foods & drinks that promote weight gain** Avoid high-calorie foods and sugary drinks.

**Preservation, processing & preparation** Eat less salt and avoid mouldy grains & cereals.

**Plant foods** Eat more grains, veg, fruit and beans.

**Animal foods** Limit red meat and avoid processed meat.

**Alcoholic drinks** for cancer prevention, don't drink alcohol.

**Dietary supplements** For cancer prevention, don't rely on supplements.

**Breastfeeding** If you can, breastfeed your baby for six months.

**Cancer survivors** After cancer treatment, the best advice is to follow the Cancer Prevention Recommendations

## 12 PREVENTION RECOMMENDATIONS OF THE EUROPEAN CODE AGAINST CANCER

Do not smoke. Tobacco is the major cause of cancer. Smoking is the most harmful form of tobacco use, inducing the heaviest burden of tobacco-related illness.

Make your home smoke free. Support smoke-free policies in your workplace. Exposure to second-hand smoke at work and at home is associated with avoidable illness, including cancer.

Take action to be a healthy body weight. In European populations, people who follow a healthy lifestyle that adheres to the recommendations for cancer prevention have an estimated 18% lower risk of cancer compared with people whose lifestyle and body weight do not meet the recommendations.

Be physically active in everyday life. Limit the time you spend sitting. There is strong evidence that people can reduce their risk of cancer by adopting healthy dietary and activity behaviours.

Have a healthy diet: Eat plenty of whole grains, pulses, vegetables and fruits, Limit high-calorie foods (foods high in sugar or fat) and avoid sugary drinks and avoid processed meat; limit red meat and foods high in salt.

If you drink alcohol of any type, limit your intake. Not drinking alcohol is better for cancer prevention.



Sun/UV exposure. Avoid too much sun, especially for children. Use sun protection. Do not use sunbeds. Radiation from the sun contains the light we can see and the infra-red radiation we can feel as heat, as well as the invisible ultraviolet (UV) radiation.

Pollutants. In the workplace, protect yourself against cancer-causing substances by following health and safety instructions.

Breastfeeding reduces the mother's cancer risk. If you can, breastfeed your baby.

Hormonal therapy Hormone replacement therapy (HRT) increases the risk of certain cancers. Limit use of HRT.

Ensure your children take part in vaccination programmes for:

- Hepatitis B (for newborns
- Human papillomavirus (HPV) (for girls).

Screening. Some types of cancer can be found and treated before they cause symptoms. Take part in organized cancer screening programmes for:

- Bowel cancer (men and women)
- Breast cancer (women)
- Cervical cancer (women).

## REFERENCES

[1] http://eco.iarc.fr/

[2] http://www.wcrf.org/int

[3] http://www.euro.who.int

[4] http://ec.europa.eu/eurostat

[5] https://cancer-code-europe.iarc.fr

[6] http://ecibc.jrc.ec.europa.eu/quality-assurance

[7] http://www.who.int

[8] http://ecibc.jrc.ec.europa.eu/quality-assurance

[9] http://eur-lex.europa.eu

[10] http://canceratlas.cancer.org/

## 1. RELEVANT DATA ON CANCER

**Estimated New Cases**

| Males | | | Females | | |
|---|---|---|---|---|---|
| Prostate | 161,360 | 19% | Breast | 252,710 | 30% |
| Lung & bronchus | 116,990 | 14% | Lung & bronchus | 105,510 | 12% |
| Colon & rectum | 71,420 | 9% | Colon & rectum | 64,010 | 8% |
| Urinary bladder | 60,490 | 7% | Uterine corpus | 61,380 | 7% |
| Melanoma of the skin | 52,170 | 6% | Thyroid | 42,470 | 5% |
| Kidney & renal pelvis | 40,610 | 5% | Melanoma of the skin | 34,940 | 4% |
| Non-Hodgkin lymphoma | 40,080 | 5% | Non-Hodgkin lymphoma | 32,160 | 4% |
| Leukemia | 36,290 | 4% | Leukemia | 25,840 | 3% |
| Oral cavity & pharynx | 35,720 | 4% | Pancreas | 25,700 | 3% |
| Liver & intrahepatic bile duct | 29,200 | 3% | Kidney & renal pelvis | 23,380 | 3% |
| **All Sites** | **836,150** | **100%** | **All Sites** | **852,630** | **100%** |

**Estimated Deaths**

| Males | | | Females | | |
|---|---|---|---|---|---|
| Lung & bronchus | 84,590 | 27% | Lung & bronchus | 71,280 | 25% |
| Colon & rectum | 27,150 | 9% | Breast | 40,610 | 14% |
| Prostate | 26,730 | 8% | Colon & rectum | 23,110 | 8% |
| Pancreas | 22,300 | 7% | Pancreas | 20,790 | 7% |
| Liver & intrahepatic bile duct | 19,610 | 6% | Ovary | 14,080 | 5% |
| Leukemia | 14,300 | 4% | Uterine corpus | 10,920 | 4% |
| Esophagus | 12,720 | 4% | Leukemia | 10,200 | 4% |
| Urinary bladder | 12,240 | 4% | Liver & intrahepatic bile duct | 9,310 | 3% |
| Non-Hodgkin lymphoma | 11,450 | 4% | Non-Hodgkin lymphoma | 8,690 | 3% |
| Brain & other nervous system | 9,620 | 3% | Brain & other nervous system | 7,080 | 3% |
| **All Sites** | **318,420** | **100%** | **All Sites** | **282,500** | **100%** |

Leading Cancer Types for the Estimated New Cancer Cases and Deaths by Sex, USA, 2017

This figure depicts the most common cancers expected to occur in men and women in 2017. Prostate, lung and bronchus, and colorectal cancers account for 42% of all cases in men, with prostate cancer alone accounting for almost 1 in 5 new diagnoses. For women, the 3 most commonly diagnosed cancers are breast, lung and bronchus, and colorectal, which collectively represent one-half of all cases; breast cancer alone is expected to account for 30% of all new cancer diagnoses in women. [1] Jemal A, et al. Cancer Statistics, 2017

The estimation of the numbers (and percentages) of incident cancer cases in the UK in 2010 that are attributable to the lifestyle and environmental exposures considered. The four most important lifestyle exposures (tobacco smoking, dietary factors, alcohol drinking and bodyweight), account for

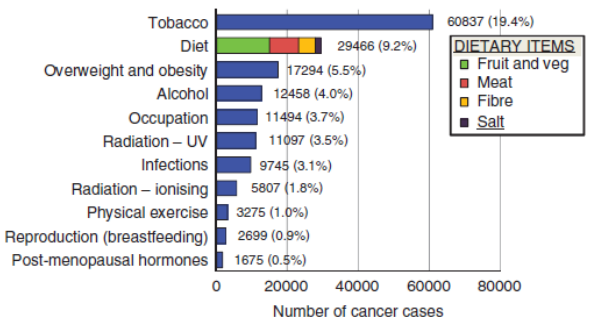
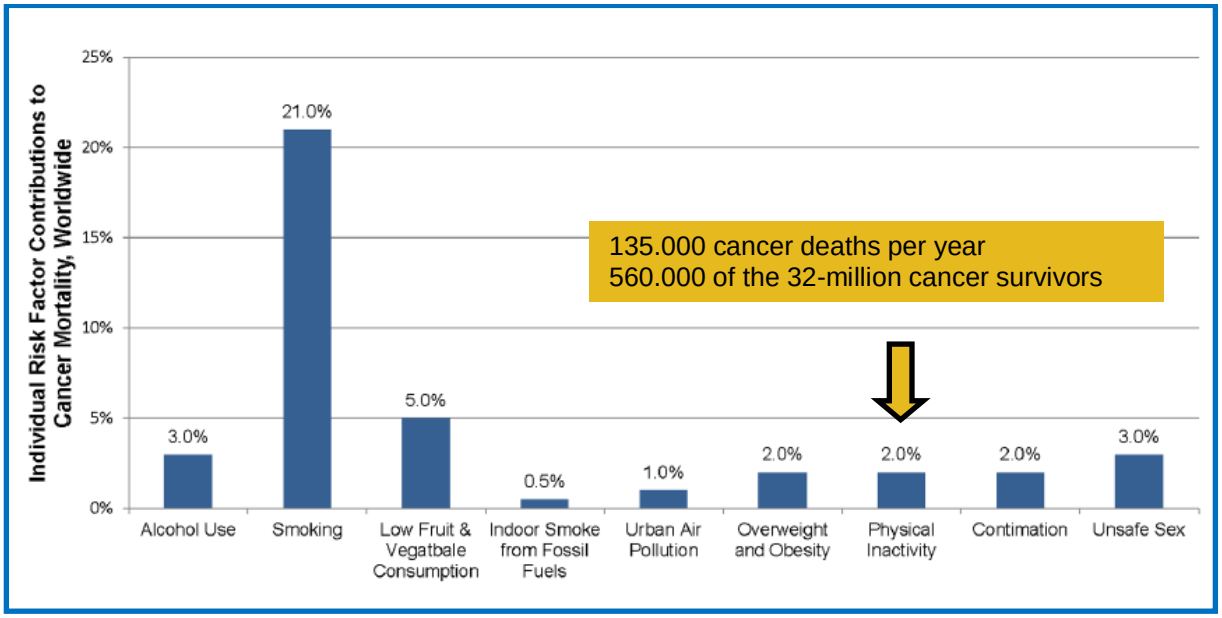



**Figure 1** Number and percentage of cancer cases in the UK attributable to different exposures.

34% of the cancers occurring in 2010 – almost four-fifths of the total from all 14 exposures. [2] Parkin DM, et al. British J of Cancer 2011.

**Individual risk factor contributions to mortality from all cancers, worldwide.**




Worldwide, the population-attributable-fraction of physical inactivity and all cancer is 2%. A population-attributable-fraction of 2% equates to approximately 135,000 cancer deaths each year, and can be projected to directly affect 560,000 of the 32-million cancer survivors worldwide. [3] Weiderpass E. J Prev Med Public Health. 2010

## 2. THE KEYS OF THE PROBLEM

The aetiology of cancer has provided numerous challenges to conduct high-quality research. The two most common study designs used to examine the association between physical activity and risk of cancer are the cohort and case-control study. Each of these observational study designs is subject to methodological strengths and weaknesses. Moreover the most common method of ascertainment of physical activity is through the use of self-report measures. The popular method of subjective physical activity estimation is with the use of physical activity questionnaires.

Then, other factors could make it difficult to draw studies on the correlation between cancer and physical activity. For example, the growth and development of cancer may take decades to occur. This long latent period makes the study of physical activity and cancer research difficult; Then the multifactorial origins of cancer (genetic, behavioural, etc.), long latent period, and relatively small population influence the research design used in physical activity or exercise and cancer (what we refer to as., "exercise oncology") research.

The logical thread of my presentation will develop according to these 4 points: the biological mechanisms of activity; the role of physical activity in cancer prevention and in cancer survivors; the current guidelines. [4] Brown et al., Compr Physiol, 2012

**Research related**

- Methodological characteristcs (study design)
- Assessment and quantification of physical activity [FITT principle: frequency, intensity, time and type]
- Synergistic effect among obesity and energy balance (independent effects?)

**Cancer related**

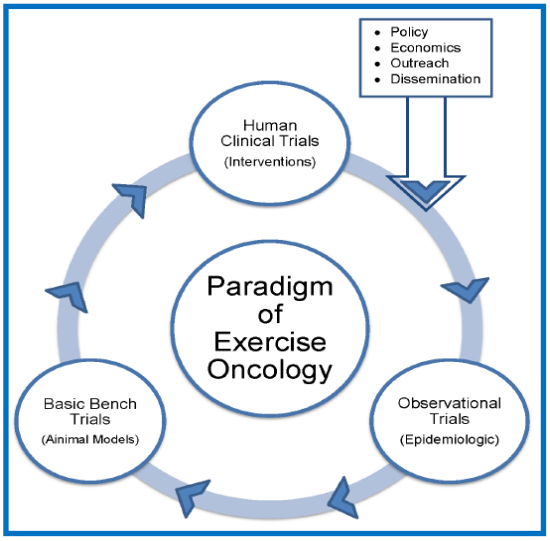
- Multifactorial origins
- Long latent period
- Small "exercise oncology" population

**Agenda**

- Biological Mechanisms of Physical Activity
- Physical Activity and Primary Cancer Prevention
- Effect of Exercise during and after Cancer Treatment
- Physical Activity Guidelines Throughout and After Cancer Treatment

## 3. PHYSICAL ACTIVITY AND CANCER: ON THEORY

### A PARADIGM OF PHYSICAL ACTIVITY AND CANCER RESEARCH



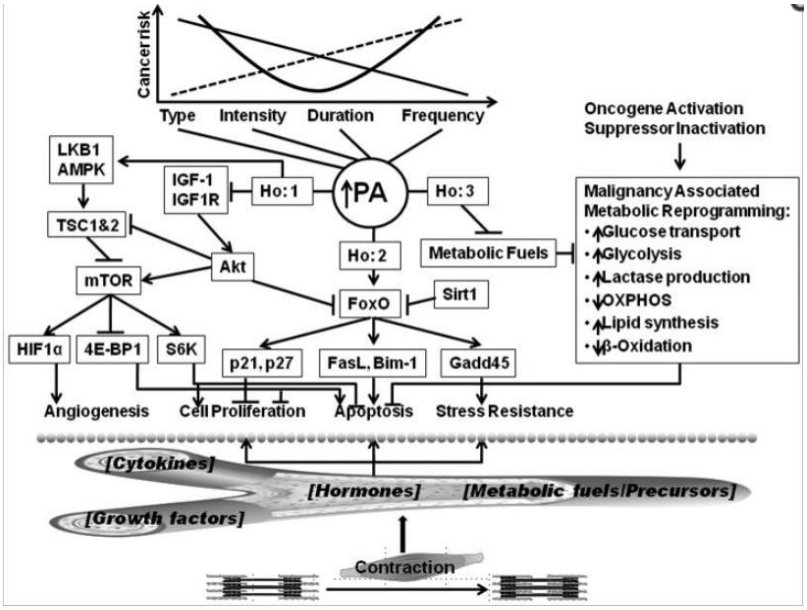

The paradigm of exercise oncology research is similar to the paradigm originally proposed by Henry Blackburn much more generally for multiple areas of biomedical research, and posits that human clinical trials, observational trials, and basic bench science trials should not be considered discrete components of research, but more as parts of a continuum. The paradigm of exercise oncology suggests observational trials may generate hypotheses to be tested, manipulated, and explored in animal models, and then translated into human clinical trials. Another critical component to the success of physical activity and cancer research is the integration of policy reform, economic analysis, outreach, and dissemination. One or more of these components may occur after conduct of a methodologically rigorous human clinical trial. [5] Blackburn H, Ancel Keys Lecture. The three beauties, Circulation 1992

## PHYSICAL ACTIVITY AND PRIMARY CANCER PREVENTION: BIOLOGIC MECHANISM

In a review by Thompson *et al*. a numerous candidate pathways have been identified to associate with varying doses of physical activity in animal models of mammary carcinogenesis. Through this example, we highlight the complexity of these biologic systems, and the synergistic relationship between each biologic pathway and physical activity.

Three hypotheses are advanced to explain the effects of physical activity on mammary carcinogenesis:

1. ***mTOR network hypothesis:*** physical activity inhibits carcinogenesis by suppressing the activation of the mTOR signalling network in mammary carcinomas. As a consequence: the drive for cell proliferation is reduced, a pro-apoptotic environment is maintained, and the stimulus for new blood vessel formation is suppressed in mammary carcinomas;



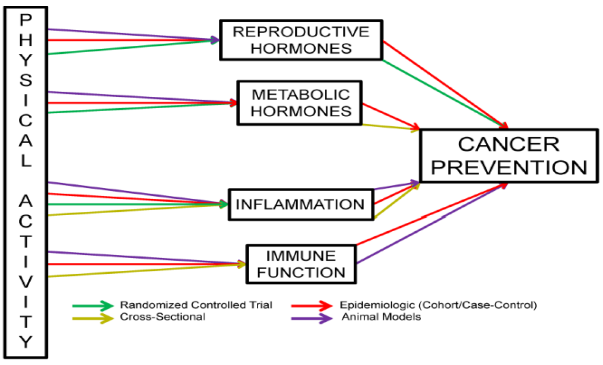

2. **The hormesis hypothesis**: This hypothesis predicts that the carcinogenic response to physical activity is hermetic, i.e. non-linear (J or U-shaped) and accounted for by a physiological cellular stress response.

3. ***The metabolic reprogramming hypothesis***: physical activity alters the availability of glucose and amino acids such as glutamine that are available to mammary carcinomas thereby delaying cell cycle progression and inducing apoptosis. *[6] Thompson et al. Candidate mechanism accounting for effects of physical activity on breast carcinogenesis.*

## STRENGHT OF EVIDENCE LINKING ACTIVITY AND HYPOTHESIZED CANCER PREVENTION MECHANISTIC PATHWAYS

The most commonly hypothesized, and well-supported pathways associated with physical activity and cancer prevention:

- sex hormones,
- metabolic hormones,
- inflammation and adiposity, and
- immune function

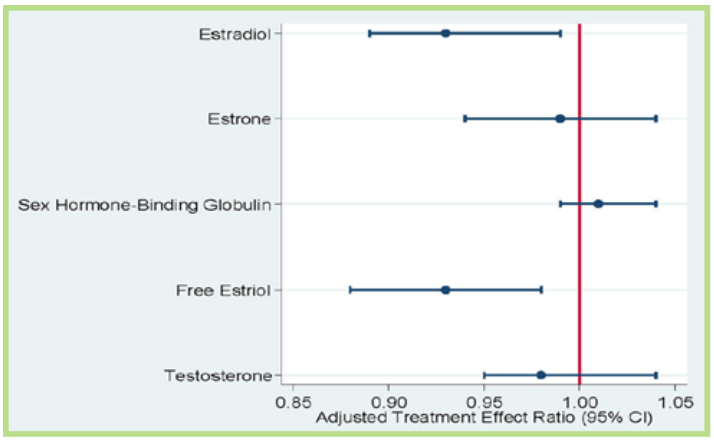



[7] Friedenreich CM., et al. Oncol 2010 [8] Rundle A., et al. Cancer Seminar epidemiol biomarkers Prev. 2005

# 4. PHYSICAL ACTIVITY AND CANCER: ON PRACTISE

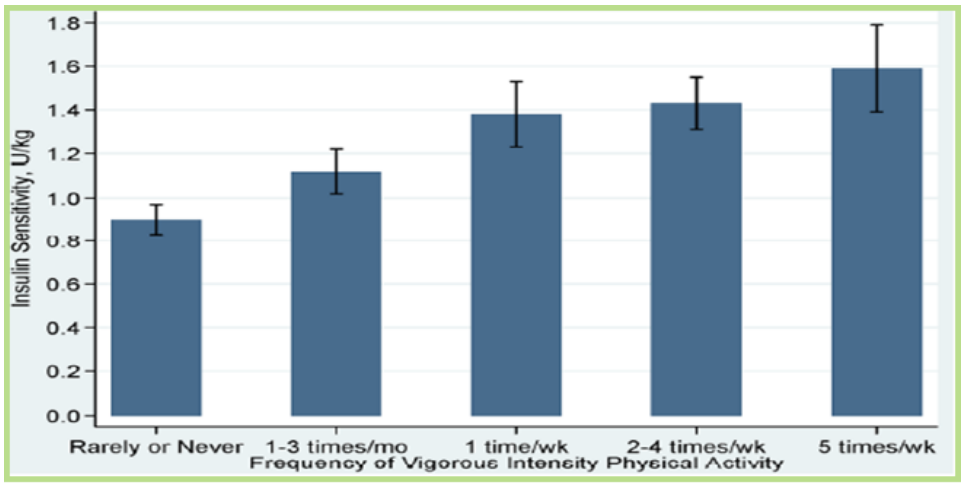
## SEX HORMONES

Elevated levels of estradiol and estrone have been associated with an increased risk of postmenopausal breast cancer. The Alberta physical activity and breast cancer prevention (ALPHA) trial was a prospective randomized controlled intervention among 320 postmenopausal women aged 50–74 years old. The ALPHA trial was a one-year exercise intervention consisting of moderate-intensity aerobic exercise performed 5 d·wk−1, 45-min·d−1. After 12-months, the aerobic exercise group demonstrated significant improvements in estradiol, sex hormone-binding globulin, and free estradiol. Alberta physical activity and breast cancer prevention.




*Alberta physical activity and breast cancer prevention. JCO 2010*

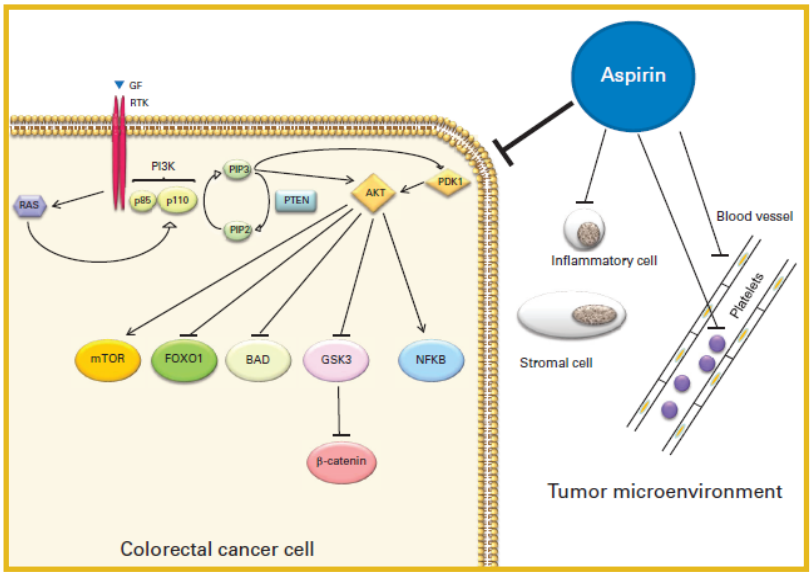
## METABOLIC HORMONES




*The Insulin Resistance Atherosclerosis Study Jama 1998*

Exercise and weight loss is an effective intervention to improve insulin sensitivity, and potentially reduce risk of insulin-mediated cancers. In a study of 1,467 men and women aged 40–69 years old, insulin sensitivity and fasting insulin were moderated in dose-response fashion with more frequent bouts of vigorous physical activity producing more favourable insulin responses.

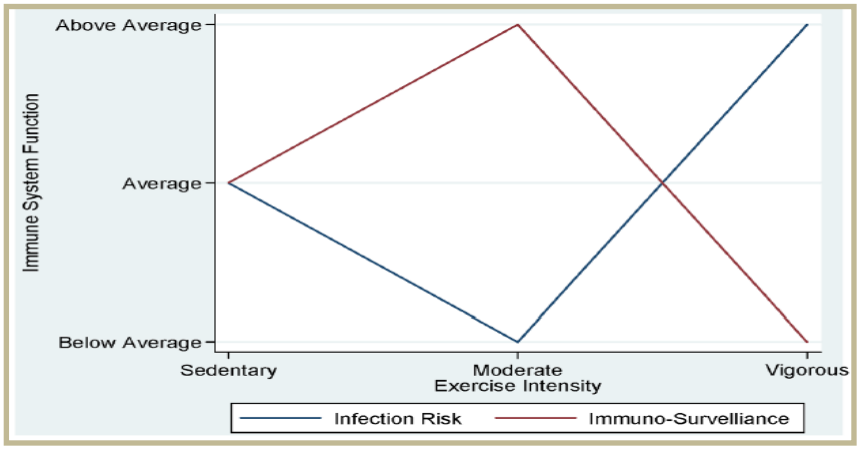
## INFLAMMATION AND ADIPOSITY




*Aspirin therapy for colorectal cancer with PIK3CA mutation. JCO 2013*

Inflammation is linked to a variety of chronic diseases including arthritis, diabetes, heart disease, and cancer. Chronic states of inflammation are hypothesized to increase risk of cancer development by degrading healthy cell growth, thereby promoting the progression of damaged cellular growth, and increased risk of tumour development.

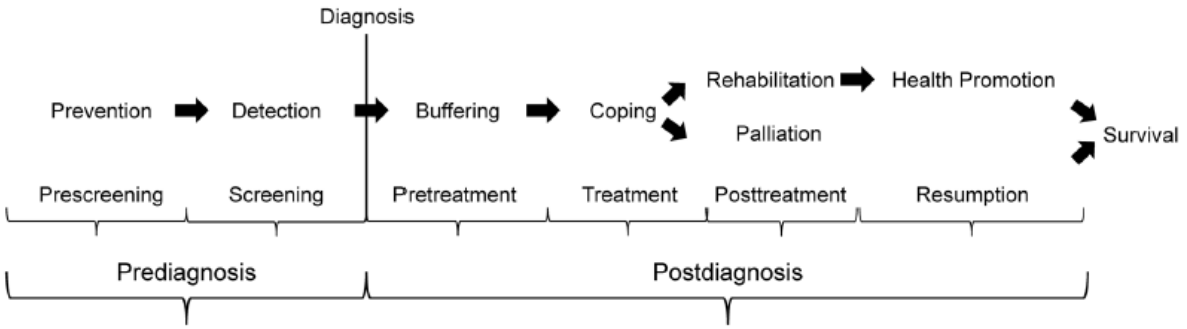
## IMMUNE FUNCTION




During exercise, particularly during moderate-intensity aerobic exercise T-cell populations transiently rise, NK cell populations and activity transiently rise, and neutrophil quantity and activity also transiently rise

*Mechanism linking physical activity with cancer. Nat Rev Cancer 2008*

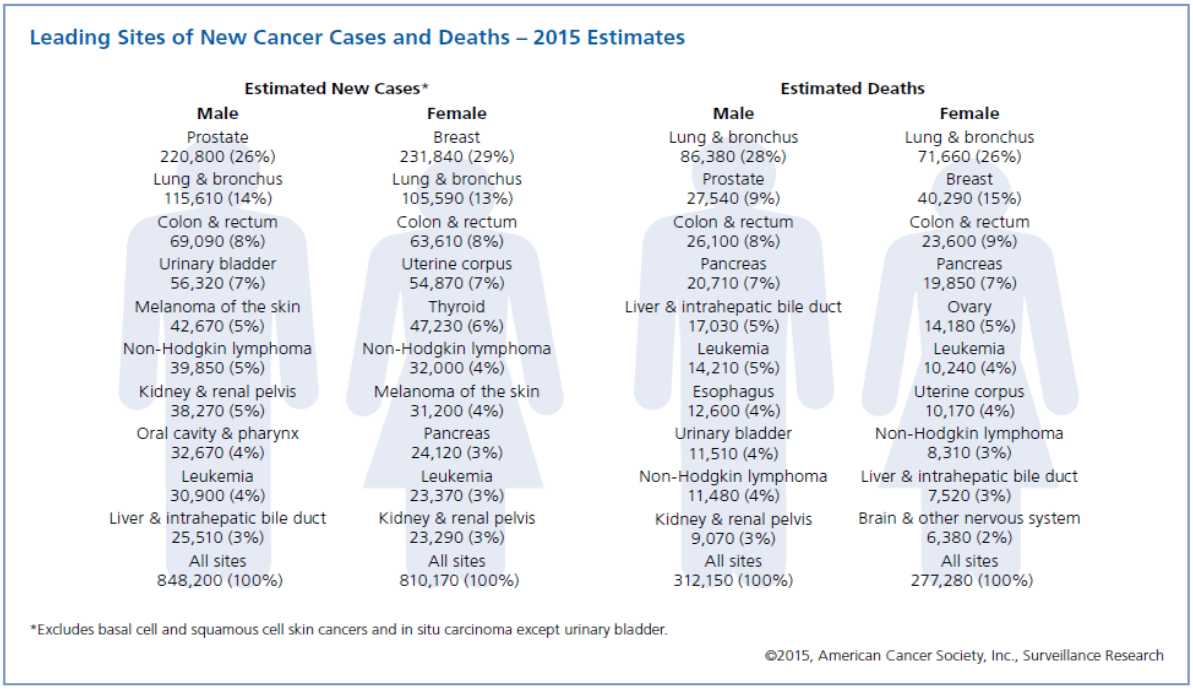
## THE CANCER CONTROL CONTINUUM




An organizational model exists to delineate the role of physical activity across the continuum of cancer control, including the major subsets prior to and after diagnosis of cancer. Within the two major subsets of diagnosis, there exist six distinct periods including eight total outcomes that are applicable to physical activity and cancer. We will use this conceptual model to guide us through the role of physical activity and the cancer survivorship continuum. [9] Framework PEACE. Ann Behav Med 2001

## ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND MORTALITY AMONG BREAST AND COLORECTAL CANCER SURVIVORS

The 5-y survival rate for breast cancer pts improved up to 90% in 2007. Localized **colorectal cancer** (40%) has a 5-y survival of 90%; regional disease (36%) have a 5-y survival of 70%. Poor long-term survival of individuals with metastatic cancer at diagnosis (20%), but these patients are now living for more than 2 y on average.




## MULTIVARIATE ANALYSIS OF PHYSICAL ACTIVITY AND BREAST CANCER RISK BY MENOPAUSAL STATUS

| | All women ($N = 1396$) | | | | | Premenopausal women ($N = 786$) | | | | | Postmenopausal women ($N = 610$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Characteristic | Controls ($n = 698$) | Cases ($n = 698$) | Adjusted OR[a] (95% CI) | | P | Controls ($n = 377$) | Cases ($n = 409$) | Adjusted OR[a] (95% CI) | | P | Controls ($n = 321$) | Cases ($n = 289$) | Adjusted OR[a] (95% CI) | | P |
| Recreational physical activity | | | | | | | | | | | | | | | |
| Total MET-hours per week | | | | | | | | | | | | | | | |
| ≤12 | 336(48) | 379(55) | 1.00 | | | 184(49) | 225(55) | 1.00 | | | 153(47) | 154(53) | 1.00 | | |
| 12–24 | 143(21) | 148(21) | 0.90 | 0.65–1.25 | 0.532 | 77(20) | 83(20) | 0.82 | 0.55–1.23 | 0.329 | 67(21) | 65(23) | 1.04 | 0.62–1.74 | 0.893 |
| 24–36 | 99(14) | 85(12) | 0.83 | 0.58–1.19 | 0.308 | 45(12) | 44(11) | 0.77 | 0.46–1.30 | 0.321 | 53(17) | 42(14) | 0.90 | 0.53–1.54 | 0.704 |
| >36 | 120(17) | 85(12) | 0.62 | 0.43–0.87 | 0.007 | 71(19) | 57(14) | 0.61 | 0.40–0.94 | 0.026 | 49(15) | 28(10) | 0.61 | 0.33–1.12 | 0.110 |
| *Trend (OR for every 6 MET-h/week)* | | | *0.96* | *0.93–0.98* | *0.003* | | | *0.95* | *0.92–0.99* | *0.007* | | | *0.97* | *0.91–1.02* | *0.254* |
| MET-hours per week of moderate activities[b,c] | | | | | | | | | | | | | | | |
| ≤12 | 395(57) | 433(62) | 1.00 | | | 221(59) | 260(63) | 1.00 | | | 175(54) | 173(60) | 1.00 | | |
| 12–24 | 151(22) | 150(22) | 0.95 | 0.71–1.27 | 0.728 | 78(21) | 89(22) | 0.93 | 0.63–1.38 | 0.724 | 73(23) | 61(21) | 0.98 | 0.63–1.54 | 0.942 |
| 24–36 | 87(12) | 71(10) | 0.81 | 0.55–1.18 | 0.271 | 39(10) | 36(9) | 0.85 | 0.50–1.47 | 0.570 | 48(15) | 35(12) | 0.78 | 0.45–1.37 | 0.385 |
| >36 | 65(9) | 43(6) | 0.58 | 0.36–0.94 | 0.028 | 40(10) | 24(6) | 0.45 | 0.24–0.85 | 0.013 | 25(8) | 19(7) | 0.84 | 0.40–1.79 | 0.657 |
| *Trend (OR for every 6 MET-h/week)* | | | *0.95* | *0.91–0.99* | *0.021* | | | *0.94* | *0.89–0.99* | *0.022* | | | *0.98* | *0.91–1.05* | *0.529* |
| MET-hours per week of vigorous activities[d,e] | | | | | | | | | | | | | | | |
| ≤12 | 591(85) | 625(89) | 1.00 | | | 312(83) | 354(87) | 1.00 | | | 279(87) | 270(94) | 1.00 | | |
| >12 | 107(15) | 73(11) | 0.79 | 0.55–1.13 | 0.194 | 65(17) | 55(13) | 0.87 | 0.57–1.35 | 0.540 | 42(13) | 19(6) | 0.62 | 0.32–1.18 | 0.144 |
| *Trend (OR for every 6 MET-h/week)* | | | *0.96* | *0.90–1.03* | *0.247* | | | *0.97* | *0.90–1.04* | *0.436* | | | *0.93* | *0.81–1.07* | *0.308* |

This is a multicentre matched case-control study where 698 pairs completed a physical activity questionnaire. Recreational physical activity during the last year was quantified in metabolic equivalent hours per week (MET-h/week) and categorized in activities of moderate (3.0–5.9 MET) and vigorous (N6 MET) intensity. The adherence to World Cancer Research Fund and the American Institute for Cancer Research recommendation was also assessed. The association with breast cancer risk, overall and by pathologic subtype, was evaluated using conditional and multinomial logistic regression models.

Results. Mean MET-h/week was 16.6 among cases and 20.4 among controls. Premenopausal breast cancer risk decreased by 5% (P = 0.007) for every 6 MET-

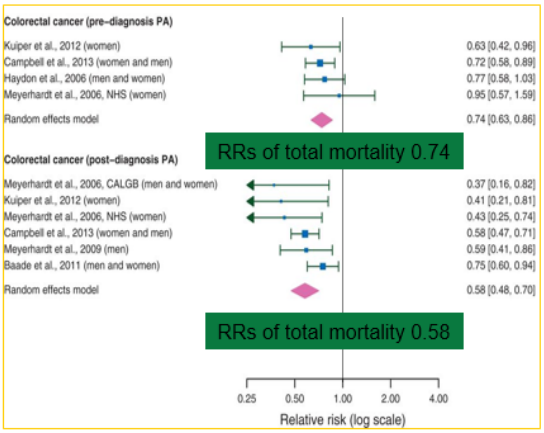
h/week increase in energy expenditure. By contrast, postmenopausal women needed to do more intense exercise to observe benefits. The protection was more pronounced for nulliparous women, as well as for hormone receptor positive and HER2+ tumours. Physically inactive women displayed a 71% increased risk when compared with those who met the international recommendation (P = 0.001). Finally, women who were inactive during the previous year, regardless of the overall physical activity reported in previous periods, showed an increased risk when compared to always active women.

Conclusions. Women who report adherence to international physical activity recommendations entail a significant decrease in risk for all pathologic breast cancer subtypes. This is of particular interest in Spain, where a significant increase in overweight and obesity in recent decades is observed. [10] Lope V et al, Gynecol Oncol. 2017

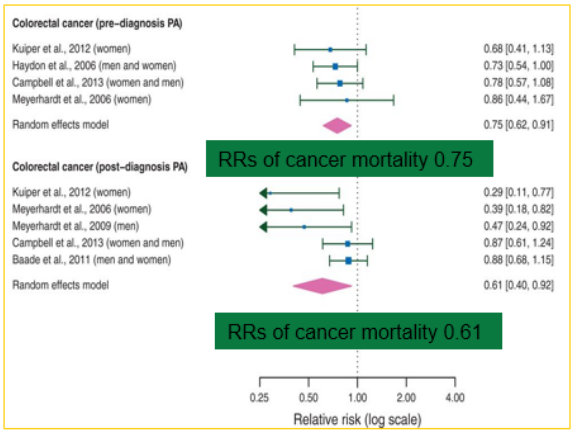
## RELEVANT STUDIES

Annals of Oncology

**Meta-analysis: 16 studies breast cancer and 7 of colorectal surviors (49095 total cancers survivors)**




Relation between physical activity (PA) and total mortality stratified by cancer site.




Relation between physical activity (PA) and cancer mortality stratified by cancer site.

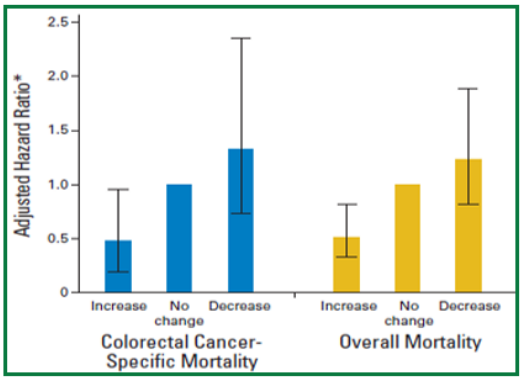
*[11] D. Schmid, and M. F. Leitzmann Ann Oncol 2014;25:1293-1311*

For pre-diagnosis physical activity among colorectal cancer survivors, the summary RRs of total and colorectal cancer mortality were 0.74 (95% CI = 0.63-0.86) and 0.75 (95% CI = 0.62-0.91), respectively. For post-diagnosis physical activity, the summary RRs of total and colorectal cancer mortality were 0.58 (95% CI = 0.48-0.70) and 0.61 (95% CI = 0.40-0.92), respectively.

VOLUME 33 · NUMBER 16 · JUNE 1 2015

JOURNAL OF CLINICAL ONCOLOGY

**Change in physical activity before and after diagnosis of stage I to III colorectal cancer among 523 women in Nurses' Health Study.**




One exploratory analysis in a study of 573 women with stage I to III colorectal cancer reported that those who increased their activity after diagnosis relative to the amount they had performed before diagnosis had a 52% lower risk of colorectal cancer–specific mortality compared with women who did not change their activity level, independent of the amount of activity performed before diagnosis.

**[12] Erin L. Van Blarigan and Jeffrey A. Meyerhard, JCO 2015**

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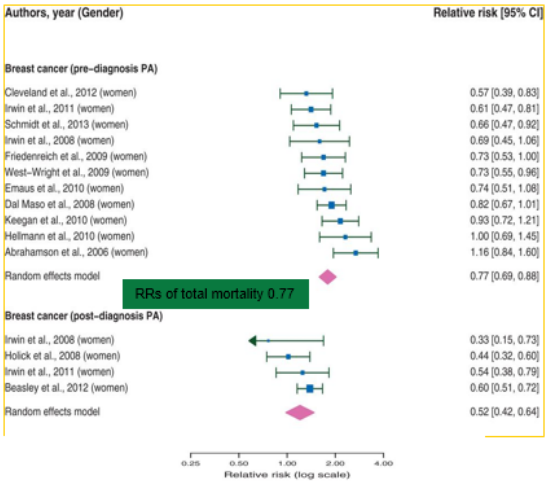
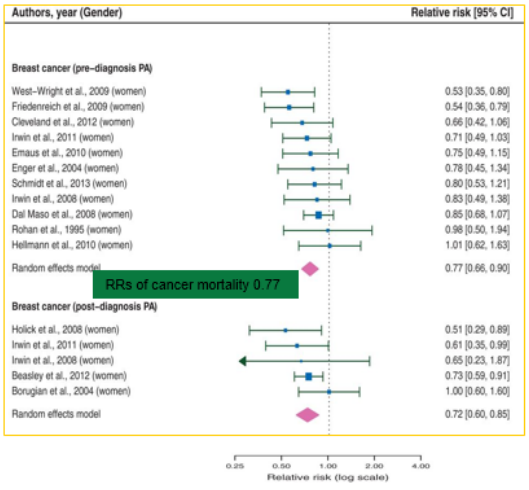



Relation between physical activity (PA) and total mortality stratified by cancer site.

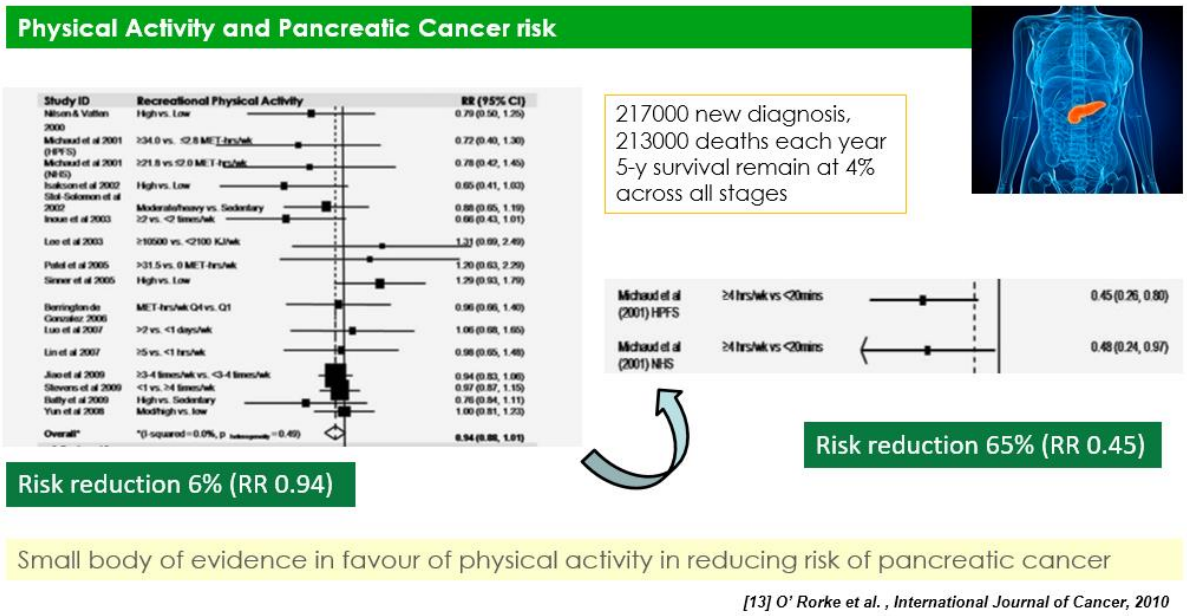



Relation between physical activity (PA) and cancer mortality stratified by cancer site.

*[11] D. Schmid, and M. F. Leitzmann Ann Oncol 2014;25:1293-1311*

Comparing the highest versus lowest levels of pre-diagnosis physical activity among breast cancer survivors, the summary relative risks (RRs) of total and breast cancer mortality were 0.77 [95% confidence interval (CI) = 0.69-0.88] and 0.77 (95% CI = 0.66-0.90, respectively. For post-diagnosis physical activity,

the summary RRs of total and breast cancer mortality were 0.52 (95% CI = 0.42-0.64) and 0.72 (95% CI = 0.60-0.85), respectively. Each 10 metabolic equivalent task-hour/week increase in post-diagnosis physical activity (equivalent to current recommendations of 150 min/week of at least moderate intensity activity) was associated with 24% (95% CI = 11-36%) decreased total mortality risk among breast cancer survivors.




Small body of evidence in favour of physical activity in reducing risk of pancreatic cancer

*[13] O' Rorke et al. , International Journal of Cancer, 2010*

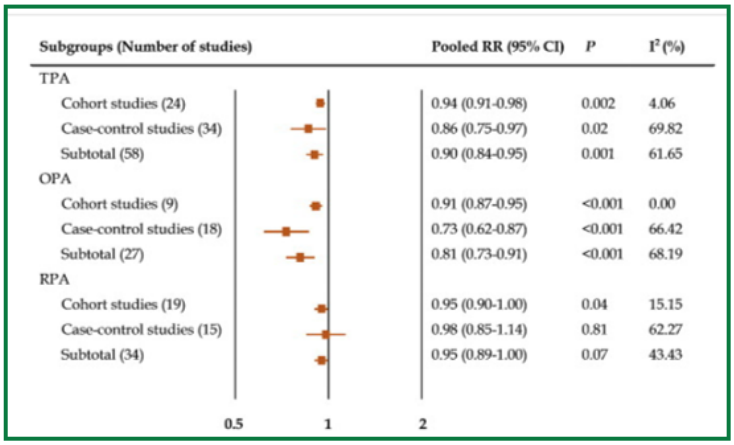
In terms of risk by cancer site.

Pancreatic cancer: Physical activity may prevent pancreatic cancer by regulating body weight and decreasing insulin resistance, DNA damage, and chronic inflammation. In a more recent meta-analysis risk reduction with physical activity reach 11% especially for those younger than 50 y-old (Farris MS et al Cancer Epidemiol BiomarKers prev 2015).

## Exercise and Prostate Cancer—the evidence stacks up for benefits

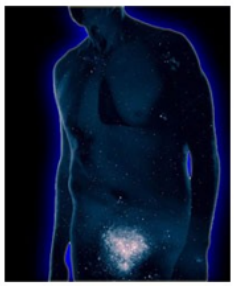
Prostate cancer foundation conference, S Diego 2014

903.500 new diagnosis, 258.000 deaths each year
5-y survival limited disease>99% , 30% if metastatic



| Subgroups (Number of studies) | Pooled RR (95% CI) | P | $I^2$ (%) |
|---|---|---|---|
| TPA | | | |
| Cohort studies (24) | 0.94 (0.91-0.98) | 0.002 | 4.06 |
| Case-control studies (34) | 0.86 (0.75-0.97) | 0.02 | 69.82 |
| Subtotal (58) | 0.90 (0.84-0.95) | 0.001 | 61.65 |
| OPA | | | |
| Cohort studies (9) | 0.91 (0.87-0.95) | <0.001 | 0.00 |
| Case-control studies (18) | 0.73 (0.62-0.87) | <0.001 | 66.42 |
| Subtotal (27) | 0.81 (0.73-0.91) | <0.001 | 68.19 |
| RPA | | | |
| Cohort studies (19) | 0.95 (0.90-1.00) | 0.04 | 15.15 |
| Case-control studies (15) | 0.98 (0.85-1.14) | 0.81 | 62.27 |
| Subtotal (34) | 0.95 (0.89-1.00) | 0.07 | 43.43 |

0.5 1 2



Significant risk reduction between 20 and 45 years of age (RR: 0.93) and between 45 and 65 years of age (RR: 0.91)

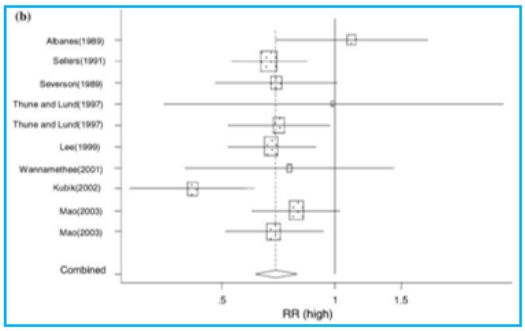
*[14] Liu Y et al, Eur Urol. 2011*

In a more recent and large study: During a mean follow-up of 24.8 years, 1,052 men were diagnosed with prostate cancer, of whom 349 had advanced disease (stage 3+ or prostate cancer death). Neither recreational nor occupational physical activity was, independently or combined, associated with overall or localized prostate cancer. Compared with physically inactive men, we observed a nonsignificant lower risk of advanced prostate cancer [HR, 0.67; 95% confidence interval (CI), 0.42–1.07] among men reporting both recreational and occupational physical activities (*P* value for interaction = 0.03). Awaiting confirmation in larger studies with detailed assessment of physical activity, our data suggest that extensive physical activity beginning in early adulthood may reduce the risk of advanced prostate cancer. *Cancer Prev Res; 8(10); 905–11. ©2015*

**Increasing Physical Activity and Exercise in Lung Cancer: Reviewing Safety, Benefits, and Application**

*[16] JTO, June 2015*


- Perioperative exercise in lung cancer patients appears to be safe with improvement in operability, -operative risk, post-operative complications.
- advanced-stage lung cancer patients may benefit from increased physical activity by improving symptom burden, though the intensity to be recommended is not clear.
- Low-intensity regimens such as daily walking or step-counting may provide a safe mechanism to increase physical activity while identifying an individual patient's activity limits.
- The authors conclude "clinicians should (at minimum) consider physical activity early, counsel against inactivity, and encourage physical activity in all stages of lung cancer"




Risk reduction of **30%** RR 0.70

IASLC
INTERNATIONAL ASSOCIATION FOR THE STUDY OF LUNG CANCER

16TH WORLD CONFERENCE ON LUNG CANCER
SEPTEMBER 6–9, 2015 → DENVER, COLORADO, USA

## ODDS RATIOS OF LUNG CANCER ASSOCIATED WITH RECREATIONAL AND OCCUPATIONAL PHYSICAL ACTIVITY IN MEN AND WOMEN

| | $N_{Cases}$ | $N_{Controls}$ | Adjusted for age and smoking OR (95% CI) | Multivariable-adjusted[a,b] OR (95% CI) |
|---|---|---|---|---|
| Men | | | | |
| Recreational PA[c] | | | | |
| Low | 189 | 266 | 1.00 (Ref) | 1.00 (Ref) |
| Intermediate | 150 | 274 | 0.94 (0.69, 1.28) | 0.88 (0.64, 1.21) |
| High | 103 | 265 | 0.70 (0.51, 0.97) | 0.66 (0.47, 0.92) |
| *p*-value for trend[d] | | | 0.09 | 0.05 |
| Occupational PA[c] | | | | |
| Low | 75 | 265 | 1.00 (Ref) | 1.00 (Ref) |
| Intermediate | 162 | 275 | 1.65 (1.16, 2.34) | 1.60 (1.09, 2.35) |
| High | 205 | 265 | 2.05 (1.45, 2.91) | 1.96 (1.27, 3.01) |
| *p*-value for trend[d] | | | <0.01 | <0.01 |
| Women | | | | |
| Recreational PA[c] | | | | |
| Low | 159 | 180 | 1.00 (Ref) | 1.00 (Ref) |
| Intermediate | 72 | 185 | 0.58 (0.38, 0.89) | 0.63 (0.40, 0.99) |
| High | 54 | 181 | 0.46 (0.29, 0.71) | 0.55 (0.34, 0.88) |
| *p*-value for trend[d] | | | <0.01 | 0.02 |
| Occupational PA[c] | | | | |
| Low | 86 | 181 | 1.00 (Ref) | 1.00 (Ref) |
| Intermediate | 72 | 185 | 0.65 (0.41, 1.02) | 0.70 (0.43, 1.13) |
| High | 127 | 180 | 0.97 (0.63, 1.49) | 0.94 (0.58, 1.53) |
| *p*-value for trend[d] | | | 0.10 | 0.28 |

Although evidence has accumulated that recreational physical activities (PA) may reduce lung cancer risk, there is little evidence concerning the possible role of a potentially more important source of PA, namely occupational PA. This study investigated both recreational and life- time occupational PA in relation to lung cancer risk in a population-based case–control study in Montreal, Canada (NCASES = 727; NCONTROLS = 1,351).

*Results* In both sexes, increasing recreational PA was associated with a lower lung cancer risk (ORMEN=0.66, 95% con dence interval (CI) 0.47–0.92; ORWOMEN=0.55, 95% CI 0.34–0.88, comparing the highest versus lowest tertiles). For occupational PA, no association was observed among women, while increasing occupational PA was associated with increased risk among men (ORMEN = 1.96, 95% CI 1.27–3.01). ORs were not modified by occupational

lung carcinogen exposure, body mass index, and smoking level; results were similar across lung cancer histological types. [17] Ho et al. Cancer Causes Control 2017

## CONCLUSIONS

All the data that has been shown represent the rationale for which the ONCOLOGY GAMES project is FUNDAMENTAL: it is in fact a priority to approach the healthy population but also cancer patients to physical activity for two main reasons:

1. The first is that the patient does not have to wait for the success passively and behave "as a sick person". This will help him to have a more positive and proactive attitude.
2. The second is that physical activity reduces the risk of cancer, but also the mortality rate for all causes and the cancer-related for those who are already affected. Finally it helps to overcome treatments better.

REFERENCES

[1] Jemal A, Siegel R, Ward E, Murray T, Xu J, Thun MJ. Cancer statistics, 2007. CA: a cancer journal for clinicians. 2007 Jan 1;57(1):43-66.

[2] Parkin DM, Boyd L, Walker LC. 16. The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010: Summary and conclusions. British journal of cancer. 2011 Dec 6;105(Suppl 2):S77.

[3] Weiderpass E. Lifestyle and cancer risk. J Prev Med Public Health. 2010 Nov 1;43(6):459-71.

[4] Brown JC, Winters-Stone K, Lee A, Schmitz KH. Cancer, physical activity, and exercise. Comprehensive Physiology. 2012 Oct 1.

[5] Blackburn H. Ancel Keys Lecture. The three beauties. Bench, clinical, and population research. Circulation. 1992 Oct 1;86(4):1323-31.

[6] Thompson HJ, Jiang W, Zhu Z. Candidate mechanisms accounting for effects of physical activity on breast carcinogenesis. IUBMB life. 2009 Sep 1;61(9):895-901.

[7] Friedenreich CM. The role of physical activity in breast cancer etiology. InSeminars in oncology 2010 Jun 30 (Vol. 37, No. 3, pp. 297-302). WB Saunders.

[8] Rundle A. Molecular epidemiology of physical activity and cancer. Cancer Epidemiology and Prevention Biomarkers. 2005 Jan 1;14(1):227-36.

[9] Courneya KS, Friedenreich CM. Framework PEACE: an organizational model for examining physical exercise across the cancer experience. Annals of Behavioral Medicine. 2001 Nov 1;23(4):263-72.

[10] Lope V, Martín M, Castelló A, Casla S, Ruiz A, Baena-Cañada JM, Casas AM, Calvo L, Bermejo B, Muñoz M, Ramos M. Physical activity and breast cancer risk by pathological subtype. Gynecologic oncology. 2017 Mar 31;144(3):577-85.

[11] D. Schmid, and M. F. Leitzmann. Association between physical activity and mortality among breast cancer and colorectal cancer survivors: a systematic review and meta-analysis. Annals of Oncology 2014;25:1293-1311

[12] Van Blarigan EL, Meyerhardt JA. Role of physical activity and diet after colorectal cancer diagnosis. J Clin Oncol. 2015 Jun 1;33(16):1825-34. doi: 10.1200/JCO.2014.59.7799.

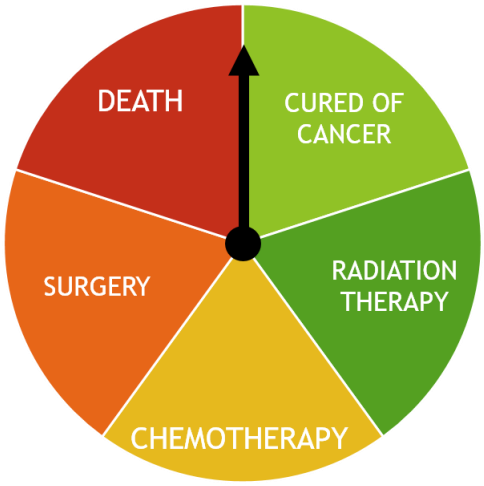
[13] O'Rorke, M.A., Cantwell, M.M., Cardwell, C.R. et al. (2010) Can physical activity modulate pancreatic cancer risk? ... International Journal of Cancer, 126, 2957–2968.

[14] Liu Y1, Hu F, Li D, Wang F, Zhu L, Chen W, Ge J, An R, Zhao Y. Does physical activity reduce the risk of prostate cancer? A systematic review and meta-analysis. Eur Urol. 2011 Nov;60(5):1029-44

[16] Bade BC, Thomas DD, Scott JB, Silvestri GA. Increasing physical activity and exercise in lung cancer: reviewing safety, benefits, and application. J Thorac Oncol. 2015 Jun;10(6):861-71.

[17] Ho V, Parent ME, Pintos J, Abrahamowicz M, Danieli C, Richardson L, Bourbonnais R, Gauvin L, Siemiatycki J, Koushik A. Physical activity and lung cancer risk in men and women. Cancer Causes Control. 2017 Apr;28(4):309-318.

To be diagnosed with cancer is a life changing situation which deeply marks the present and the future of the diagnosed person.




The roulette you have on the right represents the situation the cancer patients have to go through every time they visit the doctor.

Imagine you go to the doctor because you are feeling sick, after several tests the doctor give you this roulette and explains you that from now on, you will have to spin this roulette once every month and cope with the result. Hoping that one day, the arrow will stop on CURED OF CANCER, and your life will go back to normality.

Obviously each type of cancer is different, thus the probability of each results will be different for each type of cancer and the characteristics of the patient. This roulette is just a simplified explanations of the distress the cancer patients go through during the sickness.

## 1. THE EFFECTS OF CANCER ON SOCIAL AND EMOTIONAL WELLBEING

Cancer and cancer treatments can cause physical problems for patients, like hair loss, nausea, vomiting, etc. And they can also cause social and emotional issues. These are problems that effect on how a patient feels, or how they relate to their family and community. They are also sometimes called psychological problems. [1]

### SOCIAL AND EMOTIONAL ISSUES RELATED TO CANCER

**Emotional reactions to cancer**

People with cancer (and those close to them) can experience a range of feelings during their cancer journey. These can include:

- Distress
- Anger
- Sadness
- Fear
- Feeling out of control
- Helplessness

These feelings are very common around the time of diagnosis, or when there are changes in the course of cancer treatment. Negative feelings related to cancer often come and go, and they usually improve with time as the person gets used to their cancer diagnosis and treatment, and learns to cope with the stress of having cancer. [1]

**Social issues related to cancer**
The physical and psychological problems related to cancer can be intensified by or produce new social problems. Reduced employment and income, the cost of health care, or a lack of health insurance can result in substantial stress. [2]

**Reduced Employment and Income**
Overall, 63.5% of cancer survivors (range 24–94%) of Mehnert review returned to work. The mean duration of absence from work was 151 days. Cancer survivors had a significantly increased risk for unemployment, early retirement and were less likely to be re-employed. Depending on the cancer type and study, between 26% and 53% of cancer survivors lost their job or quit working over a 72-month period post diagnosis. Between 23% and 75% of patients who lost their job were re-employed. A high proportion of patients experienced at least temporary changes in work schedules, work hours, wages and a decline in work ability compared to non-cancer groups. [3]

**Why are social and emotional issues a problem?**
Social and emotional issues can be difficult for patients to understand and talk about. They can also lead to other problems, like depression and anxiety.

## PSYCHOPATHOLOGICAL DISORDERS AND CANCER

Patients at every stage of the patient pathway can find themselves dealing with difficult and distressing issues. They can develop problems ranging from sadness or worry to psychological symptoms sufficiently intense to interfere with their ability to function on a day-to-day basis. [4]

Around the time of a diagnosis of cancer, approximately half of all patients experience levels of anxiety and depression severe enough to affect their quality of life adversely. About one quarter continue to be so affected during the following six months. Among those who experience recurrence of disease, the prevalence of anxiety and depression rises to 50% and remains at this level throughout the course of advanced illness. In the year following diagnosis, around one in ten patients will experience symptoms severe enough to warrant intervention by specialist psychological/psychiatric services. Such symptoms can also be seen in 10-15% of patients with advanced disease. [4]

**Anxiety** is an emotion characterized by feelings of tension, worried thoughts and physical changes like increased blood pressure. People with anxiety disorders usually have recurring intrusive thoughts or concerns. They may avoid certain situations out of worry. They may also have physical symptoms such as sweating, trembling, dizziness or a rapid heartbeat. [5]

**Signs and symptoms that a patient may have anxiety [1]:**

- ✓ Feeling fearful, scared or on edge a lot of the time.
- ✓ Avoiding certain people or places due to fears.
- ✓ Needing constant reassurance from others.
- ✓ Sweating, shaking, or tingling.
- ✓ Breathing difficulties or tightness in the chest.
- ✓ Increased use of grog (alcohol) or other drugs.

**Depression** is more than just sadness. People with depression may experience a lack of interest and pleasure in daily activities, significant weight loss or gain, insomnia or excessive sleeping, lack of energy, inability to concentrate, feelings of worthlessness or excessive guilt and recurrent thoughts of death or suicide. Depression is the most common mental disorder. Fortunately, depression is treatable. [6]

**Signs and symptoms that a patient may be depressed [1]:**

- ✓ Feeling sad, empty, hopeless or tearful most of the day on most days.
- ✓ Losing interest or pleasure in things that usually make the person happy.
- ✓ Appetite and/or weight changes.
- ✓ Avoiding friends, family or going out
- ✓ Sleep problems.
- ✓ Feeling very tired and not wanting to get out of bed.
- ✓ Feeling worthless, guilty or like they are being a burden to others.
- ✓ Feeling that life is not worth living.
- ✓ Being very critical of themselves.
- ✓ Having thoughts or plans of hurting themselves or ending their life.
- ✓ Increased use of grog (alcohol) or other drugs.

**IMPORTANT TO NOTE**

If you have ever felt any of the previous signs and symptoms before, that's fine, it does not mean that you have and anxiety or depression disorder. Anxiety

and depression are a part of our life and sometimes are natural processes to help people to cope with life situations. To be considered as a disorders the mention signs and symptoms above have to become chronic and/or disrupt normal person's life significantly, importantly it can be only be diagnosed by a professional.

## 2. PSYCHOLOGICAL BENEFITS OF EXERCISE


2016 Race Against Cancer in Mallorca, organised by the Asociación Española Contra el Cáncer (AECC). Picture by Guillem Bosch from Diario de Mallorca.

Traditionally, physiological health benefits of psychical activity, such as improvements on cardiovascular endurance, muscle strength or flexibility were widely recognise among experts and general public as a primary benefit while, the improved psychological/emotional health and cognitive function was backed into a secondary benefit of physical activity. Nowadays, the psychological benefits of exercise are starting to be recognised since it has been proved the relationship between regular exercise and the reduction of psychological (e.g., poor body image) and emotional (e.g., depression) states, as well as the increase of positive psychological (e.g., self-esteem) and emotional (e.g., positive mood) responses. Those psychological and emotional benefits appear to be short and long term nature. [7]

Engaging in a moderate amount of physical activity will result in **improved mood and emotional states**. Exercise can promote psychological well-being as well as **improve quality of life**. The following are common psychological benefits gained through exercise [8]:

- Improved mood
- Reduced stress as well as an improved ability to cope with stress
- Improved self-esteem
- Pride in physical accomplishments
- Increased satisfaction with oneself
- Improved body image
- Increased feelings of energy
- Improved in confidence in your physical abilities
- Decreased symptoms associated with depression

**How much exercise is needed to produce those effects?** [8]

- Even a brief walk at low intensity can improve mood and increase energy. As little as 10 minutes of aerobic exercise can have a positive effect.
- For long-term benefits, you should exercise 3 times a week for 30 minutes per session at a moderate intensity.
- Programs longer than 10 weeks work best for reducing symptoms of depression

## PSYCHOLOGICAL BENEFITS OF EXERCISE FOR CANCER PATIENTS

During post diagnosis of cancer, appropriate exercise…

1. Improves symptom experience
2. Ameliorates treatment side effects
3. Enhances psychological well-being
4. Appears to increase survival through a range of mechanisms.

Fit-Salut Palma 2016. Picture from Institut Municipal d'Esports, Ajuntament de Palma.

As such, regular exercise should be encouraged in all populations, particularly those at higher risk of cancer. Further, exercise as medicine must be incorporated in the routine clinical care of cancer patients to improve quality of life as well as reduce morbidity and mortality. [9]

Post cancer diagnosis, exercise is now considered an important adjuvant therapy to reduce symptom experience, ameliorate side effects of radiation and pharmaceutical therapies, improve psychological, wellness and increase survivorship. [10] As a real example, in 2016, the hospital S. Maria Della Misericordia located in Perugia opened a gymnasium inside the hospital for the oncology patients. The gymnasium is opened during the afternoons and is supervised by qualified staff.


Leonardo Cenci, President of AVANTI TUTTA opening the new cancer gymnasium, from Perugia Today newspaper.

## 3. COMPASSION FATIGUE AND BURNOUT

Stress among health professionals constitutes a significant problem, because of its strong impact both on them and their patients. For that reason, health professionals have to be especially conscious of the signs and symptoms which indicate that the stress is becoming chronic and evolving into Burnout or

Compassion Fatigue. Also, it is important to learn some tips to prevent and cope with the early symptoms of Burnout and Compassion Fatigue.

## COMPASSION FATIGUE: DEFINITION, SYMPTOMS AND PREVENTION

**Definition**

Compassion Fatigue (CF) is defined as the formal caregiver's reduced capacity or interest in being empathic or "bearing the suffering of clients" and is "the natural consequent behaviours and emotions resulting from knowing about a traumatizing event experienced or suffered by a person". [11]

**Symptoms of compassion fatigue [12]**

- Inability to maintain balance of empathy and objectivity, feeling estranged from others or having difficulty sharing or describing feelings with other.
- Anger and increased irritability. Outbursts of anger or irritability with little provocation.
- Blaming. While working with a victim thinking about violence or retribution against the person or persons who victimized.
- Sleep disturbances. Losing sleep over a client and their family's traumatic experiences.
- Emotional exhaustion. Felt a sense of hopelessness associated with working with clients and their families.
- Physical exhaustion. Have felt weak, tired, and rundown as a result of working as a helper.
- Depression. Have felt depressed as a result of the work as a helper.
- Diminished sense of personal accomplishment. Feeling that you are working more for the money than for personal fulfillment.
- Less ability to feel joy. A sense of worthlessness, disillusionment and/or resentment associated with the work.

**Prevention: do's and don'ts of recovery [12]**

**Do:**

- Find someone to talk to.
- Understand that the pain you feel is normal.
- Start exercising and eating properly.
- Get enough sleep.
- Take some time off.
- Develop interests outside of your job.
- Identify what's important to you.

**Don't:**

- Blame others.
- Look for a new job, buy a new car, get a divorce or have an affair.
- Fall into the habit of complaining with your colleagues.
- Hire a lawyer.
- Work harder and longer.
- Self-medicate.

- Neglect your own needs and interests.

## BURNOUT: DEFINITION, SYMPTOMS AND PREVENTION

**Definition**
Maslach (1982) defined burnout as a psychological syndrome involving emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment that occurred among various professionals who work with other people in challenging situations. [13]

**Symptoms**
Burnout is considered to have a wide range of symptoms. There is no general agreement about which of those part of burnout are and which are not. But all definitions given so far share the idea that the symptoms are thought to be caused by work-related or other kinds of stress.

There are three main areas of symptoms that are considered to be signs of burnout [14]:

- **Exhaustion:** People affected feel drained and emotionally exhausted, unable to cope, tired and down, and do not have enough energy. Physical symptoms include things like pain and stomach or bowel problems.
- **Alienation from (work-related) activities:** People who have burnout find their jobs increasingly stressful and frustrating. They may start being cynical about their working conditions and their colleagues. At the same time, they may increasingly distance themselves emotionally, and start feeling numb about their work.
- **Reduced performance:** Burnout mainly affects everyday tasks at work, at home or when caring for family members. People with burnout are very negative about their tasks, find it hard to concentrate, are listless and lack creativity.

**Prevention [15]**

- Invest in your closest relationships, such as those with your partner, children or friends. Try to put aside what's burning you out and make the time you spend with loved ones positive and enjoyable.

- Try to be more sociable with your co-workers. Developing friendships with people you work with can help buffer you from job burnout. When you take a break, for example, instead of directing your attention to your smart phone, try engaging your colleagues. Or schedule social events together after work.

- Limit your contact with negative people. Hanging out with negative-minded people who do nothing but complain will only drag down your

mood and outlook. If you have to work with a negative person, try to limit the amount of time you have to spend together.

- Connect with a cause or a community group that is personally meaningful to you. Joining a religious, social, or support group can give you a place to talk to like-minded people about how to deal with daily stress — and to make new friends. If your line of work has a professional association, you can attend meetings and interact with others coping with the same workplace demands.

## 4. COMMUNICATION FOR CHANGE

Changing unhealthy personal habits for healthy ones can be a tough challenge, and even more, during difficult life situations when the person in feeling out of control, helplessness, etc. For that reason, professionals who are supporting people during the change are recommended to use some practices to improve people's motivations and the probability of success.

There are many practises used on intervention and counselling, which because of its complexity they need long training to be applied thus those cannot to be taught on this short Training Course for Coaches. Nevertheless, there are few practices based on communication which coaches will need to bear in mind and use during the training [16].

So far in the intervention and counselling practises, the greatest change in health habits has been induced by [16]:

1. Rewarding the patient positive behaviours
2. Using multiple forms of information
3. Self-pacing and tailoring the intervention to patient's needs
4. Providing feedback information about the change in health status measure.

Another practise which can be used is the acronym FRAMES which define the elements of an affective brief intervention which helps to trigger the patient motivation to change. FRAMES stands for [16]:

- Giving **Feedback** based on thorough assessment
- Helping the patient take **Responsibility** for changing
- Giving clear **Advice** on what behaviour must change
- Expressing **Empathy** for ambivalence and difficulty in making changes
- Evoking **Self-efficacy** to foster commitment and confidence

REFERENCES

[1] Cancer treatment side effects: A guide for Aboriginal Health Workers. Sydney: Cancer Institute NSW, March 2015.

[2] Page AE, Adler NE, editors. Cancer care for the whole patient: Meeting psychosocial health needs. National Academies Press; 2008 Apr 19.

[3] Mehnert A. Employment and work-related issues in cancer survivors. Critical reviews in oncology/hematology. 2011 Feb 28;77(2):109-30.

[4] Gysels M, Higginson IJ, Rajasekaran M, Davies E, Harding R. Improving supportive and palliative care for adults with cancer: research evidence. London: National Institute for Health and Clinical Excellence. 2004 Mar.

[5] American Psychological Association. Psychology topics: anxiety (adapted from the Encyclopaedia of Psychology). Retrieved from http://www.apa.org/ on 01/09/2017

[6] American Psychological Association. Psychology topics: depression (adapted from the Encyclopaedia of Psychology). Retrieved from http://www.apa.org/ on 01/09/2017

[7] Lox CL. The psychology of exercise: Integrating theory and practice. Taylor & Francis; 2017 May 11.

[8] Association for Applied Sports Psychology. Psychological Benefits of exercise. Retrieved from www.appliedsportpsych.org on 01/09/2017.

[9] Newton RU, Galvao DA. Exercise in prevention and management of cancer. Current treatment options in oncology. 2008 Jun 1;9(2):135-46.

[10] Newton RU, Galvao DA. Exercise in prevention and management of cancer. Current treatment options in oncology. 2008 Jun 1;9(2):135-46.

[11] Adams RE, Boscarino JA, Figley CR. Compassion fatigue and psychological distress among social workers: a validation study. American Journal of orthopsychiatry. 2006 Jan;76(1):103.

[12] Pfifferling JH, Gilley K. Overcoming compassion fatigue. Family practice management. 2000 Apr;7(4):39.

[13] Maslach C. Burnout: The cost of caring. ISHK; 1982.

[14] National centre for biotechnology information (NCBS). Depression: What is burnout? January 12, 2017 retrieved from www.ncbi.nlm.nih.gov/ on 01/09/2017

[15] Burnout prevention and treatment. Trusted Guide to Mental and Emotional Health. Retrieved from www.helpguide.com on 01/09/2017

[16] Stiefel FC. Communication in cancer care. Stiefel F, editor. Springer-Verlag Berlin Heidelberg; 2006 Sep 13.

## SESSION 7: BASIC FIRST AIDS

### 1. IMPORTANCE OF FIRST AIDS

First aid is the assistance given to any person suffering a sudden illness or injury with care provided to preserve life, prevent the condition from worsening, and/or promote recovery.

*The binding of a battlefield wound depicted on ancient Greek pottery*

It includes initial intervention in a serious condition prior to professional medical help while awaiting an ambulance, as well as the complete treatment of minor conditions, such as applying a plaster to a cut.

First aid is generally performed by the layperson, with many people trained in providing basic levels of first aid, and others willing to do so from acquired knowledge.

- **First Aid knowledge** is invaluable for everyone. It enables to assist persons who become injured in the event of an accident or emergency situation until help arrives.
- **First Aid skills** can be applied in home, workplace or public locations, therefore the more aware people of a community are, the safer that community becomes.
- **If an accident happens** being a helpless witness to an emergency situation can potentially worsen the situation.
- Hence, it is **very important** for as many people as possible to have at least a basic knowledge of First Aid!

#### BENEFITS OF FIRST AID

- **It affords people with the ability to provide help during various emergency situations.** Ingestion of hazardous substances, a heart attack, victims of a natural disaster, are just some cases in which a person knowledgeable in first aid becomes more than just another bystander.
- **First aid helps ensure that the right methods of administering medical assistance are provided.** Knowing how to help a person is just as important in emergency situations. It only takes six minutes for the human brain to expire due to lack of oxygen.
- **Knowledge in first aid also benefits the individuals themselves.** Whether the emergency affects themselves directly, or involves people they live and work with, first aid stems the severity of an emergency in a given time and place.

## 2. CASE STUDY

Police officer Freya Cowan is used to dealing with emergencies when she is at work. However, back in January of 2014, 26 year old Freya found herself right in the middle of a first aid emergency whilst off duty.

***"Freya undoubtedly saved Shaun's life and ensured oxygen was getting to his brain which meant that after 2 days in a coma Shaun woke to no nerve or brain damage – something which we are extremely grateful for. Freya is an absolute hero in our eyes as she has given us the gift of our son's future, which without her actions would not have existed."***

## 3. EMERGENCY HEALTH INFORMATION FROM EACH COUNTRY

- Italy:**118**
- Spain:**112**
- Bulgaria: **150**
- Turkey: **112**
- UK: **999, 112**
- Poland: **999**
- Greece:**166, 112**


## 4. MOST COMMON BASIC FIRST AIDS EXPLAINED:

### MINOR CUTS AND SCRAPES

Minor cuts and scrapes usually don't require a trip to the emergency room. But if your wound is deep jagged, or exposing fat or muscle, see a doctor as soon as possible. You may need stitches.

Proper wound closure within a few hours minimizes scarring and reduces the risk of infection.

**Guidelines:**

- **Wash your hands.** This helps avoid infection.

- **Stop the bleeding.** Minor cuts and scrapes usually stop bleeding on their own. If needed, apply gentle pressure with a clean bandage or cloth and elevate the wound until bleeding stops.
- **Clean the wound.** Rinse the wound with water. Wash around the wound with soap but don't get soap in the wound. Don't use hydrogen peroxide or iodine, which can be irritating.
- **Remove any dirt or debris.** Use tweezers cleaned with alcohol. See a doctor if you can't remove all debris.
- **Apply an antibiotic or petroleum jelly.** Apply an antibiotic ointment or petroleum jelly to keep the surface moist and help prevent scarring. Certain ingredients in some ointments can cause a mild rash in some people. If a rash appears, stop using the ointment.
- **Cover the wound.** Apply a bandage, rolled gauze or gauze held in place with paper tape. Covering the wound keeps it clean. If the injury is just a minor scrape or scratch, leave it uncovered.
- **Change the dressing.** Do this at least once a day or whenever the bandage becomes wet or dirty.
- **Get a tetanus shot.** Get a tetanus shot if you haven't had one in the past five years and the wound is deep or dirty.
- **Watch for signs of infection.** See a doctor if you see signs of infection on the skin or near the wound, such as redness, increasing pain, drainage, warmth or swelling.

## FAINTING

- Fainting occurs when the blood supply to your brain is momentarily inadequate, causing you to lose consciousness.

- This loss of consciousness is usually brief. It can have no medical significance, or can be serious.
- Treat loss of consciousness as a medical emergency until the signs and symptoms are relieved and the cause is known.
- Discuss recurrent fainting spells with your doctor

**If someone faints:**

1. **Position the person on his or her back.** If the person is breathing, restore blood flow to the brain by raising the person's legs above heart level — about 12 inches (30 centimeters) — if possible. Loosen belts, collars or other constrictive clothing. To reduce the chance of fainting again, don't get the person up too quickly. If the person doesn't regain consciousness within one minute, call your local emergency number.

2. **Check the person's airway to be sure it's clear.** Watch for vomiting.

3. **Check for signs of circulation (breathing, coughing or movement).** If absent, begin CPR. Call your local emergency number. Continue CPR until help arrives or the person responds and begins to breathe.

## HEAT CRAMPS

- Heat cramps are painful, involuntary muscle spasms that usually occur during heavy exercise in hot environments. The spasms may be more intense and more prolonged than are typical nighttime leg cramps. Fluid and electrolyte loss often contribute to heat cramps.

- Muscles most often affected include those of your calves, arms, abdominal wall and back, although heat cramps may involve any muscle group involved in exercise.

**If someone goes through seizure of heat cramps**

- Ask him/her to rest briefly and cool down
- Provide him/her with clear juice or an electrolyte-containing sports drink
- Practice gentle, range-of-motion stretching and gentle massage of the affected muscle group
- Ask him/her not to resume strenuous activity for several hours or longer after heat cramps go away
- Call the doctor if cramps don't go away within one hour or so

## NOSEBLEEDS

- Nosebleeds are common.
- Most often they are a nuisance and not a true medical problem.
- But they can be both.

**In case of nose bleeding**

- Sit upright and lean forward. By remaining upright, you reduce blood pressure in the veins of your nose. This discourages further bleeding. Sitting forward will help you avoid swallowing blood, which can irritate your stomach.
- Pinch your nose. Use your thumb and index finger to pinch your nostrils shut. Breathe through your mouth. Continue to pinch for 10 to 15 minutes.
- If the bleeding continues after 10 to 15 minutes, repeat holding pressure for another 10 to 15 minutes.

**To prevent re-bleeding**

- Don't pick or blow your nose and don't bend down for several hours after the bleeding episode. During this time remember to keep your head higher than the level of your heart. You can also gently apply some petroleum jelly to the inside of your nose using a cotton swab or your finger.
- If re-bleeding occurs, blow out forcefully to clear your nose of blood clots and spray both sides of your nose with a decongestant nasal spray containing oxymetazoline. Pinch your nose again as described above and call your doctor.

**When to seek emergency care**

- The bleeding lasts for more than 20 minutes
- You feel faint or lightheaded
- The nosebleed follows an accident, a fall or an injury to your head, including a punch in the face that may have broken your nose

## BRUISE

- A bruise forms when a blow breaks blood vessels near your skin's surface, allowing a small amount of blood to leak into the tissues under your skin.
- The trapped blood may cause a bruise that at first looks like a black-and-blue mark and then changes color as it heals.


If your skin isn't broken, you don't need a bandage.

**But you can enhance bruise healing with these simple techniques:**

- Elevate the injured area.
- Apply an ice pack wrapped in a towel or a cloth dampened with cold water. Do this for about 10 minutes. Repeat several times a day for a day or two after the injury as needed.
- Rest the bruised area, if possible.
- Consider acetaminophen (Tylenol, others) for pain relief, or ibuprofen (Advil, Motrin IB, others) for pain relief and to reduce swelling.

REFERENCES

1. http://ercguidelines.elsevierresource.com/european-resuscitation-council-guidelines-resuscitation-2015-section-2-adult-basic-life-support-and
2. http://www.mayoclinic.org/
3. https://www.firstaid.org.uk/charity/our-work/case-studies/
4. https://www.ekab.gr/category/odigies/protes-voithies/

## SESSION 8: TESTIMONY OF CANCER PATIENT

This session has the intention to offer to the coaches a direct experience from someone who is currently facing cancer or has recently went throughout. On the followings pages, Leonardo Cenci explains his story as well as the positives and negatives remarks of it, unfortunately, Leonardo cannot attend to all Training course for Coaches for that reason we encourage all partner to find a candidate who would like to explain his/her experience to the coaches.

### 1. BRIEF PERSONAL STORY OF LEONARDO CENCI

Who is Leonardo Cenci? - Leonardo Cenci was born in Perugia (Italy) 45 years ago. He had several and different work experiences. He has been a barman, he worked in Customs and for several years he worked in the sales area of a local company. He has dealt with his work with special enthusiasm and love.

The disease - Since August 9, 2012 he lives with a lung adenocarcinoma – stage 4, with double gene mutation, incurable and inoperable, with multiple brain and bone metastases. After eight cycles of chemotherapy, he started an experimental protocol still ongoing.

How he find out that he had cancer - In July 2012 he was training for the New York Marathon. He realized he was struggling to run and made some medical checks. He was hospitalized and diagnosed with the cancer. Because of the ferocity of cancer, the doctors estimated the prognosis to be a few months. In spite of all, Leonardo has immediately faced the diagnosis as a challenge.

Post-diagnosis difficulties - Brain metastases made him lose the use of the lower limbs. It took months to recover leg mobility. All thanks to the determination and passion for the race, which has allowed him to have a greater sense of footing and the awareness of how to move.

Effects of the disease - In the months following the diagnosis, besides losing the use of the legs, he had several pneumonia that repeatedly affected and weakened him. In spite of everything, he didn't die as expected and, as soon as he recovered his psycho-physical condition he decided to found an association with the aim of giving relief, hope and dignity to cancer patients. Demonstrating, on your own skin, that even a person with cancer can live a dignified life.

The Avanti Tutta association - On June 13, 2013, the no-profit association named Avanti Tutta Association has been established. In a few years the Association succeeded to donate aids, equipment and a gym to the medical oncology ward and day *Hospital of Santa Maria della Misericordia hospital in Perugia*. All thanks to the generosity of the city, of the institutions and of private companies and citizens.

The Avanti Tutta Days - The first event promoted by the association was the "Avanti Tutta Days", a two-day event that annually animates the Green Path of the city of Perugia. It provides free sports activities for young, adult and elderly people, and meetings to talk about healthy and correct lifestyles. Since 2013, it has become one of the most famous sports events in the region.

Leonardo as a positive example - His story and his attention to cancer patients has made Leonardo to become an example of hope and strength for everyone. For these reasons he was enrolled in the Albo d'Oro of the City of Perugia, a list of citizens who have given prestige to the city itself. Then, in the Vatican, he received the International Prize "Giuseppe Sciacca" for Social Activities and Voluntary Service and, in Scarperia, the International Award "Le Velo - Europe for Sport". On 6 November 2016 he participated in the New York Marathon as the first Italian in the world who ran a 42,195 km with a cancer in progress.

The New York Marathon - Leonardo ended at 24.179th place (with over 50.000 racers on the way and a time of 4 hours, 27 minutes and 57 seconds). His performance improved the one of Fred Lebow, co-founder of the New York marathon, who ran it in 1992 with a brain cancer (diagnosed in early 1990) in 5 hours, 32 minutes and 34 seconds.


Knight of the Italian Republic - After the Marathon, on 2 February 2017, he was awarded by the President of the Republic, Sergio Mattarella, with the title of **Knight of the Italian Republic** *"for the determination and the strength of mind with which he faces his very severe illness by offering the other patients an example for reacting and defending life"*.

Leonardo nowadays - Today Leonardo continues to spread his message of hope and to pursue and promote a healthy lifestyle by participating in meetings in schools and conferences around Italy. He is the testimonial in many sports events. He continues to make donations through his association and to meet hospital patients.

On 27 October 2017 he will be awarded by CONI with a medal for the athletic value. On 5 November 2017 he will take part again at the New York Marathon as the only person who run it for two years with a cancer in progress.

## 2. POSITIVE AND NEGATIVE SIDE FROM A PATIENT PERSPECTIVE.

### THREE POSITIVE ASPECTS FROM LEONARDO'S EXPERIENCE.

*"Cancer has changed my perspective of life. I'm living as if it were always the last day and making projects as if I should never die"*

*"I found in me qualities I didn't think I had: the sense of acceptance of cancer and the lightness with which I accepted the change"*

*"I grabbed faith as a hope. In these moments you have to rely on something bigger than us. Especially I did it with Saint Francis"*

### THREE NEGATIVE ASPECTS FROM LEONARDO'S EXPERIENCE

- Life-long dependence on drugs with related side effects
- Living as if you had a weight over your shoulders that makes you always feel tired
- Always living with pain, every hour of every day

## 3. 10 RECOMMENDATIONS FOR COACHES AND PATIENTS

The ten tips that Leonardo gives to everyone, ill and not, are as follows:

1. Never lose hope.
2. Commit yourself to try your best, always!
3. Know how to adapt to change.
4. Always have a positive mind.
5. Accepting and respecting the disease.
6. Trust in doctors and healthcare workers.
7. Looking to the future, planning your own life.
8. Resist the pain.
9. Note that nothing will be easier.
10. Love life and make it a wonderful adventure to live and not a problem to solve.


And finally ... every morning remember to look at yourself in the mirror and smile. Raise your thumb and say out loud: **"Full steam ahead, always!"**

## SESSION 9: NUTRITION AND CANCER DISEASE

*"There are no proven ways to prevent cancer, but you can reduce your risk of getting it."*

## 1. FOOD AND CANCER PREVENTION

### Can a balanced and healthy eating prevent from cancer?

- Nowadays a lot of researches is going on into diet and cancer;
- The researches shows that healthy and balanced diet may lower the risk of developing cancer;
- Well balanced diet guarantee all the nutrients the body needs;
- Eating products containing fibre can reduce the risk of bowel cancer; ensuring proper amounts of fibre prevents constipation;
- There are evidence that shows that red meat and processed meat can higher the risk of bowel cancer (colorectal);
- Processed meat refers to meat that has been preserved by smoking, curing, salting or adding preservatives (sausages, bacon, ham, salami and pâtés);
- Excess body weight may lead to cancer.

### Healthy and balanced diet: why?

Evidence consistently suggests that eating plenty of fibre can reduce the risk of bowel cancer. Diets high in fibre can help keep your bowel healthy and prevent constipation.

Fibre-rich foods include wholegrain pasta, bread, breakfast cereals and rice. Pulses, fruit and vegetables are also good sources of fibre.

### Diet and development of cancer

- There is a link between the diet and the development of certain types of cancer

- The scientists have identified many naturally occurring substances in plant foods with the power to defuse potential carcinogens.
- The research shows that eating protective and naturally-occurring plant substances known as phytochemicals can help to defend the body against cancer and other diseases.
- Too long inflammation can damage cells and their DNA or cellular genetic material.
- Chronic inflammation can be very often observed if the person is overweighed or obese. Fat cells constantly make inflammatory cytokines

## Fat cells and cancer

Location of fat cells in body matters;

- **Fat cells accumulated in the abdominal area** – **body shape APPLE** – visceral fat which lies very deep in the abdomen and surrounds vital organs;
    - Pumps out more inflammatory cytokines and hormones like insulin, leptin and estrogen
- Subcutaneous fat – the fat located directly beneath the skin (this type of fat is very often located at the waist, in the tights and buttocks) **– body shape – PEAR.**

## Diet and types of cancer

- According to the research overweight and obesity increases the risk of cancer:
    - colorectal,
    - postmenopausal breast,
    - kidney,
    - pancreatic,
    - endometrial,
    - gallbladder and common variety of oesophageal cancer called adenocarcinoma
    - oesophageal cancer
    - Bowel cancer
    - Breast cancer
    - Cancer of the womb (uterus).
- Lack of fibre in diet:
    - Bowel cancer

- Colorectal cancer

- Too much salt in diet:
  - Stomach cancer

## HOW TO PREVENT?

**Avoid or reduce foods and beverages:**

- There are evidence that shows that red meat and processed meat can higher the risk of bowel cancer (colorectal);
  - Red meat: beef, lamb, pork, veal, venison, goat
  - Processed meat: cold cuts, bacon, sausage, ham

- It is suggested to reduce consumption of red and processed meat to 70 grams per day (three thin-cut slices); the red meat provides protein, minerals like iron and zinc


- Processed meat refers to meat that has been preserved by smoking, curing, salting or adding preservatives (sausages, bacon, ham, salami and pâtés);

- Avoid drinking alcohol; it is suggested to drink not more than 14 units a week (420-550 ml) (both men and women); always check how many units have alcoholic drinks;
  - One drink is defined:
    - Beer – 355 ml;
    - 80-proof distilled spirits – 44 ml;
    - Wine – 148 ml

- Avoid supplements that contain beta-carotene;

- Sugary drinks like regular sodas;

- Avoid or limit consumption too much salt;

- Avoid or limit foods processed with sodium (salt) – boxed, canned and frozen prepared foods and items
- Avoid hot-dogs, hamburgers, French fries, corn chips, potato chips and all other pre-prepared foods that do not require cutlery (convenience food);
- Avoid foods with added fat and sugar;
- Avoid energy-dense foods:
  - High-fat, high calorie snack foods;
  - Fast foods (baked goods, desserts, sweets)


## What else should we avoid?

- Tobacco products should be entirely avoided (cigarettes, chewing tobacco, smoking from a hookah, any other forms of using tobacco);
- Protect the skin from sun damage:
  - Avoid burning
  - Use sunscreen with a sun protection factor (SPF) – at least SPF 15
  - Try to avoid sun between 11 a.m. and 3 p.m.;
  - Keep an eye on any moles or freckles


- Observe your body (potential symptoms of cancer: lumps or unexplained bleeding)

## What should we eat and drink to prevent from cancer

- Balanced diet with variety of foods rather than taking supplements;
- Use a nutrient-rich whole foods like: fibre, vitamins, minerals, phytochemicals;
- Choose plant-based foods;
- A diet should be rich in fruits and vegetables, whether grown conventionally or organically; It is important to eat plenty of vegetables and fruits, whole grains and beans, whether fresh, frozen, dried, cooked or canned.
- The EWG (Environmental Working Group) has published lists of:

- "Dirty dozen plus two": non organic fruits and vegetables that contains the highest amount of pesticides.
- "Clean fifteen": non organic fruits and vegetables that contains the least amount of pesticides.

| Dirty dozen plus two | Clean fifteen |
|---|---|
| strawberries | avocados |
| spinach | pineapples |
| nectarines | cabbage |
| apples | onion |
| peaches | sweet peas frozen |
| pears | asparagus |

### Resuming… Healthy and balanced diet should consist of:

- plenty of bread (Fibre-rich foods),
- rice (Fibre-rich foods),
- potatoes,
- pasta and other starchy foods (Fibre-rich foods )
- some meat,
- fish,
- eggs,
- beans and other non-dairy sources of protein
- some milk and dairy foods
- just a small amount of foods and drinks high in fat or sugars, such as cakes, crisps and biscuits
- vegetables

## EATING HABITS AND FOOD PREPARATION

### Eating habits

- Eat mostly food of plant origin;
- Eat at least five portions/savings a day;
- Remember about variety of non-starchy vegetables and fruits every day; (one cup of raw or cooked vegetables or 1 medium apple)
- Eat whole grains and/or legumes (beans and lentils) with every meal

### How to prepare foods

- Remember to keep foods like raw meat, poultry, seafood, eggs far from ready to eat foods;

- For cutting raw meat, poultry and fish use the separate cutting boards;

- Try to cook food at proper temperatures
- Refrigerate or freeze leftover foods within 1 hour to limit growth of bacteria;
- The refrigerator should be set between 1- 4,5 °C
- The freezer should be set to minimum – 16 °C or lower
- Use the microwave, refrigerator or cold water to thaw meat and poultry;
- Check always the product expiration date.

| Food | Suggested temperature |
|---|---|
| steaks, roasts | Ok 63 ° C |
| fish | Ok 63 ° C |
| pork | Ok 71 ° C |
| ground beef | Ok 71 ° C |
| eggs | Ok 71 ° C |
| chicken | Ok 74 ° C |
| poultry | Ok 74 ° C |
| hotdogs | Ok 74 ° C or steaming hot |

### How to prepare foods: washing

- Wash your hands (you should use soap and hot water and wash the hands at least 20 seconds; if not use the hand sanitizer. Remember to wash and sanitize hands:
  - Before eating;
  - After using the restroom;
  - When preparing foods (before and after);
  - After handling garbage;
  - After touching animals (pets);
  - After sweeping the floor
  - After wiping down the counters


## COMMON EATING DIFFICULTIES DURING AND AFTER TREATMENT

### CHANGES IN APPETITE

**How to improve appetite**

1. Try to eat 5-6 small meals per day;
2. If you are hungry try to eat the largest meal;

3. When you feel that your appetite is strong eat the high – protein foods;
4. Try to keep high-calorie foods and beverages within easy reach;
5. Try to be physically active;
6. Consult your diet with dietitian;
7. In certain situation your doctor can prescribe a medication to improve your appetite.

## NAUSEA AND VOMITING

**Nausea and vomiting can be caused by:**

1. Chemotherapy
2. Radiation therapy

**How to manage with nausea and vomiting**

- Eat more often but smaller amounts (easier to tolerate);
- Avoid high-fat, greasy, spicy or overly sweet foods;
- Avoid foods with strong odours;
- Eating foods and sipping clear liquids at room temperature or cooler may be easier tolerate;
- Sip on beverages between meals;
- Eat sitting up and keep head raised for about an hour after eating;
- When vomiting – if it is controlled try to sip on clear liquids (cranberry juice or broth); also you can try to eat pretzels or crackers;

## FATIGUE

1. The most common side effect;
2. It can be related to cancer itself;
3. It can be the side effect of cancer treatment

**How to manage with fatigue**

- Try to eat regularly;
- Rely on ready-to-eat foods (frozen dinners, fruits and vegetables);
- Prepare food when you feel best – freeze leftovers;
- Try to drink plenty of fluids; at least 8 cups of hydrating fluids per day (water, clear juices, sports drinks, broth, weak tea);
- Try to be physically active

## DIARRHOEA

1. Can be caused by cancer itself;
2. Can be caused by certain chemotherapy agents and medicines
3. Can be caused radiation therapy

**How to manage with diarrhoea:**

- Drink plenty of liquids (water, clear juices, sports drinks, broth, weak tea, oral rehydration solutions);
- Eat small amounts of soft blended foods ( foods that consist of soluble fibre-containing – bananas, white rice, applesauce, white toast);
- Decrease consumption of nuts and seeds, raw vegetables and fruits, whole grain breads and cereals;
- Try to eat smaller meals throughout the whole day;
- Take anti-diarrhoea medicine prescribed by your doctor.

## CONSTIPATION

1. Can be a symptom of the cancer itself;
2. Can be caused by medicines used to treat cancer or manage pain;
3. Occurs when the bowels do not move regularly.

**How to manage with constipation**

- Try to drink healthy beverages – to keep your digestive system moving (water, prune juice, warm juices, decaffeinated teas, hot lemonade);
- Try to increase the amount of food rich in fibre (whole grains, fresh and cooked vegetables, fresh and dried fruits, foods containing peels, nuts and seeds;
- Try to increase physical activity (taking walks, doing limited exercise every day
- If necessary include stool softeners and gentle, no habit forming laxatives

## TASTE AND SMELL CHANGES

Changes in smell and taste occur while undergoing and recovering from cancer treatment.

**How to manage with changes in taste and smell**

- Try to choose foods that appeal to you (moist and naturally sweet foods such as frozen melon, balls, grapes, oranges, tart foods and beverages)
- Try to eat cooler temperature foods ( they have less aroma and taste than the hotter one);
- Try marinades and spices to mask strange tastes;
- Instead of red meat try poultry, fish, beans, nut butters, eggs;
- You can try to add a small amounts of sugar if the foods taste bitter or salty;
- Try to brush your teeth and tongue and rinse your mouth regularly before eating; you can try to use homemade salt and baking soda solution (one quart of water combined with one teaspoon of salt and one teaspoon of baking soda) or use an alcohol-free mouth rinse.

## SORE MOUTH OR THROAT

Can be caused by certain chemotherapy agents or radiation therapy (the inflammation of mucus membranes; the patient may have problems with eating and swallowing;

**How to manage with sore mouth or throat:**

- Try to eat moist and soft foods with extra sauces, dressings or gravies;
- Avoid dry, coarse or rough foods;
- Avoid alcohol, citrus, caffeine, vinegar, spicy foods, acidic foods like tomatoes;
- Choose the temperature of food that suits you best (warm, cool or icy);
- Drink plenty of fluids ( warm/cool milk-based beverages, non-acidic fruit drinks, "flat" carbonated beverages, cream or broth-based soups;
- Rinse your mouth several times a day
- If necessary ask your doctor for medications.

## UNWANTED WEIGHT GAIN

Occurs during or after treatment for hormone–sensitives cancers (breast cancers, prostate cancers. Another reason of unwanted weight gain might be inactivity moreover some steroids used during cancer treatments can cause increase of weight.

**How to manage with unwanted weight gain:**

- Try to eat foods low in calories, high in fibre (vegetables, fruits, whole grains, beans;
- Pay attention to the size of meals and fill your plate with lower calorie plant foods;
- Eat only when you are physically hungry.

## LOW LEVEL OF WHITE BLOOD CELLS AND INFECTIONS

The cancer itself or treatment can weaken the immune system, which is why the patient is more exposed on infection. The main role of white blood cells is to defence the body against infection (destroying germs). The risk of infection is higher when the level of white blood cells is very low (especially during the treatment process).

**The symptoms of infection**

- Temperature higher than 38° C;
- When fever occurs;

- Shaking and chills;
- Swelling or redness of any part of the body

**How to manage whit low level of white blood cells**

- Avoid eating raw or undercooked products like eggs, pork, game, poultry and fish;
- Wash fruits and vegetables before eating;
- Don't drink water from lakes, river streams, springs and avoid drinking untested water;
- Change the filter regularly if you use the filtered

**OTHERS SUCH AS…**

- Unwanted weight loss
- Undernutrition
    - Slow malnutrition – lower ability to heal
    - Severe malnutrition – improper functioning of the heart liver, kidneys and immune system

## SUPPLEMENTS VS CANCER PREVENTION

### What are supplements?

According to DSHEA dietary supplements are defined as products that contain "dietary ingredients" used to supplement diet.

Dietary ingredients that should be included in supplements:

- vitamins,;
- Minerals;
- Herbs;
- Botanicals;
- Amino acids;
- Enzymes;
- Metabolites;
- Organ tissues.

The research shows that:

- Over 50 % of adults in America use supplements;
- Between 60-80 % people with cancer have taken supplements (before, after or during the diagnosis);

### Why do we take supplements?

- In hope of stopping cancer:
- Advice of family, friends or healthcare providers;
- To strength the immune system;
- To take care of symptoms of cancer treatment;

### But… Are the supplements safe?

- There is a controversy if it is going about antioxidants during cancer treatment;
- The supplements may interact with the patient's treatment, making it less effective.
- Sometimes for specific medical conditions such as osteoporosis and iron-deficiency anaemia can be prescribed by your healthcare team

## REMEMBER THAT…

1. Dietary supplements shouldn't replace the foods rich in nutrients
2. Dietary supplements are not recommended for cancer prevention
3. Supplementation should be directed and supervised by your cancer healthcare team

# 2. NUTRITION AND DIETS FOR CANCER

## THE ROLE OF MACROMOLECULES

### Proteins

Protein consumption during cancer is crucial because of the intense activity of the immune system and the recovery of cells destroyed during treatment. Daily protein requirements increase to 15-20% of total energy. It is important to ensure that the patient receives an increased amount of whole-body protein at this time, and that the ratio between the animal and vegetable intake is 1: 1. Do not increase the supply of proteins above 2 g per kg of body weight, as this may lead to unnecessary strain on the body with nitrogen metabolites.

**Fats**

It is important to reduce fat intake (<30 Ec) in cancer prevention and treatment and it is recommended to convert/change fats of animal origin (rich in saturated fatty acids and "trans") into vegetable fats which are a very good source of unsaturated fatty acids.

According to the literature, the primary source of fat should be oil of olives, as it contains substances lowering the level of inflammation using prostaglandin cyclooxygenase.

Do not forget to enrich your diet with products rich in mono- and polyunsaturated fatty acids. It is recommended to consume fish at least 2 times a week due to their abundance in monounsaturated fatty acids. Alpha-linolenic acid (omega-3 acid) has the ability to reduce inflammation and stabilizes energy expenditure. In addition, it is processed in the human body for prostaglandins, which are credited with important role in blood clotting, vasodilatation or nerve stimulation. Consequently, taking n-3 rich foods slows down the cancer process and further reduces the activity of COX-2, which increases inflammation in the body. Keep in mind that taking omega 3 fatty acids has a therapeutic effect when combined with omega 6 fatty acids.

Omega 6 fatty acids are antiestrogenic, they are reducing the risk of breast cancer, colorectal and prostate cancer as well as they are reducing fat tissue. It is important to reduce the supply of cholesterol in the diet of a cancer patient because of the carcinogenic effects of its metabolites, which may increase the risk of colorectal cancer.

The researches show that a diet rich in saturated fats significantly increases the risk of lung, breast, colon, prostate and rectal cancer. (Gillie, 2000; Kłosiewicz-Latoszek, 2009; Jarosz, Sajór, 2012).

A study has shown that consumption of high-saturated fats when women are in premenopausal age, promotes breast cancer. (Gaynor, 2015).

**Carbohydrates**

The intake of carbohydrates in cancer patients should be approximately 55% of total energy during the day;

A key element in the diet of cancer patients is to reduce the consumption of carbohydrate by up to <10%, because they are the source of energy for the development of tumour;

Tumour cells are able to use up to several hundred grams of glucose per day;

According to the study, the consumption of starchy and simple sugars and high processed foods contributes to the increase in oesophageal and gastric cancer;

Diet containing whole grains products rich in dietary ingredients like fibre, vitamins and mineral salts protect the body against certain types of cancer. (Gillie, 2000; Jarosz, Sajór, 2012).

**Minerals**

- Due to the chronic inflammatory accompanying during cancer, antioxidants (antioxidants) play an important role, among which we distinguish:
    - β-karoten,
    - selenium, zinc, copper
    - magnesium, manganese, calcium,
    - bioactive substances such as coenzyme Q10,
    - polyphenols (flavonoids, isoflavones, lignins, phytoestrogens, stilbene, catechins) and phytosols.

Their main task is to destroy excess free radicals, leading to oxidative stress resulting in damaging cell membrane, DNA or proteins.(Jarosz, Sajór, 2012; Gillie, 2000; Kedar i wsp., 2005; Jarosz, Sajór, 2012; Gillie, 2000).

## ANTICANCER DIETS

### Gerson's' therapy

- Created in 1945 by the German physician Max Gerson;
- The main principle of this therapy is detoxication of the body using coffee enemas while adhering to diet restrictions that prohibit the use of salt, fat, nut, blueberry, coffee, frozen food or beverage from a can or bottle.
- This diet is based on consuming large amounts of carbohydrates, fluids and potassium, a small amount of animal protein, and dehydrated and defatted liver in the form of capsules.
- It is also advisable to take injections from raw liver extract.
- During the day drink 13 glasses of fresh fruit or vegetable juice;
- Erythrocytes must be performed daily as a way to cope with pain and stimulation of intestinal function;
- Patients take various supplements (eg thyroid hormones, royal jelly, iodine solution, castor oil, linseed oil)

- People who suffer from pain take very high doses of vitamin C and niacin;
- During the diet, patients may experience flu-like symptoms: fever, fatigue, pain and dizziness, lack of appetite, rash, herpes.
- Unfortunately, none of the published literature provides evidence of the effectiveness of this therapy in the fight against cancer. (Kardasz i Pawłowska, 2008).

### Vegetarian diet

- It is characterized by the consumption of only products of plant origin
- The World Cancer Research Foundation and the American Cancer Research Institute have published a report on the basis of which it has been proven that a vegetarian diet can protect against prostate cancer, breast cancer and colon cancer.
- Moreover green leafy vegetables can reduce the incidence of larynx, throat, stomach and oesophagus
- Besides the lack of meat in the diet, it is characterized by increased supplementation of antioxidants and dietary fibre, and lower iron reserves as well as lower fat intake (Zalega i Szostak-Węgierek, 2013c; Kardasz i Pawłowska, 2008).

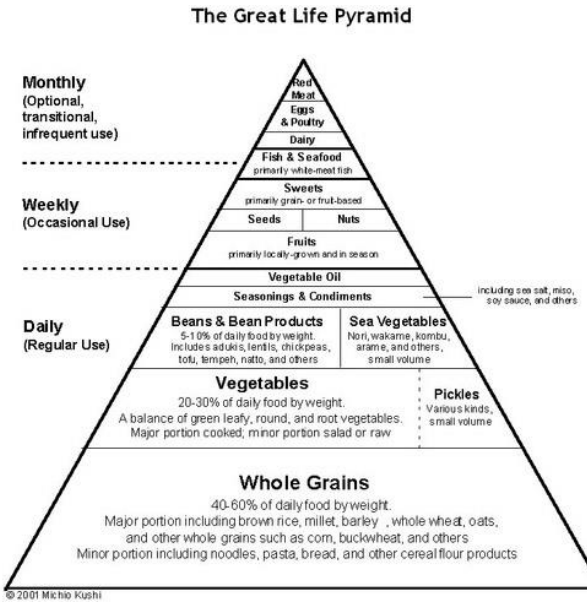
### Megavitamin and ortho-molecular therapy

- This is a diet which is based on taking large doses of vitamins and minerals in the form of dietary supplements (sometimes 10-Times higher than recommended).
- It is important to take large amounts of vitamin C, which is effective against the cancer

**There are a few non-significant sources of evidence for this diet, but there are some important data that report negative effects of excess vitamin C in the diet of cancer patients. There are heart disorders, hyprendiminosis, toxic effects for the liver (Kardasz i Pawłowska, 2008).**

## Macrobiotic diet

- The main motto of this diet is that: a healthy general level of health prevents the development of cancer and other diseases.




- This term was introduced by the Japanese philosopher Georg Ohsawa, and disseminated by his student Michio Kushi
- The components of the macrobiotic diet are modified according to gender, age, physical activity, environment, and patient needs.
- In this diet there is a large amount of carbohydrates packed into a reduced amount of fat;
- In this diet the patient should avoid eating meat, fat, eggs, dairy products, sweetened beverages, tropical fruits
- Michio Kushi introduced a specially developed food pyramid for people using a macrobiotic diet (Kardasz and Pawłowska, 2008).

## Metabolic therapy (Kelley/Gonzalez)

- Dr. Kelley argued that the reason of cancer diseases is the deficiency of pancreatic enzymes that are essential for the removal of tumor cells.
- patients were subjected to colon detoxification, received diuretics, were externally cleansed and used fasting;
- Then they introduced a limiting diet that could have changed after a suitable test according to the metabolic type of patient.
- During this therapy the patient had to take about 300 tablets a month.

**None of these studies has confirmed the validity of this method. Dr. Gonzalez thinks that his diet is almost identical to Dr. Kelley's diet. Also contains digestive enzymes, a considerable amount of supplements (about 150 tablets per day), detoxication is carried out with the use of enema (Kardash and Pawłowska, 2008).**

## SUPERFOOD

- Over the last few years, the interest in healthy living has increased dramatically and the proper way of eating has been developed (promoting "modern food trends" by well-known and popular people in the country), recently the superfoods became very popular products,
- One of the definitions says that superfoods are natural, unprocessed products that are rich in nutrients (vitamins, minerals, fibre, antioxidants, omega-3 fatty acids, enzymes, bioactive peptides and other active ingredients) that may have a beneficial effect on health, they promote immunity and are easily and quickly digested.
- In addition, they are attributed to the healing function; many sources report that they support the body's fight against many civilization diseases such as cardiovascular disease, atherosclerosis, osteoporosis, obesity, cancer and increase life expectancy;
- They provide the body with incomparable benefits over conventional foods.
- Avocados, aloes, goji berries, acai, algae, cocoa, aloe, quinoa, chia seeds, etc. are included in this group.
- However, some products grown in Poland are also included in the list of "superfoods" like: garlic, chokeberry, black without, whole grain products, sea buckthorn, honey, quince and many others (Nagai and Inoue, 2004; Banach et al., 2017).

### Goji berries

- is the fruit of either the *Lycium barbarum* or *Lycium chinense*;
- are found in the Mediterranean, North America, Asia and Australia;

- The most common form of goji berries are juices, teas, dried and raw and as dietary supplements;
- they have been used for a long time in traditional Chinese medicine;

- Goji berries contain large amounts of carotenoids: β-carotene, cryptoxanthin, neoxanthin, polyphenol compounds such as rutin, coffee acid, quercetin or p-carotene and polysaccharide complex, which has the ability to inhibit proliferation of colorectal, gastric, or hepatic cells (Daniel i Sadowska, 2016).

## Acai berries

- Is a fruit of *Euterpe oleracea*, often found in South and Central America;
- Many biologically active substances are noted in their composition like polyphenols and dietary fiber
- They have a high antioxidant potential due to the presence of many antioxidants in their composition
- Laboratory experiments have been performed on rat brain cells that have unambiguously demonstrated the antitumor efficacy of these products.
- Other studies have shown that when acai berry is applied, the inhibition of leukemia cells has decreased by as much as 86% (Daniel and Sadowska, 2016).

## Algae

- Algae are an important source of iodine;
- have anti-inflammatory, antibacterial and antioxidant properties;
- Their compositions include polyphenols, phenolic acids, carotenoids and flavonoids that have antitumor activity;
- Studies have confirmed the positive correlation between algal consumption and the lower probability of colorectal and breast cancer (Daniel and Sadowska, 2016).

## Quinoa

- Grows in South America, Chile, Peru, Brazil, Colombia, Andes.
- Rich in dietary fibre, flavonoids, phenolic acids and saponins, which in many data are referred to as antitumor compounds.
- A trial have been done that demonstrated the antitumor effect of quinoa on prostate tumor cells - Gawlik-Dziki et al. (Daniel i Sadowska, 2016).

## Garlic

- Is an onion plant, cultivated in many countries, comes from Central Asia;
- It is used as a medicine and spice

- people mainly use an onion (head) which consists of a dozen small onions (cloves), harvested in the autumn
- It has many medicinal and therapeutic properties. Works anti-thrombotic, antibacterial, antifungal and antioxidant.
- It is also characterized by an intensification of apoptosis in relation to tumour cells.

- There are many biologically active substances in its composition: flavonoids, amino acids, sulphur compounds, vitamins B6, B3, B5, C, calcium, potassium.
- Based on numerous epidemiological studies, it has been shown that consumption of garlic in raw or post-heat treatment has antitumor effect against tumours of the large intestine, stomach, ovary, oesophagus, kidney, oral cavity, larynx and prostate (Banach et al., 2017).

## Black lilac (Sambucus nigra)

- Is a large bush, belonging to the family of *Caprifoliaceae*,
- inflorescences, fruits and even leaves are used
- commonly found in western and central Asia and Europe;
- Fruits of lilac are rich in anthocyanins, while elderberry flowers are a source of flavonoids (quercetin, rutabis, essential oils, chlorogenic and coffee acid);
- Elderberry is characterized by high antioxidant activity - they neutralize reactive oxygen forms, limit peroxidation of lipids, inhibit cells proliferation and mutagenesis.
- Do not forget about their strong anti-inflammatory effect, which plays an important role in the fight against cancer and the ability to regulate pro- and anti-inflammatory cytokines (Banach et al., 2017).

## Sea buckthorn

- It is a prickly shrub, occurring in China, Mongolia, Europe, and Central Asia. Belongs to the olive family
- Fruits, leaves and shoots are used in the food, cosmetic and pharmaceutical industries;
- Sea buckthorn is characterized by high levels of unsaturated fatty acids, vitamins - vitamin C and minerals: magnesium, calcium, potassium and iron and polyphenols and carotenoids;
- Sea buckthorn has really high antioxidant activity. Its fruits have been reported to reduce the incidence of skin and papillomatoses carcinoma in the anterior (Banach et al., 2017).

## Chokeberry

- A small shrub belonging to the family of roses;
- It is distinguished by its high therapeutic potential in curing civilization diseases
- Only fruits are used;
- The composition of black chokeberry is primarily water, but also organic acids, tannins, vitamins (C, B1, B2, B6, E), calcium, potassium and iron compounds;
- They are considered to be the most polyphenolic compounds (anthocyanins, sphenoid, flavonoids)
- They have antioxidant effect, counteract the formation of free radicals, regulate blood pressure, improve circulation and strengthen the walls of blood vessels;
- In addition, they act an anti-mutagenic and anti-cancer against colorectal, colon and breast cancers (Banach et al., 2017).

## 3. HEALTHY FOOD RECEIPTS

The following receipts are extracted from:

- *"Dieta w walce z rakiem"* Richard`a Beliveau i Denis`a Gingras
- "*Plan terapii genowej*" Mitchella Gayno

# Cheese with blueberries, banana and almonds

**Ingredients:**

- A glass of organic white cheese
- Half of sliced banana
- Half of glass of  blueberries
- 1 spoon of almond flakes

Preparation:

- Mix fruits with almonds and cheese. Instead of cheese you can also use yogurt.

## Halibut with lemon and dill and garlic cauliflower puree (2 portions)

Ingredients:

- 2 halibut steaks (about 240 g)
- Salt coarse-grained
- freshly ground black pepper
- 1 tablespoon of extra virgin olive oil
- 0.5 cup of dry white wine
- 1 teaspoon of lemon juice
- 1 teaspoon of butter
- 2 tablespoons chopped fennel
- 0,5 cauliflower
- ½ tsp of crushed garlic
- 1 teaspoon of lemon juice
- 0.5 cups of lean organic milk
- ½ teaspoon chopped dill

Preparation:

Heat oil in a frying pan, salt and pepper steaks, fry the fish on both sides until it is soft. Pour wine and lemon juice into a small pot. Boil over low heat until it is half full, then add butter. Add halibut, pour the sauce and sprinkle with dill. Cook cauliflower, mix it with garlic, lemon juice and milk. Serve with dill.

# Super Chocolate Waffles

**Ingredients:**

- 1 ¼ of glass of wheat flour
- 0,5 teaspoon of salt
- 1 teaspoon of powdered ginger
- 1 teaspoon of pepper
- 1 teaspoon of cacao
- 1 glass of wheat germ
- 4 spoons of melted butter
- 2 slightly beaten eggs
- 2 tablespoons of honey
- 2 glasses of lean organic milk
- Coconut oil for the waffle maker

Preparation

In a large bowl, mix flour, salt, baking powder and spices, add wheat germ. In a separate bowl, mix the remaining ingredients, add the flour and mix into a homogeneous mixture. Bake on warmed and greased coconut oil waffles.

REFERENCES


Jarosz M., Sajór I., **2012**, *Żywienie chorych z nowotworami*, wyd. Lekarskie PZWL, Warszawa 2012

Banach K., Rutkowska B., Glibowski P., 2017, Polska „SUPERŻYWNOŚĆ" w prewencji chorób nowotworowych, Bromat. Chem. Toksykol. – L, 2, str. 106 – 114

Daniel I., Sadowska J., 2016, Przeciwnowotworowe działanie produktów roślinnych – egzotyczne superfoods i produkty z polskiej piramidy żywienia, Kosmos, Tom 65, nr 3 (312): 371–381

Nagai T., Inoue R., **2004**, *Preparation and functional properties of water extract and alkaline extract of royal jelly*, Food Chem., 84: 181-186

Kardasz M., Pawłowska D., **2008**, *Dyskusyjne metody terapii alternatywnej u osób z chorobą nowotworową*, Nowa Medycyna 2/2008, s. 16-25

Zalega J., Szostak-Węgierek D., 2013c., Żywienie w profilaktyce nowotworów. Część III. Diety o właściwościach przeciwnowotworowych, Probl. Hig. Epidemiol, 94(1):59-70

Gillie O., **2000**, *Uciec przed rakiem. Profilaktyka chorób nowotworowych dzięki diecie*, przeł. z ang. Suskiewicz E.W., Warszawa 2000

http://www.cancerresearchuk.org/about-cancer/coping/physically/diet-problems

http://www.aicr.org/assets/docs/pdf/education/heal-well-guide.pdf

http://www.nhs.uk/livewell/preventing-cancer/pages/diet-and-cancer.aspx

## SESSION 10: SPORT OF ATHLETICS

### 1. TRACK AND FIELD

Track and field, or athletics as it is called in many countries, is a compendium of men and women sports disciplines that involve running, jumping for height and distance, and throwing for distance using implements of standardized design. Competitions are usually held outdoors, although during winter many disciplines could be also performed indoor. Disciplines belonging to the athletic family may vary from track events (running: sprints, middle distances, long distances; hurdles) field events (disciplines involving jumping and throwing), race walking, road races, mountain running, and cross-country running.

#### DISCIPLINES

- 100m / 200m
- 400m
- 800m / 1500m
- 3 km / 5 km / 10 km
- Marathon
- Hurdles
- Steeplechase
- Discus
- Javelin
- Shot Put
- Hammer Throw
- Pole Vault
- Long Jump
- High Jump
- Triple Jump
- Heptathlon
- Decathlon
- Race Walk
- Relay

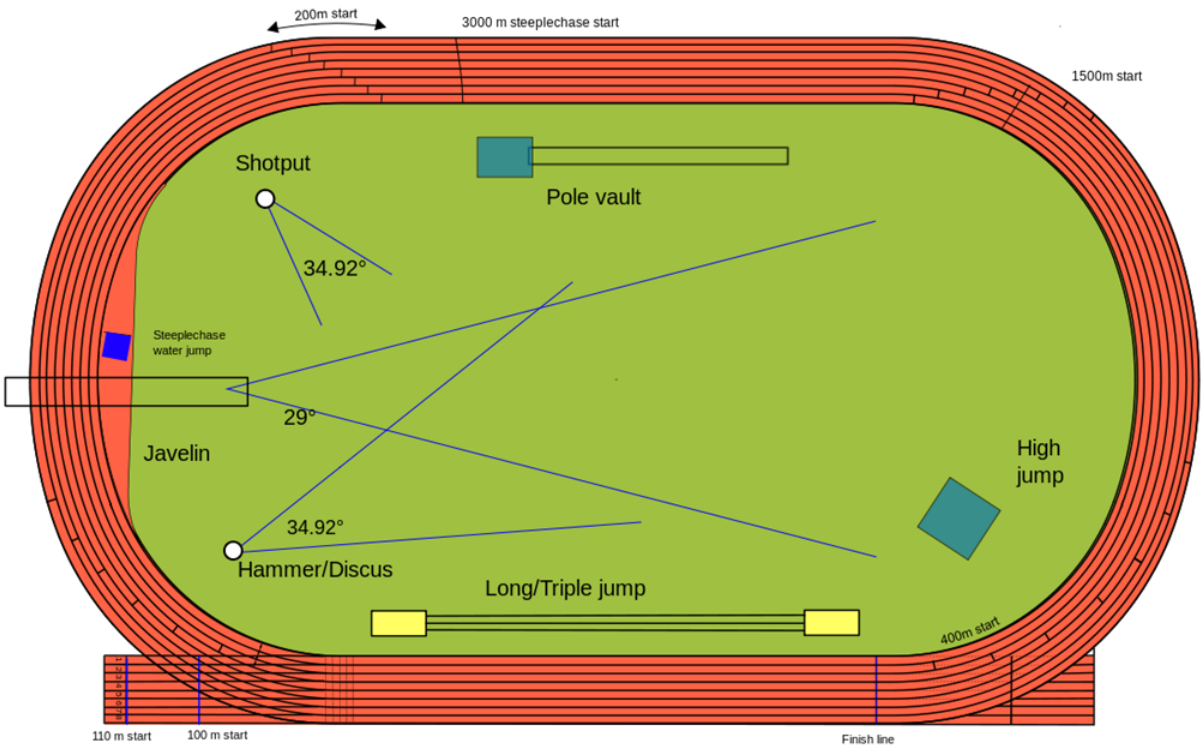
| Official world championship track and field events | | | | | | | |
|---|---|---|---|---|---|---|---|
| Track | | | | | Field | | Combined events |
| Sprints | Middle-distance | Long-distance | Hurdles | Relays | Jumps | Throws | |
| 60 m | 800 m | 5000 m | *60 m hurdles* | 4×100 m relay | Long jump | Shot put | *Pentathlon* |
| 100 m | 1500 m | 10,000 m | 100 m hurdles | 4×400 m relay | Triple jump | Discus throw | Heptathlon |
| 200 m | 3000 m | | 110 m hurdles | | High jump | Hammer throw | Decathlon |
| 400 m | | | 400 m hurdles | | Pole vault | Javelin throw | |
| | | | *3000 m* steeplechase | | | | |
| Note: Events in italics are competed at indoor world championships only | | | | | | | |

## 2. VENUES

Professional athletics almost exclusively takes place in one of three types of venue: stadiums, set courses on grass or woodland, and road-based courses. Such venues ensure that events take place in a relatively standardized manner, as well as improving the safety of athletes and enjoyment for spectators. At a more basic level, many forms of athletics demand very little in terms of venue requirements; almost any open space or area of field can provide a suitable venue for basic running, jumping and throwing competitions.

### TRACK AND FIELD STADIUM

A standard outdoor track is in the shape of a stadium, 400 metres in length, and has at least eight lanes 1.22 m in width (small arenas might have six lanes). A standard indoor track is designed similarly to an outdoor track, but is only 200 metres in length and has between four and eight lanes, each with width between 0.90 m and 1.10 m.



## CROSS COUNTRY COURSES

There is no standardised form of cross country course and each venue is significantly defined by the environment it contains – some may be relatively flat and featureless, while others may be more challenging with natural obstacles, tight turns, and undulating ground. While a small number of purpose-built courses exist, the vast majority of cross country running courses are created by cordoning a specific area within any open natural land, typically a park, woodland or greenspace near a settlement.

## ROAD COURSES

The surface of road races is highly important and the IAAF dictate that the courses must be along man-made roads, bicycle paths or footpaths. Courses set along major roads of cities are typical of road running events, and traffic is usually cordoned off from the area during the competition. While soft ground, such as grass, is generally avoided, races may start and finish on soft ground or within a track and field stadium. Road racing courses come in two primary types: looped and point-to-point. Courses may be measured and designed to cover a standardized distance, such as 10 km (6.2 mi), or they may simply follow a set route

## 3. HISTORY OF TRACK AND FIELD

### ANTIQUITY

Track and field is one the most popular and well know sports, with a great and long history. According to some literary traditions, during the first edition of the ancient Olympic Games in the year 776 BC the first track and field event took place, which consisted of a foot race 600 feet long.

From 776 BC, the games were held in Olympia every four years for almost twelve centuries. However, the development of the sport was characterized by many changes over time in terms of both type of disciplines included and participation. During the ancient Olympic Games athletic events were gradually added until reaching a five-day program, including three foot races (stadion, diaulos, and dolichos) as well as the pentathlon (five contests: discus, javelin, long jump, wrestling, and foot race), pugme (boxing), pale (wrestling), pankration, and the hoplitodromos. To note many famous and well know athletic events were not present in the Olympic programme at that time.

For instance, the marathon was not an event of the ancient Olympic Games and was introduced in the Modern Olympic Games in 1896 in Athens. In particular, the race consisted of a 42.195 kilometres run from Marathon (a city placed at northeast of Athens) to the Olympic Stadium, commemorating the run of Pheidippides.

Based on the literature from the ancient Greek historian Herodotus, Pheidippides was an ancient "day runner" who carried the news of the Persian landing at Marathon of 490 BC to Sparta (a distance of 149 miles) in order to enlist help for the battle. Then the distance of the modern marathon was standardized as 42.195 kilometres in 1908 when the Olympic Games were held in London, using the exact measured distance between the Windsor Castle and the White City Stadium.

## MODERN ERA

After the end of the ancient Olympic Games (393 AC), few information are available regarding the development of the sport during the Middle Age and Modern Age, since the XIX century. By the late 1800s, the popular enthusiasm for all types of physical exercise had caused a boom in participation in sports. Athletics was especially popular, and became an essential component of national educational systems. Organized athletics prospered in well-developed industrial societies, with competition programmes for schools and universities rapidly growing in importance. Furthermore, it was practiced also in military organizations and private clubs. In particular, it the United States, the Intercollegiate Association of Amateur Athletes of America, the nation's first national athletic group, held the first collegiate races in 1873, and in 1888 the Amateur Athletic Union (which governed the sport for nearly a century) held its first championships.

Regarding the Olympic world, in 1894 at the Paris Congress of the IOC, the desire for athletic sports to be included on the programme of the Olympic Games was expressed. Thus, track and field was on the programme of the Games of the I Olympiad in Athens in 1896, and has remained on the

programme since then. Twelve men's events were on the programme of these first Games.

With the track and field world growing in importance over time, national athletic sport federation started to be established worldwide. Then the International Amateur Athletic Federation (today IAAF, International Association of Athletics Federations) was founded in 1912 by 17 national athletic federations who saw the need for a governing authority, for an athletic programme, for standardised technical equipment and world records. The IAAF has 215 member nations and territories, which are divided into six continental areas (or area associations). The six association areas are for Asia, Africa, Europe, Oceania, North America and South America.

IAAF Athletics

International Association of Athletics Federations

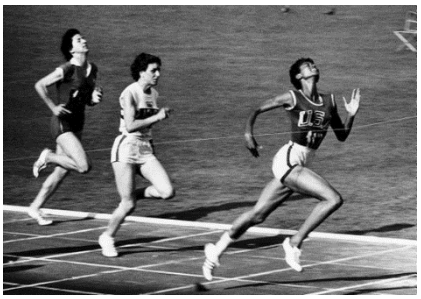
In Europe we have the EAA – European Athletics Association: http://www.european-athletics.org/

Within the EAA, coaches play a central role in the development of athletes at all levels and it is therefore important for the sport to provide support that ensures they are well trained and qualified, up to date with the latest practices and information, and properly motivated.

The management of coaches in athletics is a responsibility of the Member Federations but European Athletics provides support through the promotion of the IAAF's Coaches Education and Certification System in Europe, the Coaching Summit Series of conferences for the exchange of good practice, and the annual European Athletics Coaching Awards to recognise excellence in this field.

National level athletics organisations are responsible for the regulation of the sport within their respective countries and most major competitions have some form of permit or approval from their national body.

**Women** were authorised to compete in athletics events for the first time at the 1928 Games in Amsterdam, with five events. Although since that time the participation of women in the Olympic Games and in track and field events was allowed, the participation of women in certain sports was questioned for a long time. Women's track struggled for widespread acceptance until the 1970s, when track and field as a whole enjoyed a boom in popularity. To note, the women's marathon was included on the programme of the Games of the XXIII Olympiad only in Los Angeles in 1984. Currently, the women's programme includes 23 events.



As track and field developed as a modern sport, the issue regarding the athletes' status as amateurs had been central. In fact, track and field was considered a purely amateur sport for a long time and athletes were not allow to receive money or cash prizes for their sporting activity. In this framework, those recognized to belong to professionalism could be disqualified from competition for life. This permitted a limited group of athletes to achieve high-level performances by virtue of a privileged social and financial situation.

During the second half of the XX century, the U.S. and Soviet teams battled in one of the sport's longest and most competitive rivalries. The critical political situation gave a strong relevance to sporting successes, thus also opening the door to the **development of doping**. Many doping scandals over the years had affected the genuine development of track and field, which led the IAAF (International Association of Athletics Federations) to create and apply an

extensive anti-doping programme involving testing both in and out of competition.

Beginning in the 1960s, **TV coverage of athletics greatly increased and many companies began to see the commercial value in the sport.** It became harder to follow the amateur principle in the traditional sense, especially considering the time and resources needed to train and maintain elite athletes. Faced with this commercially demanding world, the IAAF made changes to benefit the athlete, spectators and all other members of the "Athletics Family". During that time, a professional track circuit was also organized in the United States to increase the competitiveness of American athletes. However, few athletes wanted to participate in this competitions because most of them were actually receiving larger illegal payments for appearing at amateur meets and because these events may disqualified them from participating in future Olympic Games. Then, in 1982, the IAAF abandoned the traditional concept of amateurism and in 1985 created trust funds for athletes. Thus, the way to high performance was opened to larger groups of extremely talented athletes.

The development of applied sports sciences, improved equipment and new training and competition techniques, brought even more changes to the sport. Sadly, performance enhancing drugs became more prominent at this time as well, jeopardising the moral fabric of sport as well as the health and lives of young people.

## 4. ATHLETES WITH DISABILITIES

Athletes with physical disabilities have competed at separate international events since 1952. The International Paralympic Committee governs the competitions in athletics, and hosts the Paralympic Games, which have continued since 1960.

Competitors at elite level competitions, are classified by disability, to arrange athletes with a similar disability in the same event. A classified T12 athlete for example, is a track athlete with a visual impairment.

**TYPOLOGIES:**

- F = Field athletes
- T = Track athletes
- 11–13 – visual impairment. Compete with a sighted guide.
- 20 – Intellectual disability
- 31–38 – cerebral palsy

- 40–46 – amputation, and others (including athletes with dwarfism)
- 51–58 – Wheelchair

In wheelchair racing athletes compete in lightweight racing chairs. Most major marathons have wheelchair divisions and the elite racers consistently beat the runners on foot.

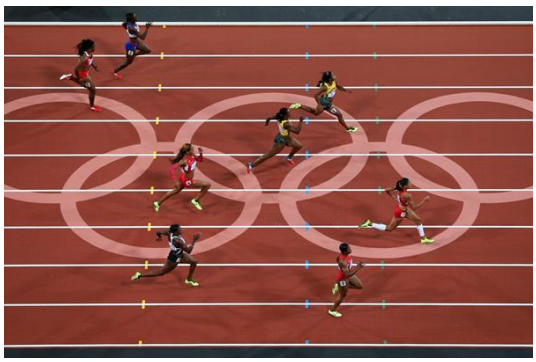
Occasionally, athletes with a disability excel to compete with able bodied athletes. Legally blind **Marla Runyan** ran in the 2000 and 2004 Olympics and won a gold medal in the 1500 meters at the 1999 Pan American Games.

**Oscar Pistorius**, a double amputee, has competed in the 2012 Olympics. At the 2011 World Championships Pistorius successfully made it to the 400 meters semi-final round and won a silver medal as part of South Africa's 4x400 meters relay team. In Masters Athletics it is far more common to make an accommodation for athletes with a disability.

Blind **Ivy Granstrom** set numerous Masters World records while being guided around the track.

## 5. EVENTS & COMPETITIONS

Until the late seventies, athletics had its moment of glory every four years, at the Summer Olympic Games and Paralympic Games.



The modern **Summer Olympics** was the first event at which a global athletics competition took place. All the four major sports within athletics have featured in the Olympic athletics programme since its inception in 1896, although cross country has since been dropped. The Olympic competition is the most prestigious athletics contest, and many athletics events are among the most watched events at the Summer Olympics. A total of 47 athletics events are held at the Olympics, 24 for men and 23 for women (as of London 2012). The events within the men's and women's programmes are either identical or have a similar equivalent, with the sole exception being that men contest the 50 km race walk.

The **Summer Paralympics** include athletes with a physical disability.

Track and field, and road events have featured in the Paralympic athletics programme since its inception in 1960.

The Paralympic competition is the most prestigious athletics contest where athletes with a physical disability compete.

Furthermore, today the official IAAF Competition Programme today includes a large number of events of which the most important is undoubtedly the **IAFF World Championships in Athletics**. This is a biennial competition was first held in 1983 and now features an event programme which is identical to the Olympics. Thus, road running, racewalking and track and field are the sports which feature at the competition.

Other specialized world championships include: World Senior/Youth Championships held Outdoor/Indoor, Continental Cup, World Cross Country Championships, World Race Walking Cup, World Half Marathon Championships, Universiade, etc.

### Major Events

- European Athletics Championships
- European Athletics Indoor Championships
- European Athletics Team Championships
- SPAR European Cross Country Championships

### Age Group

- European Athletics U23 Championships
- European Athletics U20 Championships
- European Athletics Youth Championships

### Events

- European Athletics Team Championships First League
- European Athletics Team Championships Second League
- European Athletics Team Championships Third League
- European Combined Events Team Championships Super League
- European Combined Events Team Championships First League
- European Combined Events Team Championships Second League
- European Race Walking Cup
- European Throwing Cup
- European Mountain Running Championships
- European 10,000m Cup

## Clubs

- ECCC Track & Field Senior
- ECCC Track & Field U20
- ECCC Cross Country

## Meetings

- Premium Permit Meetings
- Classic Permit Meetings
- Area Permit Meetings
- Indoor Permit Meetings
- Cross Country Permit Meetings
- Race Walking Permit Meetings

REFERENCES


1. International Olympic Committee (2015). ATHLETICS: History of Athletics at the Olympic Games - Reference document. Available at: https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/Factsheets-Reference-Documents/Games/OG/History-of-sports/Reference-document-Athletics-History-at-the-OG.pdf

2. Track and Field History and the Origins of the Sport. Available at: http://www.athleticscholarships.net/history-of-track-and-field.htm

3. IAAF (2017). History of track and field. Available at: https://www.iaaf.org/about-iaaf/history

4. Wikipedia: https://en.wikipedia.org/wiki/Sport_of_athletics

## SESSION 11 AND 12

Session 11 and 12 have no particular topic, they need to be designed by each partner according to their needs and resources. The sessions could be used as to explain deeper some of the previous topics, to add something new, introduce practical activities, etc.

For example…

1. Invite a local/regional doctor, oncologist for the coaches to openly ask questions in order to understand better how cancer and treatments work.
2. Invite any local/regional/national European authority who could speak about the job of the EU in Sports and Health at regional level.
3. Organise the last two sessions in an athletic track where the coaches could practise some of the disciplines with the support of a local trainer or club.
4. Use the last two sessions for designing a training plan oriented to cancer patients.

Any idea will be welcomed as long as it fulfilled the following objectives:

1. Raising awareness on the project own objectives.
2. Improving professional preparation of coaches.

This **Training Course for Coaches** has been developed thanks to the work and expertise of all partners involved into the Oncology Games project. Without their collaboration this would have not been possible.

The **Oncology Games** has been funded with support from the European Commission. This communication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.